

# Seventeenth century drawings of Brazilian animals in Leningrad

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Manuscript pictures of NE. Brazilian animals, related to seventeenth century originals described by Marcgrave and Piso (1648, 1658), validated by Linnaeus (1758-59, 1766-68), are studied and identified, comments are supplied, partly based on much neglected old sources, with evaluations of current interpretations.

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## Introduction

(by M. Boeseman)

The present publication is a much belated tribute to the initiative of the late Professor Enrico Schaeffer († 1979), art historian at the University of São Paulo, Brazil, who, as far back as 1972, requested our co-operation in providing zoological comments for his art-historical treatise on a collection of seventeenth century drawings of Brazilian animals in the Archives of the Academy of Sciences in Leningrad. In turn,

Professor Schaeffer was responding to a plea by Assis Chateaubriand, former Brazilian ambassador in London, who had arranged for the drawings to be photographed during a visit in 1965 and who urged their publication. Our own interest in the Dutch colonial episode in Brazil, especially the period 1637-1644 when Johan Maurits of Nassau-Siegen was Governor-General, coupled with our interest in the South American fauna, may have encouraged Professor Schaeffer to seek our help. Although Schaeffer's surmises with regard to the quality, purpose and authorship of these drawings cannot now be maintained as a result of published and unpublished research by ourselves and others, so that only a small part of his original manuscript introduction can be used, we nevertheless acknowledge our very sincere debt to this scholar who recognized the importance of the collection and with great generosity invited us to co-operate with him.

A brief account of the collection was given by Schaeffer (1968) and by Whitehead (1979), and a more detailed review, with reference to the many other collections connected with the Leningrad one, is given by Whitehead & Boeseman (1989).

### Historical background

In 1630, after some ephemeral or unsuccessful attempts, the forces of the Dutch West India Company finally managed to establish a fairly secure foothold in north-eastern Brazil in the area around Recife. The purpose of this settlement was partly commercial, sugar and Brazil-wood being important Brazilian products, and partly military and strategic, the colony offering a vantage point against the Spanish while the Dutch were still waging their war of liberation.

After some initial successes came a series of reverses, the colony failing to pay for itself, and the Board of Directors of the Company felt it necessary to find a strong personality with sufficient military abilities to keep at bay the Portuguese, who had not only held the area before the Dutch invasion, but were at that time united with the Spanish. The Company's requirements exactly fitted Johan Maurits of Nassau-Siegen (1604-1679), then serving in the States-General's army. Following his appointment in 1636, Johan Maurits arrived in Recife early in 1637, accompanied by an entourage of scientists and artists, thus indicating a much wider field of interest than that usually shown by colonial governors or indeed than was required by the Company.

Among those in the retinue were the physician Wilhem Pies (better known nowadays as Piso), the young German scientist Georg Marcgrave (variously spelt in the literature), and the artists Albert Eckhout and (less important here) Frans Post. To these can be added the German quartermaster Zacharias Wagener, who had arrived in Recife in 1634 and whose book of watercolours of Brazilian subjects shows him to have been a good amateur artist (Wagener, 1964). Judging by the known scientific and artistic outcome of these five men, it can be said that Piso mainly collected data on the medical topography of the country, as well as the economic and nutritional aspects of the natural resources; Marcgrave chiefly occupied himself in astronomy, cartography and exploring the natural history; Eckhout drew and painted the local population and documented the fauna and flora; while Post seems to have concen-

trated on landscapes (although to judge from his apparently small output, he may well have spent most of his time on drawing plans of civil and military buildings). Wagener, on the other hand, drew for his own pleasure and as a record for his friends back home, in most cases copying works by Eckhout, Post, Marcgrave or other artists.

In 1644, Johan Maurits returned to Europe with his retinue (except Georg Marcgrave, who had been sent to Angola in 1643 and died there shortly afterwards), and he subsidized the publication of the scientific results in a large folio volume *Historia naturalis Brasiliae* by Piso and Marcgrave (edited by De Laet, 1648). Ten years later, Piso rearranged some of the material in his *De Indiae utriusque re naturali et medica* (Piso, 1658). For more than a century these books stood as the main source for knowledge of the animals and plants of Brazil and many of the species first recorded here were later given proper Latin names and were thus validated for science by Linnaeus (1758, 1766) in the 10th and 12th edition of his *Systema naturae*, frequently with the Marcgrave (or Piso) descriptions as the sole basis for the species. Unfortunately, many of these early descriptions from the *Historia* (plus their often rather poor woodcut illustrations) are unreliable for a positive identification of the species. Of great value, therefore, are the drawings and paintings of these same species made in Brazil by Eckhout, Wagener and perhaps Marcgrave himself. Some of these, or possibly a prior drawing or a subsequent tracing, must have served for the woodcuts in the *Historia*.

The Brazilian pictures were formerly in the Prussian State Library in Berlin, being seven volumes catalogued in the series *Libri Picturati*. They comprised four large volumes of mainly oil paintings (Libr. Pict. A 32-35.— known as the *Theatrum*), two volumes of watercolours (Libr. Pict. A 36-37.— known as the *Handbooks*) and a mixed volume with 35 further Brazilian pictures (Libr. Pict. A 38.— known as the *Miscellanea Cleyeri*). During the last war, these and other precious works from the Berlin library were evacuated, the Brazilian volumes going to a depot in Silesia and after the war disappearing mysteriously.

In these circumstances, the existence in Leningrad of a large collection of seventeenth century watercolours of Brazilian animals, apparently from the same source and believed to have perhaps been original field sketches, was highly important. This collection offered the only source for the correct identification of many of Marcgrave's animal species and it was clearly of the utmost value to publish them. For this reason, we gladly accepted Schaeffer's offer to co-operate on the zoological discussion of the drawings, never dreaming that five years later, in March 1977, the seven original volumes from Berlin would suddenly surface after a disappearance of over thirty years. Nevertheless, we have considered it worthwhile to continue with our work on the Leningrad pictures and publish them. The presumed originals, now in the Jagiellon Library in Cracow, Poland, are not easily accessible and in many cases their Leningrad copies are a sufficient indication of the species, especially since we have been able to reference almost all the Leningrad pictures to the volume and page of the Cracow ones. We give modern identifications and thus 'fix' a number of Linnaean and later names which have hitherto received one or more incorrect interpretations in the literature.

### The Leningrad drawings

The early history of the collection of 17th century animal drawings now in Leningrad is completely unknown. They are not apparently listed in the *Musei Petropolitani* of 1746 and Soloviev (1934), the only Russian author to mention them, offers no tangible evidence of their provenance. They seem to have been found in 1832 in the Zoological Institute by the Director, J.F. Brandt (1802-1879), who sent them to Johann Horkel (1763-1846), Professor of Physiology in Berlin. It is not clear whether Brandt knew of the Brazilian drawings from Johan Maurits' collection (*Libri Picturati*), but in any case Horkel compared the Leningrad drawings with these. He underlined in red ink against each Leningrad drawing the already written page number of the matching drawing in the *Handbooks* (i.e. the two watercolour volumes), and he himself added the volume and page for those matching the *Theatrum* paintings (i.e. the four volumes of oil colours), thereby dividing the Leningrad pictures into two sets, Series A and Series B (see below). He also included some notes on the two sets (on Sheets 1 and 23- formerly 34, see below). He believed that the *Handbooks* were made in Holland in 1644-1645 as copies of Marcgrave's originals, from which the Leningrad A series again was copied. He attributed the *Theatrum* paintings to Frans Post. Horkel then returned the drawings to Brandt and they were placed in two portfolios which were subsequently entitled '*Lehmaniana*' by K.E. von Baer (1792-1876), the well-known embryologist and a member of the Russian Academy of Sciences, who continued the work of the Russian explorer and scientist A. Lehmann (1814-1842) after the latter's death. Whatever the reason for this erroneous labelling, it seems to have helped to bury these Brazilian drawings for yet another century.

It was not until 1934 that the present drawings again were 'discovered', this time by M.M. Soloviev (1877-1942), who realized their importance and gave a brief account of them (Soloviev, 1934). Unfortunately, Soloviev was not fully conversant with the literature on the Johan Maurits collection of pictures in Berlin and, equally unfortunately, his paper was not seen by Hans Wegener, Thomas Thomsen, Adolf Schneider and others who, only a few years later, were to stimulate renewed interest in the *Libri Picturati*. Soloviev presumed that the Leningrad drawings were not the ones that had been used for preparing the woodcuts for the *Historia*, stating that the latter had been destroyed in a fire at the Amsterdam printing works. In fact, he was probably referring to the disastrous fire at the works of Johannes Blaeu, the Amsterdam publisher, but this had nothing to do with the *Historia*, which was published by Elsevier of Amsterdam (and Frans Haak of Leiden).

Once again the Leningrad drawings slipped into obscurity. They were transferred from the Zoological Institute to the Archives of the Academy of Sciences of the USSR, also in Leningrad, and for another thirty years their existence was unsuspected by those working on aspects of the Dutch period in Brazil. Not until 1965 were they 'discovered' once more, by Dom Clemente da Silva Nigra, and three years later they were most generously lent for the exhibition *Os Pintores de Mauricio de Nassau* held in Rio de Janeiro (Schaeffer, 1968, reproduced four in colour, with an introduction, in an unpagged Addendum to the exhibition catalogue).

The Leningrad collection consists of 145 folio sheets of varying sizes (see table) depicting 283 animals and 7 sheets text. Horkel split the pictures into two series, the first (21 folios) apparently matching the Berlin watercolours of the *Handbooks* (i.e.

*Libri Picturati* A.36 and 37), the second (124 folios) matching the Berlin oil paintings of the *Theatrum* (i.e. *Libri Picturati* A.32, 33 and 34), adding to each an introductory note.

The smaller set, which is referred to here as the Series A, now contains 22 folios numbered consecutively 1 - 22. Folio 1 contains Horkel's notes. Folios 2 - 10 show 31 drawings of mammals, 11 - 15 show 52 drawings of birds, and 16 - 22 show 25 drawings of fishes, 3 reptiles, 6 crustaceans, 2 spiders, 1 beetle and 1 insect larva. In all, there are thus 121 drawings of animals. Each picture has a caption, which begins with a page number, followed by a vernacular name and often some notes on the animal, written in rather untidy and perhaps hasty German. From folio 14 (bird p. 254) the page number and the caption have first been written in pencil and then afterwards in ink, the latter almost certainly in the same hand. The page numbers correspond to the page numbers in the Berlin *Handbooks* and they run in strict sequence (mammals 1-137, birds 159-282, fishes etc. 300-410). Evidently some Leningrad folios are now missing because there are occasional gaps (e.g. between folios 9 and 10, where the page numbers jump from 104 to 124). It can be noted that Bloch (1787) recorded pictures of mammals, birds and fishes in both volumes of the *Handbooks*, whereas Lichtenstein (1818 *et seq.*) cited most of these drawings as being in the second of the two volumes, with only occasional references to drawings in the first volume. Horkel, on the other hand, indicated volume one of the *Handbooks* for the first page of Leningrad mammals (folio 2) and thereafter seems to imply that all come from this same volume. In fact, the volume numbers were reversed when the volumes were rebound at some time after 1829.

In addition to the folio numbers (now removed, see below) and the Berlin *Handbook* page numbers, there is a third set of numbers written one per folio, usually top right, but sometimes running up the left or right edge of the paper. These are roman numerals, e.g. Tab. XVI, Tab. IV, Tab. XVII, Tab. XVIII and Tab. II on the first five folios showing pictures. Although they are not in order and are incomplete, they conform to the subject matter in that I-XVIII are mammals, XXVI-LXVIII are birds, and LXXXIII, XCVII and CIV-CXXXIII are fishes, etc. They do not correspond to the *Handbook* numbers and thus represent an independent but in some way related series.

The A series folios are all on the same kind of paper, which has a round, shield-like watermark. The chain-marks are 2.7-2.8 cm apart and there are 8 horizontal lines per cm. The dating is considered below.

The larger set of Leningrad drawings, here designated Series B, contains 130 folios, now numbered consecutively 23 to 152: folio 23 is a sheet of notes by Horkel, folio 24 is labelled '12 Blätter Säugthiere aus Tom III', folio 37 is labelled '4 Blätter Reptilien aus Tom III', folio 42 is labelled '52 Blätter Fische aus Tom I', folio 95 is labelled '41 Blätter Vögel aus Tom II' and folio 137 is labelled '15 Blätter Krebse, Insecten, Sepien und Seesterne aus Tom I'. Folios 25-36 show 15 mammals, folios 38-41 show 4 reptiles, folios 43-94 show 55 fishes, folios 96-136 show 56 birds (and a beetle on folio 114), and folios 138-152 show 31 invertebrates, in all making 162 drawings of animals. The Horkel numbers, that is to say the page numbers of the corresponding drawings in the *Theatrum* volumes, are written by Horkel in red ink above and to the left of each figure. As with the page numbers of the *Handbooks* in the A series, the *Theatrum* numbers are in the same order as the present drawings (with one

or two exceptions). However, since there is usually only a single drawing on each folio of the Leningrad drawings, it is equally possible that Horkel arranged them to match the *Theatrum* order. Like the A series, the B series are also marked with roman numerals (e.g. Tab. XVII, etc.). Once again, these are not in order, but they conform to the subject matter in that VI.—XX are mammals, XXII - LXIX are birds, LXXI - LXXIV are reptiles, LXX and LXXVII - CXXX are fishes, CXXXIV - CXLIX are invertebrates and CXLIV both fishes and invertebrates. It can be noted that there is a slight irregularity between reptiles and fishes, but LXX (folio 87, an eel) originally has been identified as a reptile. Combining the roman numbers of the A and the B series we find the following result:

I - XX	Mammals
XXII - LXIX	Birds
LXXI - LXXIV	Reptiles (B series only: A series mixed)
LXX, LXXVII - CXLIX	Fishes, also aquatic crustaceans, etc.

The significance of these roman numerals is still unknown.

Some of the B series sheets also have a reference to the page number in Marcgrave's part of the *Historia naturalis Brasiliae*, the indication following the vernacular name, e.g. 'Guatucupá p. 177 HB' or 'Guara p. 203 HB'. The name and the reference are usually written in pencil, which in many cases has later been inked over. In a few cases there is a further page reference, e.g. 'Boiguacu p. 227. HI' or 'Boitiapó p. 279 HI', which refers to Piso's '2nd edition' of the *Historia*, the *De Indiae utriusque re naturali et medica* published in 1658. This shows that whoever owned the Leningrad B series drawings was interested in annotating them more than six years after the *Theatrum* and *Handbooks* had been given by Johan Maurits to the Elector of Brandenburg, or at least fourteen years after Johan Maurits returned to Europe from Brazil. Such continued interest after the publication of the two 'editions' and the preparation of the much more magnificent *Theatrum* volumes is surely significant. It is also significant that there are no such references to Piso, 1658 on the A series, implying that the two series were separate when the B series was annotated.

On some of the B series drawings there is yet another set of numbers which is sometimes combined with the *Historia* reference, e.g. 'Tajasicá No 62 p. 68 et p. 144. HB', but is often on its own, e.g. 'Paru No 20 p. 55' (we interpret here as 'No' what appears as a capital N with a line through it, followed by a lower case o). These are in fact references to the figures in Piso's 1658 edition, the numbers falling into place if Piso's woodcuts are numbered separately for fishes, birds and so on. That these were not written on the Leningrad sheets by Piso is shown by certain critical comments such as 'Guacari No 74 p. 74 [symbol, apparently 'est'] altera specs autoris' or 'Matuitui [symbol, evidently 'non'] ad p 95 no 38; sed ad M refertur [symbol, meaning 'quod'] describitur p 199 HB cujus specs est'. The reason for numbering the Piso illustrations but not those of Marcgrave in the *Historia* is puzzling.

In most of the B series drawings there is a name, sometimes written in pencil and often inked over, above the animal, the writing being large and rounded. In other cases, the name is written in ink and may match the handwriting of the names on the A series sheets. As explained above, the name is often followed by reference to the page or figure numbers of Piso and Marcgrave, sometimes with a comment in the same hand. On a few occasions (e.g. folios 78, 79) there is a brief comment in Dutch above the subject, or a brief note in Latin (folio 87).

Another indication on the B series sheets is a series of large numbers usually in pencil (sometimes in ink). For the birds (41 folios), these numbers range from 1 to 8; with a few exceptions they follow the sequence of the folio numbers of the sheets, but the numbers of drawings in each of the eight groups varies considerably (e.g. nine in groups 5 and 6, six in group 1, four in group 7 and only three in groups 2, 3 and 8). In the fishes, the groups are even more irregular (twelve in 1, nine in 2, one in 3, twenty-seven in 4 and two in 5). The mammals are not grouped, but the four reptiles are labelled 3, and the invertebrates are grouped as 1 (thirteen sheets) or 2 (one sheet, possibly two). The significance of these numbers is not known; they do not match the chapters in Piso or Marcgrave.

Finally, the B series drawings are on two different kinds of paper. In most cases the watermark is a running stag spanning two chain-marks (2.3 - 2.4 cm apart), with 10 horizontal lines per cm. However, ten sheets, all fishes, have 8 lines per cm and the chain-marks are 2.7 - 2.8 cm apart; five of these have a crest topped by a crown (folios 51, 57, 75, 80, 94), while five lack a watermark and were presumably from the other half of the sheet (folios 52, 60, 61, 74, 93). The dating is discussed below.

### Research and results

For long interested in the art-historical aspects of Dutch rule in Brazil, and especially stimulated by the Leningrad pictures shown in the 1968 Rio de Janeiro exhibition, Schaeffer prepared a primarily art-historical manuscript on these animal drawings. Not finding satisfactory publishing facilities or collaborators to prepare zoological comments, the manuscript remained unpublished until in 1972, as stated above, he made contact with us.

After an agreement was reached with Schaeffer, we received his manuscript, consisting of a general introduction and a series of art-historical comments on each of the Leningrad pictures, as well as a complete set of large colour transparencies of all Leningrad sheets. These were made in 1965 by a photographer accompanying the former Brazilian ambassador in London, Assis Chateaubriand during a visit to Russia (Schaeffer, *in litt.*, 2 September 1972).

Although the available material, including enlarged prints prepared by the Leiden Museum photographer E.L.M. van Esch, proved adequate in most cases, some colours appeared no longer correct ('the colour, since 1965 lost somewhat in vigour', Schaeffer, *in litt.*, 4 July 1972), and for a more satisfactory result a study of the Leningrad originals was considered desirable. After long but abortive negotiations (1974-1977), during which a loan proved impracticable, permission was kindly granted for studying and photographing the manuscript in the Leningrad archives. This visit, with the late Dr A. Diakonoff, emeritus curator of Lepidoptera of the Leiden Museum, kindly acting as a guide and an interpreter, and photographer Van Esch, took place from 21 November to 3 December 1977. It was interesting to confirm the impression based on Schaeffer's pictures that in some cases drawings were made over the handwritten captions, i.e., the caption must have preceded the picture, and to search for information necessary to date the Leningrad manuscript.

Besides the study and the making of photographic copies of the pictures, special attention was given to the watermarks. Photographs of these were subsequently sent

to Dr H. Voorn (Koninklijke Bibliotheek, Papier-historische Afdeling, Den Haag) who dated the paper as from 1650 or later. Thereby, the supposition of their representing field-sketches, already doubted on the basis of comparative studies on the sequence, execution and captions of the Leningrad and Berlin pictures, became untenable, while their attribution and purpose now posed new problems. Unfortunately, therefore, Schaeffer's art-historical comments to the pictures, based on the assumption of their being original field-studies, no longer could be maintained.

In contrast, Horkel's introduction to the first series of pictures (A series fol. 1) again became more interesting. Although it seems clear that Horkel's attribution of animal pictures to Post is incorrect (but not surprising since Eckhout at that time was virtually unknown), his further statements on original Marcgrave pictures, *Handbooks* and present pictures may well be relevant, although unfortunately not supported by any record of his sources of information. However, there are several supporting indications.

Horkel's statement about the existence of original Marcgrave pictures seems confirmed by Marcgrave's own claim to have made his illustrations for the *Historia naturalis Brasiliae* himself. Rather unfortunately the editor of the book, Johannes de Laet, added some of his own.

Equally, the copying into the *Handbooks* of Marcgrave's own pictures, before these were sent away for the preparation of woodcuts (after which they got lost), is less unlikely than a direct attribution of the *Handbooks* to Marcgrave (i.e. the assumption that these contain his original drawings). In fact, a study of the *Handbooks* (July and September 1979) showed that, if these pictures were originals, whoever made them must have been a remarkably accomplished draftsman, since there are no indications of failures, serious corrections or pages ever torn out. This, together with the obvious fact that the pictures were made in books already bound (there are smudges on opposite pages), always correctly placed on the pages, without any indications of previous abortive attempts, almost without any studies of details and without any annotations, although often with meticulous detail, all points to their being copies, presumably of Marcgrave's originals (possibly by Marcgrave himself) rather than field-sketches made under unfavourable circumstances.

Less fortunate seems Horkel in his introduction to the present B series, when attributing the *Theatrum* originals to Post. Although as yet there is no certainty, most of these may rather be attributed to Eckhout, with some of lesser quality either based on dead and badly preserved specimens or on simple sketches kindly provided by less talented friends and acquaintances, or possibly even to be attributed to different hands.

The Leningrad pictures, evidently made from the *Handbooks* and *Theatrum*, show several interesting aspects. Considering their moderate quality and lack of detail, it is hard to understand how they might ever have been used or intended for artistic or scientific purposes, and it seems more likely that they were made by not very experienced hands and merely for private reasons. Moreover, a number of unfinished pictures or some not even started on, only a caption having been copied, appears to point to a hasty, last-minute job. It seems quite possible that Johan Maurits, either adding the valuable *Handbooks* and *Theatrum* to his 1652 gift to the Elector of Brandenburg at the last moment, or just being late in realizing their future value, gave a last-minute order to have them copied as best as possible and by whoever



was available. In fact, of the principal other persons here involved, Marcgrave had died, Eckhout already must have possessed much better sketches (although we cannot exclude the possibility that copies by other hands were made for Eckhout - see below), Piso was more interested in medical properties, mainly of plants, while finally, as a landscape painter, Post is hardly likely to have depicted so many marine animals. This would agree with Horkel's statement and date them as from 1652. Also it has been suggested that they may have been made later, in Berlin, but then: why hasty and why incomplete? It is possible that, in 1653, Johan Maurits presented these pictures to Eckhout on the occasion of his departure for Saxony, where he entered into the service of the Elector Johann Georg, as a token of appreciation for his services. If so, their value to Eckhout would have been more sentimental than artistic, determined more by their donor than by their quality or costliness.

Continuing along this speculative line of thought, there seems to be a rather plausible explanation for the present whereabouts of the pictures. Their route could have been from Eckhout (died in Groningen, c. 1664), via his widow Annetje (Annetgen, Anneke) Jansen Wigbolt (died in Groningen, 1684) and a possible auction of Eckhout effects by his daughter Gertruyd in 1685, obtained by the famous collector Albert Seba (see Engel, 1937), who visited Groningen 1685-1686 and whose (first) collection was bought by Czar Peter the Great in 1717, to be shipped to St. Petersburg. This striking coincidence of Seba's visit to Groningen renders a support that is lacking for an alternative possibility involving the animal and plant painter Maria Sibylla Merian (died 1717), whose daughter and son-in-law, the painter Georg Gsell, went to Leningrad. Appleby (1982: 388) suggests that Robert Erskine (1677-1718), a Scottish collaborator of Peter the Great, may have played a role here.

In the second part we discuss each of the Leningrad pictures in turn in the sequence mostly already adopted for their exhibition in Rio de Janeiro in 1968. As shown on Schaeffer's transparencies, they were numbered 1-152, including Horkel texts and chapter headings on folios 1 (A series), 34 (B series), 35 (mammals), 37 (reptiles), 42 (fishes), 95 (birds) and 137 (invertebrates). Although this numbering was no longer found during our 1977 visit to Leningrad, it is retained here with a slight correction: folios 34 and 35 have been moved to their proper places at the beginning of the B series, thereby becoming folios 23 and 24, and the former folios 23-33 become 25-35. Sheet sizes are given in the accompanying table, after the measurements provided in Schaeffer's manuscript.

During the present studies it proved of interest to compare some of the pictures with similar animals portrayed on sets of tapestries made at the Gobelins workshops in Paris, mostly after Eckhout cartoons presented in 1679 to King Louis XIV by Johan Maurits. These sets of usually eight tapestries were repeatedly produced and are known as the *Anciennes Indes* (1687-1730) and (modified by F. Desportes) the *Nouvelles Indes* (1740-1941). The separate tapestries are named as follows: *Le cheval rayé*, *Les deux taureaux/Les taureaux*, *L'éléphant* (or *Le cheval isabelle*), *Le chasseur indien*, *Le combat d'animaux*, *Le roi porté* (par deux maures), *La négresse portée* (dans un hamac), *L'indien à cheval* (or *Le cheval pommelé/Le cheval pommelé* (or *Le chameau*), and *Les pêcheurs*. Both sets were reproduced in colour by Krotoff (1984), the *Anciennes Indes* by Whitehead & Boeseman (1989).

It was fortunate that several members of the staff of the Rijksmuseum van Natuurlijke Historie in Leiden proved willing to co-operate and agreed to adhere more

or less to a general scheme, although remaining free in the treatment of their subjects. While the basic references as a rule include the *Handbooks*, *Theatrum*, Marcgrave, Piso, Linnaeus (1758, 1766), Wagener, Lichtenstein (or those considered important by the author), additional references may occur in the text. The references to the *Theatrum* are based on copies of the indices of the three volumes considered here, but in many cases these may well refer to blank pages with only the name of the animal.

Of the discussions of the various pictures, the mammals are dealt with by Dr C. Smeenk, the reptiles by Dr M.S. Hoogmoed, the crustaceans (mostly in a separate paper) by Prof. Dr L.B. Holthuis, the birds and the fishes by the present author, who also prepared the further invertebrate sections, kindly assisted by Prof. Dr E. Gittenberger (Cephalopoda), Dr M.R.R.B. Best (Echinodermata), Dr P.J. van Helsdingen (Arachnida), J. Krikken (Coleoptera) and J. van Tol (Phasmida), all of the Leiden Museum staff, and by Drs M. Jangoux and Chantal de Ridder (Echinodermata) of the Laboratoire de Zoologie (Faculté des Sciences), Université Libre de Bruxelles. I gratefully acknowledge their valuable contributions, which in no way involve their responsibility for the present texts. The bird section is a special case, this group having already been discussed in 1938 by Schneider, basing himself on the Berlin (Cracow) pictures, while a recent study on the subject was prepared by Teixeira (MS., 1986). Therefore, only the main references are given here, with few further comments. In some cases Dr G.F. Mees, the Leiden Museum ornithologist, provided valuable advice.

Much pertinent information provided here was taken from an earlier and more extensive manuscript, prepared by Dr P.J.P. Whitehead of the British Museum (Natural History) in London before the idea developed to devote a whole book on the present and related subjects. To prevent or at least restrict unnecessary duplication, and with Dr Whitehead's kind permission, I condensed his text. Since I also added some personal considerations, I take full responsibility for the present presentation and contents.

### Supplementary note

Coloured photographic copies of the Leningrad folios, both negatives (or prints) and colour transparencies, are kept in the Nationaal Natuurhistorisch Museum (Rijksmuseum van Natuurlijke Historie) in Leiden and are available for further study. In the present paper we usually abstain from any initiatives involving systematics or nomenclature (like lectotype selections) requiring a more thorough study of the groups concerned, especially since for such a purpose the far better originals in *Theatrum* and *Handbooks* are again available. It is hoped that in the not too far future these will be studied and published.

Our study of the originals in Cracow suffered from lack of time. As a result, our information hardly covers volume 2 of the *Handbooks*, and only a few secondary, copied or deduced references to that volume are given. For each picture discussed here we have listed, besides *Handbook*, *Theatrum* and the principal, primary references (only the crustaceans are treated in more detail), some translations. In such references, the records of pagination, plates or figures in translations (in Portuguese) and of comments (Marcgrave, Piso, Lichtenstein, Wagener) are given in square

brackets, while the authors of the comments are not named; these may be found in the list of references. Whenever the species concerned is recorded without reference to Marcgrave, as in Linnaeus' compilations, the pagination is given in curved brackets. If a reference to Marcgrave is included erroneously or in a composite species, as a rule the indications "error" or "partly" are added.

Especially in the vernacular names, some variation in spelling or in diacritical signs were encountered, but not all of these are repeated in the present texts. Notably, in Marcgrave (1648) the capital "u" is printed as "V", the capital "j" as "T".

The various handwritten legends and notes on the folios are transcribed as well as possible, but some are vague, problematical or even illegible, and the present interpretations should be considered with some reserve. This also implies abbreviations on the Leningrad folios, some of which seem explained in Lichtenstein's series on the subject: H.B. (Marcgrave, 1648); H.I. (Piso, 1658); I.M. (Icones Menzeli = *Theatrum*); I.P. (Icones Posti? = *Theatrum*); L.M. (Liber Menzeli = *Theatrum*); L.P. (Liber Posti or Liber Principis = *Handbooks*). An incidental F.P. (Fecit Post?) seems possible and presumably the apparent "Ho" stands for "No". The cryptic symbols already referred to above: "o" with circumflex atop (folios 89, 103, etc.), "-" with circumflex (e.g., folio 46), and "+" with (?dot and) circumflex atop (folios 56, 86, etc.), are here interpreted as "non" (not), "est" (is) and a more positive "est" (is, or also), respectively.

#### Folios sizes

Leningrad MS. cf. Schaeffer (in litt.), in cm.

1	text Horkel	53	32x 19	103	23.8x 19
2	24.5x 20	54	32x 19	104	30.5x 19.3
3	27x 20	55	28.5x 19.6	105	16.5x 18.3
4	33x 20	56	31x 19	106	26.3x 19.4
5	27x 20	57	27.5x 19.5	107	32x 19.3
6	33x 19.7	58	31.6x 19	108	18.3x 20
7	33x 20	59	31x 19.2	109	31x 19.4
8	33x 20	60	32x 19.4	110	31.5x 19.2
9	33x 20	61	33x 19.5	111	27x 19
10	26x 20	62	32.2x 19.5	112	32.3x 19.7
11	33x 20	63	28x 14.5	113	32x 19.5
12	33x 20	64	29.5x 18.5	114	32x 19.5
13	33x 20	65	30.5x 19.4	115	32x 19.5
14	33x 20	66	28.5x 19.2	116	32x 20
15	33x 20	67	28.2x 19	117	31.2x 19.2
16	33x 20	68	26.8x 19	118	32x 19
17	33x 20	69	31.5x 19	119	32x 19.5
18	33x 20	70	32x 19.5	120	32x 19
19	33x 20	71	29.5x 19.1	121	32x 19.5
20	33x 20	72	30x 17.5	122	32x 19.5
21	33x 20	73	29.7x 19	123	32x 19.7
22	33x 20	74	31.6x 19	124	32x 19
23(34)	text Horkel	75	30x 19	125	31.5x 19
24(35)	text (mam.)	76	32x 19	126	32x 19.2
25(23)	32.5x 19	77	29x 19	127	32x 20
26(24)	27.2x 19	78	32.5x 19.5	128	26x 19.4
27(25)	26.6x 19.2	79	32x 20	129	17.3x 19.5
28(26)	32.2x 17.5	80	26.2x 19	130	32.2x 18.7
29(27)	26x 17.5	81	32x 19	131	32x 18.8
30(28)	30x 19	82	30.2x 18.5	132	31.2x 19.8

31(29)	33.5x 19	83	29.5x 19	133	15x 20
32(30)	32.5x 19	84	32x 19	134	29.4x 19
33(31)	26.6x 19.2	85	31.7x 19.3	135	31.5x 19
34(32)	28.5x 18.5	86	30.2x 19	136	31.5x 19
35(33)	30x 20	87	31x 19	137	text (invert.)
36	37.3x 20	88	31.7x 19	138	31.5x 19
37	text (rept.)	89	30.5x 19.5	139	32.4x 20
38	32x 19	90	28x 19.5	140	32x 19.2
39	32x 19.5	91	32x 19	141	31x 18.3
40	32.5x 18.7	92	29.5x 19	142	32.3x 19.5
41	32x 18.7	93	33x 18.5	143	32x 19
42	text (pisc.)	94	31x 19	144	32.2x 19.5
43	32x 19	95	text (aves)	145	32.5x 19.5
44	31x 19.6	96	32x 20	146	31.5x 19.2
45	20x 19.4	97	32.5x 19.7	147	32.8x 19.3
46	32.7x 19	98	31x 19.6	148	31x 19.3
47	29x 19	99	32x 19	149	32x 19
48	31.5x 19	100	32x 19.4	150	32x 19.5
49	32x 19.5	101	32.2x 19	151	32.5x 19.5
50	31.219.7	102	32.5x 17	152	32x 19.7
51	32.2x 19				
52	30x 20				

### Comments on the Leningrad pictures: A Series

Mammals by C. Smeenk; Reptiles by M.S. Hoogmoed; Crustaceans by L.B. Holthuis; further Invertebrates and Birds by M. Boeseman.

#### Mammals (by C. Smeenk)

#### Folio 1

21 Blätter Copien von den mit Wasser und Deckfarben gemahlten brasilianischen Thierabbildungen der Berliner Königl. Bibliothek, 2 Bände Folio, die unter dem Namen Liber Principis bekannt sind und die man früher lt. Bloch für von Moritz von Nassau selbst gemahlt hielt und von denen Lichtenstein geglaubt hat, es seien die von Markgraf in Brasilien gemachten Originalabbildungen. Sie sind aber weder das eine noch das andere sondern in Holland in den Jahren 1644-45 gemacht. Splendide Copien der Markgrafschen vielleicht bei der Verfertigung der darnach gemachten Holzschnitte verlohren gegangenen Originalabbildungen, denen der Prinz der sie für sich hatte machen lassen eigenhändig Noten hinzugeschrieben hat, die er späterhin ebenso wie die Postschen Abbildungen von brasilianischen Pflanzen und Thieren, dem grossen Kurfürsten schenkte. Und ehe er dieses that liess er eine zusammengedrängte Copie davon machen, der er wiederum eigenhändig dieselben Noten hinzuschrieb. Wo von die anliegend freilich mit mehreren Lücken den grössten Theil des ersten Bandes der grossen Copie wo immer nur ein Thier sei es auch noch so klein auf einem Folioblatt vorkommt. Horkel.

Free translation:

"21 sheets with copies of the pictures of Brazilian animals, in water- and body-

colour, in the "Königliche Bibliothek" at Berlin, 2 volumes in folio, known by the name of "Liber Principis", which formerly cf. Bloch were considered to have been painted by Moritz von Nassau himself, and of which Lichtenstein believed that they must be the originals Marcgrave made in Brazil. Yet, those [Handbooks] are neither the one nor the other, but were made in Holland during the years 1644-45. To the splendid copies of Marcgrave's originals, which perhaps got lost when used as examples for the preparation of woodcuts, the Prince, who had them made for himself, personally added handwritten notes which he subsequently also added to Post's pictures of Brazilian plants and animals to be presented to the Great Elector. And before he did this [- the presentation -], he had a more compact copy made on which he again wrote the same notes. Of which the present, though with several gaps, represents the major part of the large copy [- i.e. Handbook, 1 -], in which always only a single animal, no matter how small, occurs on one folio sheet. Horkel".

Remarks.— In the foregoing chapters we have already drawn attention to the fact that the present series of pictures evidently does not represent the original field drawings, but copies. Also we pointed out that Horkel made a grave error when he attributed pictures that Johan Maurits presented to the Great Elector to Frans Post. See also the text on folio 23.

## Folio 2

Capijbara.— *Hydrochaeris hydrochaeris* (Linnaeus, 1766)

Handbook, 1: 6; Theatrum, 3: 107, 109; Marcgrave, 1648: 230 (fig.); Marcgrave, 1942: [LXXXII (note 673)]; Piso, 1658: 99 (fig.); Piso, 1957: [231 (fig. p. 232)]; Linnaeus, 1766: 103; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153]; Cabrera, 1961: 583; Wagener: 1964: 205 (fig. 74), [256, 361]

Annotations: "Tom 1. p. 6 Capijbara. Ein wasserschwein, helt sich unter dem wasser wie eine otter, ist von farben und grosse wie in kleinsten stücken ein [?] zu finden ist" (a water hog, keeps under water like an otter, is in colour and size as to be found in (the) smallest specimens). Text not clear.

A rough, but clearly recognizable sketch, almost certainly representing the same animal as figured in Marcgrave and Piso, and possibly also in Wagener. The manuscript drawing is more accurate in the shape of the forelegs; in Marcgrave's woodcut the muzzle is blunter and thus more natural and, moreover, is decorated with whiskers. The most natural figure is that of Wagener, which also shows the animal in its aquatic habitat. All figures wrongly show four toes on the hind foot instead of three.

The animal is still commonly known by the name "Capybara".

Coandi.— *Coendou prehensilis* (Linnaeus, 1758)

Handbook, 1: 10; Theatrum, 3: 105; Marcgrave, 1648: 233 (fig.); Marcgrave, 1942: [LXXXII (notes 684-685)]; Piso, 1658: 99, 324 (figs.); Piso, 1957: [232, 670 (figs.)]; Linnaeus, 1758: 57; Linnaeus, 1766: 76; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153, 263 (note 32)]; Thomas, 1911: 145; Cabrera, 1961: 600; Wagener, 1964: 201 (fig. 64), [251, 357]

Annotations: "Tom 1. p. 10 Coandi. So gross alss ein mittelbahrer hund" (as big as a medium-sized dog).

A fairly good picture, clearly based on the same animal as figured in Marcgrave and Piso; Wagener's picture, however, is quite different. In the manuscript drawing the head looks more natural, with its blunter muzzle; in Marcgrave's woodcut the legs are more accurate. An identical text in pencil, in the same handwriting, is partly covered by the picture, so was evidently written before the drawing was made.

The species is still commonly known as "Cuandú". Based on Marcgrave, Thomas (1911) restricted the type locality to Pernambuco.

(no vernacular name).— *Potamochoerus porcus* (Linnaeus, 1758)

Handbook, 1: 14; Theatrum, 3: 117; Marcgrave, 1648: 230 (fig.); Marcgrave, 1942: [LXXXII (note 672)]; Piso, 1658: nil; Linnaeus, 1758: (50); Linnaeus, 1766: 103; Lichtenstein, 1818: 222; Lichtenstein, 1961: 48, [161]; Thomas, 1911: 140; Allen, 1939: 462; Wagener, 1964: nil

Annotations: "p. 14 Dieses schwein ist auss Guinea gross alss ein frischling von einem Jahre die haut ist gantz dicke" (this pig is from Guinea in size like an one year old piglet the skin is quite thick).

A very rough and inaccurate sketch, wrongly coloured. It is in good agreement with the woodcut in Marcgrave, but shows a few interesting differences in details. The manuscript drawing is more accurate in that it shows a complete dorsal crest and a tusk in the lower jaw. Marcgrave, however, clearly shows ear and tail tassels. Both figures incorrectly show whiskers. In neither figure is there any trace of the striking colour pattern of the species.

It is interesting to note that this species, which has nowhere been domesticated, apparently was brought to Brazil in those days. The "Bush Pig" or "Red River Hog" (the usual vernacular names) is common in West Africa. Based on Marcgrave's reference, Thomas (1911) restricted the type locality to Guinea.

### Folio 3

Tayaçuaté.— *Tayassu tajacu* (Linnaeus, 1758)

Handbook, 1: 18; Theatrum, 3: 111, 113, 115; Marcgrave, 1648: 229 (fig.); Marcgrave, 1942: [LXXXII (note 671)]; Piso, 1658: 98 (fig.); Piso, 1957: [230 (fig.)]; Linnaeus, 1758: 50; Linnaeus, 1766: 103; Lichtenstein, 1818: 221; Lichtenstein, 1961: 47, [161, 267 (note 49)]; Thomas, 1911: 140; Cabrera, 1961: 319; Wagener, 1964: 205 (fig. 75), [256, 362]

Annotations: "Chelderschwein" (Cellar pig) "p. 18. Tayaçuaté. Ein wiltschwein, werden nicht grösser dan ein frischling von 1 jahr, hat den nabel auf dem rücken wo A steht alss es darauf geschlagen wird, stirbt es, sind sehr zornige thiere, u. delicat zu essen" (a wild boar, do not grow larger than an one year old piglet, has its navel on its back where A stands, it dies if it is struck there, are very angry animals, and delicate eating).

The picture resembles the woodcut in Marcgrave and Piso (in reverse) and is probably based on the same animal. The manuscript drawing, however, is far more

accurate and natural. Wagener's figure too, may represent the same specimen.

Two species of peccaries occur in the area: *Tayassu tajacu* and *Dicotyles pecari* (Link, 1795). *Tayassu* is characterized by a pale collar over the shoulders and the generally white-tipped hairs; *Dicotyles* by contrasting white lips, chin and cheeks. Linnaeus refers to the white collar, but Marcgrave does not mention this character, giving the colour of this animal as all black, speckled with white. The collar does not appear in Marcgrave's woodcut nor in the manuscript drawing, but the speckling of the coat is very obvious in the latter. Moreover, no white face markings are mentioned by Marcgrave, or indicated in the figures. It thus seems beyond doubt that Marcgrave does indeed refer to *Tayassu tajacu*; the collar may not be very well developed in some specimens.

The matter is further complicated by the fact that, according to Sawaya (in Marcgrave, 1942), the vernacular name for *Dicotyles* is "Taiassú", whereas *Tayassu* is commonly called "Caetetú".

(no vernacular name).— *Genetta genetta* (Linnaeus, 1758)

Handbook, 1: 22; Theatrum, 3: 77 (?); Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: (45); Linnaeus, 1766: (65); Lichtenstein, 1818: 220; Lichtenstein, 1961: 46, [159]; Thomas, 1911: 137; Allen, 1939: 200; *G. g. senegalensis* (J.B. Fischer, 1829); Wagener, 1964: nil

Annotations: "p. 22. [same, covered by hoofs]. Dieses ist eine Zibetkatze, so gross u. etwas mehr, als ein wylte katze, die hand weist denbeutel da der zivet wird austrückt" (this is a Civet cat, as large and a little more, than a wild cat, the hand shows the sac where the civet is pressed out).

An obvious case of confusion between two species. The manuscript drawing shows *Genetta genetta*, but the comment refers to *Viverra civetta* Schreber, 1778, the animal that for ages has been kept for its civet, which is obtained exactly in the manner described by the text.

Apparently, both *Genetta genetta* and *Viverra civetta* had been introduced into Brazil in those days. Lichtenstein records his "*Viverra*" (= *Genetta*) as occurring on Handbook, 2 (= 1): 22, "*Genetta*" (= *Viverra*) on Handbook, 1 (= 2?): 184 (? erroneous, the page referred to being blank). A good picture of *Viverra civetta* appears in Wagener (fig. 66).

Çavia çobáya.— *Cavia porcellus* (Linnaeus, 1758)

Handbook, 1: 26; Theatrum, 3: 71; Marcgrave, 1648: 224 (fig.); Marcgrave, 1942: [LXXX (notes 647-648)]; Piso, 1658: 102 (fig.); Piso, 1957: [239 (fig.); Linnaeus, 1758: 59; Linnaeus, 1766: 79; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153]; Thomas, 1911: 146; Cabrera, 1961: 578; Wagener, 1964: 206 (fig. 79?), [258, 363]

Annotations: "p. 26. Meerschwein" (Lake hog). "Çavia çobáya. Diese ist ein Cavia so gross als die hiesige" (this is a Cavy as big as the indigenous one).

A good picture, in agreement with the woodcut in Marcgrave and Piso (in reverse), but with a different colour pattern. The manuscript figure looks more natural, but both figures show four toes instead of three. The same animal, with the same

colour pattern, occurs on the tapestry "Le cheval rayé" (Anciennes Indes).

#### Folio 4

(no vernacular name).— *Equus caballus* Linnaeus, 1758

Handbook, 1: 30-31; Theatrum, 3: 127, 129, 151; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: (73); Linnaeus, 1766: (100); Lichtenstein, 1818, 1961: nil; Thomas, 1911: 154; Wagener, 1964: nil

Annotations: "p. 31: Ein brasillir ross, sind schon von gewachs, grosse stärke von grosser arbeit, nimmer beschlagen, bekommen nichts den grass beij den gemeinen leuten, herren aber geben schnitzel, welches alhier dunkelkorn genennt wird anstat des habers, u. ein halb mass sirobvutter einen eijmer wasser, werden sehr glatt fest u. mutig davon, Ich habe dieses u. noch 3 and s Hochheit Prins Hendrich von Orangen geschickt" (a brasilian horse, are beautifully built, of great strength of great labour, never shod, get nothing but grass with the ordinary people, gentlemen however give fodder, which is called dark corn here instead of oat, and a half measure syrup fodder a bucket of water, become very smooth steady and brave of that, I sent this one and three others to his Highness Prince Henry of Orange).

Without the originals, we are unable to see which of the Theatrum paintings agrees with the manuscript drawing.

#### Folio 4 (verso)

(no vernacular name).— *Bos indicus* Linnaeus, 1758

Handbook, 1: 34-35; Theatrum, 3: 125; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: (72); Linnaeus, 1766: (99); Lichtenstein, 1818, 1961: nil; Thomas, 1911: 154; Wagener, 1964: nil

Annotations: "p. 34. Ein ochse welche schön u. starck sein, geben den dähnischen nicht viel nach, die kühe sind ungleichen schön, geben aber mit ihr 6 so viel milch nicht alls eine holländische kuh, doch ist die milch sehr gut u. fett" (an oxen which are beautiful and strong, not much yielding to the danish ones. The cows are unusually beautiful, six of them however do not give as much milk as one dutch cow, but the milk is very good and fat).

A cow of African or Asiatic origin in view of the hump in the neck and the shape of the horns.

#### Folio 5

(no vernacular name).— *Equus caballus* Linnaeus, 1758

Handbook, 1: 36; Theatrum, 3: 127, 129, 151; for other references, see text to folio 4

Annotations: "p. 36 Dieses pfert ist auch mit nach holland an S. Hochheit Prins Wilhelm geschickt" (this horse was also sent to Holland to His Highness Prince William).



As stated for folio 4, at present we are unable to see which of the *Theatrum* paintings corresponds with the manuscript drawing.

### Folio 6

Coati.— *Nasua nasua* (Linnaeus, 1766)

Handbook, 1: 38; *Theatrum*, 3: 87; Marcgrave, 1648: 228 (fig.); Marcgrave, 1942: [LXXXI (note 663)]; Piso, 1658: nil; Linnaeus, 1766: 64; Lichtenstein, 1818: 217; Lichtenstein, 1961: 43, [156, 265 (note 38)]; Cabrera, 1957: 247; Wagener, 1964: 206 (fig. 76), [257, 362]

Annotations: “p. 38. Coati. Dieses ist ein fuchs, kan ein mast aufklattern” (this is a fox, able to climb a mast).

A rough sketch, in good agreement with the woodcut in Marcgrave, and also with the figure in Wagener, the most skilful picture. The manuscript drawing does not show the strange “beard” appearing in Marcgrave’s woodcut. The species also occurs on folio 9 and on the tapestry “Le cheval rayé” (Anciennes Indes), but that representation is not based on the picture in the present manuscript.

The species is still commonly known as “Coati”.

Çuguaçarána.— *Puma concolor* (Linnaeus, 1771)

Handbook, 1: 40; *Theatrum*, 3: 85; Marcgrave, 1648: 235 (fig.); Marcgrave, 1942: [LXXXIII (note 693)]; Piso, 1658: 103; Piso, 1957: [241]; Linnaeus, 1771: (522); Lichtenstein, 1818: 218; Lichtenstein, 1961: 44, [157, 265 (note 40)]; Cabrera, 1957: 293; Wagener, 1964: nil

Annotations: “p. 40. Çuguaçarána. Ein Klein ahrt von einer Tiger, sehr furios, nur so gross als ein kleine katze” (a Small kind of a Tiger, very angry, only as big as a small cat).

Identification of this rough sketch would be very difficult without its context, particularly as long as we are unable to compare it with the Handbook and *Theatrum* paintings. The drawing agrees well with the woodcut in Marcgrave and Piso (in reverse), but looks more natural, though the snout is too pointed for any cat. Marcgrave’s description of the “Cuguacuarana” undoubtedly refers to *Puma concolor*; the woodcut got slightly displaced. Lichtenstein also remarked that the *Theatrum* picture closely resembled a mounted specimen he had at his disposal. The manuscript comment therefore could only refer to a very young animal.

Sawaya (in Marcgrave, 1942) gives “Sussuarana” as a local vernacular for the Puma.

(no vernacular name).— unidentifiable monkey

Handbook, 1: 42; *Theatrum*, 3: 57 (?); Marcgrave, 1648: ?; Piso, 1658: nil; Lichtenstein, 1818: 211; Lichtenstein, 1961: 37, [149, 262 (note 24)]; Wagener, 1964: nil?

Annotations: “p. 42 Eine wilde katze, so gross als ein gemeine aff, ist sehr from von ahrt. Sein aus Guinea” (a wild cat, as big as a common monkey, is very sweet

natured. Are from Guinea).

This species must remain unidentifiable as long as we are unable to compare it with the originals in Handbook and Theatrum. Lichtenstein identified Handbook, 2 (=1): 42 as *Saimiri sciureus* (Linnaeus, 1758: 29). However, though the head pattern shows a very slight similarity to that of this species, the rest of the colouration is totally different. Moreover, the head is more like that of *Cercopithecus aethiops* (Linnaeus, 1758) s.l., which is common in Africa; but there again, the remaining colouration, with its grey body and red tail, is very different from that species or, for that matter, from any other African or South American monkey. A similar monkey occurs on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), but here again, the species cannot be identified with certainty, though it looks very much like *Cercopithecus aethiops* s.l.

Lichtenstein does not refer to any of the Theatrum paintings. The name "Çagui" which, according to him, is given on Handbook, 1: 42, appears with the second next species in the present manuscript and on Handbook, 1: 50; Theatrum, 3: 57 gives "Cagui & minor".

(no vernacular name).— ?*Cercopithecus diana* (Linnaeus, 1758)

Handbook, 1: 46

Annotations: "p. 46 [Eine meer katze] [= *Simia diana* Linn.?" (a monkey). The writing, in different hands, is partly far from clear, the probable text is taken from the Handbook.

The accompanying picture is missing; it should correspond with a drawing in the Handbook representing a monkey attached to a rope, sitting in a window and eating a banana. Omitted in Lichtenstein (1818, 1961).

Çagui.— *Callithrix jacchus* (Linnaeus, 1758)

Handbook, 1: 50; Theatrum, 3: 57; Marcgrave, 1648: 227 (fig.); Marcgrave, 1942: [LXXXI (note 658)]; Piso, 1658: nil; Linnaeus, 1758: 27; Linnaeus, 1766: 40; Lichtenstein, 1818: 211; Lichtenstein, 1961: 37, [149, 262 (note 25)]; Cabrera, 1957: 187; Wagener, 1964: 207 (fig. 80), [258, 364]

Annotations: "p. 50. Çagui. Ein Sarguirgen ist nicht grösser als die hand einer dahme" (a little Sargui is not bigger than a lady's hand).

A very poor sketch, closely resembling Marcgrave's woodcut, but slightly more natural. Wagener gives a totally different and far better picture of two animals in captivity.

The species is still known under the vernacular names "Sagui" and "Sahui" (etc.).

### Folio 7

(no vernacular name).— *Papio spec.*

Handbook, 1: 54; Theatrum, 3: 43, 45 (?); Marcgrave: 1648: 227; Marcgrave, 1942: [LXXXI (note 660)];

Piso, 1658: nil; Linnaeus, 1758: 28; Linnaeus, 1766: 38; Lichtenstein, 1818: 212; Lichtenstein, 1961: 38, [150, 263 (note 27)]; Wagener, 1964: 203 (fig. 70), [254, 360]

Annotations: “p. 54 Ein Affe gross als ein ziemlicher hund. kombt auss Guinea” (a Monkey in size like a fairly large dog, comes from Guinea).

A fairly good drawing of a baboon, though not identifiable without being able to consult the original Handbook and Theatrum paintings. The shape of the head, the protruding nostrils and the lack of a mantle seem to point to either an adult female or young male of *Papio ursinus* (Kerr, 1792), or to a young male of *Papio anubis* (Lesson, 1827). The latter species is common in large parts of West Africa, which would be consistent with its origin “Guinea”. The dark-coloured hands and feet, however, are more characteristic for *Papio ursinus*, the species occurring in Angola and South Africa. Wagener's rather poor picture too, emphasizes the dark hands and feet, but for the rest the body colour is far too pale for any baboon species. Moreover, Wagener, in his comment, confused the baboon figured with some native South American monkey.

Marcgrave's description of *Cercopithecus angolensis major* clearly refers to a baboon. Linnaeus included Marcgrave in the references of his *Simia cynomolgus*, synonymized by Thomas with *Simia hamadryas* Linnaeus, 1758 from north-eastern Africa, on the grounds of Linnaeus' reference to Hasselquist, who gave a first-hand description and locality (Egypt).

Lichtenstein regarded the Handbook painting and Marcgrave's description as representing *Papio ursinus*; no reference is made to the Theatrum. However, it should be kept in mind that *Papio anubis* had not yet been described when Lichtenstein published his paper.

Jaguarete.— *Panthera onca* (Linnaeus, 1758)

Handbook, 1: 58; Theatrum, 3: 83; Marcgrave, 1648: 235 (fig.); Marcgrave, 1942: [LXXXIII (note 691)]; Piso, 1658: 103 (fig.); Piso, 1957: [241 (fig.)]; Linnaeus, 1758: 42; Linnaeus, 1766: 61; Lichtenstein, 1818: 218; Lichtenstein, 1961: 44, [157, 265 (note 39)]; Thomas, 1911: 136; Cabrera, 1957: 299; Wagener, 1964: nil

Annotations: “p. 58 Jaguarete Ein junger Tiger, werden aber so gross, das sie mit dem rücken oben an eine taffel reichen, sehr furiös” (a young Tiger, but grow so big, that their back reaches to the top of a table, very angry).

A rough sketch of a cat, only identifiable by its context. The figure agrees well with the woodcut in Marcgrave and Piso (in reverse), but the spots have not been “filled in”.

As Lichtenstein points out, the “Jaguarete” of the manuscript corresponds to Marcgrave's description and figure of the “Jaguara”. The “Jaguarete”, described by Marcgrave in the following paragraph, clearly refers to a young specimen of the black variety of the jaguar. Based on Linnaeus' reference to Marcgrave, Thomas restricted the type locality of the species to Pernambuco. The jaguar is still commonly known under the names “Jaguar” and “Jaguareté”.

Tamanduai.— *Tamandua tetradactyla* (Linnaeus, 1758)

Handbook, 1: 62; Theatrum, 3: 97; Marcgrave, 1648: 226 (fig.); Marcgrave, 1942: [LXXX (notes 653-654)]; Piso, 1658: 320 (fig.); Piso, 1957: [662 (fig.)]; Linnaeus, 1758: 35; Linnaeus, 1766: 52; Lichtenstein, 1818: 214; Lichtenstein, 1961: 40, [152, 263 (note 29)]; Thomas, 1911: 133; Cabrera, 1957: 205; Wagener, 1964: nil

Annotations: “p. 62. Tamanduai. Ein klein ahrnt von mierenesser, so gross als ein dachss, steigen auf die bäume, u. henken sich mit dem schwantz an einen ast” (a small kind of ant-eater, as large as a badger, climb up the trees, and suspend themselves from a branch by the tail).

A fairly good drawing, in good agreement with the woodcut in Marcgrave and Piso. In the manuscript, however, the claws have not been worked out, the hind part of the body is not dark enough, and the ant nest is only faintly indicated in pencil. It is interesting that the comment uses the word “mierenesser”, an obvious batavism for the German Ameisenesser or -fresser.

In view of Linnaeus' reference to Marcgrave, Thomas restricted the type locality of the species to Pernambuco. The species is, according to Sawaya (in Marcgrave, 1942) known under the name “Tamanduá-mirim”; “Tamanduá-í” is a local name for the smaller *Cyclopes didactylus* (Linnaeus, 1758), see folio 36.

Maçaijubà.— *Cebus apella* (Linnaeus, 1758)

Handbook, 1: 66; Theatrum, 3: 49; Marcgrave, 1648: 227 (fig. p. 226); Marcgrave, 1942: [LXXXI (note 659)]; Piso, 1658: nil; Linnaeus, 1758: (28); Linnaeus, 1766: (42); Lichtenstein, 1818: 211; Lichtenstein, 1961: 37, [149, 262 (note 26)]; Thomas, 1911: 128; Cabrera, 1957: 163; Wagener, 1964: 204 (fig. 71), [254, 360]

Annotations: “p. 66. Maçaijubà. Ein Mehrkatz nicht gar gross, sehr fromm, haben einen sehr guhten geruch. henken sich mit den schwänzen an die äste” (a Monkey not very big, very tame, smell very well, suspend themselves from the branches by their tails). “cai”

A very poor drawing, only vaguely recognizable as the “Capuchin Monkey” by the parting of the hair on the head. The manuscript comment “sehr fromm” also seems to point to this species, since it is very easy to tame and is commonly kept as a pet.

Lichtenstein connected the Handbook and Theatrum paintings with *Simia capucina* Linnaeus, 1758. This name, however, is now regarded as representing a closely related species not occurring in north-eastern Brazil, where *Cebus apella* is very common. According to Lichtenstein, the Theatrum painting shows a pale and a dark brown monkey of exactly the same shape; the dark specimen bears the name “Ma Çai Juba”, the pale one “Çai” and “Çai-taia”. Possibly the latter is an albinistic animal of the same species. The Handbook only gives the pale form, with all three names written in the margin. The manuscript drawing too, represents the pale animal; it is in good agreement with the even less naturally looking woodcut in Marcgrave. Marcgrave's picture appears in the wrong place and the “Caitaia” is described on the following page; here too, a pale and a dark form are mentioned. Wagener's picture is not recognizable at all; only the context reveals that the same

species is meant. The species also occurs on the tapestry "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), in both cases clearly showing a black face. The pictures there, however, are far more natural than in the manuscript or in Marcgrave.

According to Sawaya (in Marcgrave, 1942), the species is still known as "Saitana" or "Saitauá".

### Folio 8

(no vernacular name).— *Cercopithecus nictitans* (Linnaeus, 1766)

Handbook, 1: 70; Theatrum, 3: 43, 45 (?); Marcgrave, 1648: 227; Marcgrave, 1942: [LXXXI (note 660)]; Piso, 1658: nil; Linnaeus, 1766: (40); Lichtenstein, 1818: 213; Lichtenstein, 1961: 39, [151]; Allen, 1939: 151; Wagener, 1964: nil

Annotations: "p. 70 Ein gross Meerkatze auss Guinea" (a large Monkey from Guinea).

The dark body, white nose and long tail are all characteristic for *Cercopithecus nictitans*, in agreement with Lichtenstein's identification. The species occurs in West Africa.

Marcgrave described it under *Cercopithecus angolensis alius*; his remark "fronte non capillata" corresponds with the bald or white head of the animal depicted in the manuscript. Since, however, the forehead and particularly the eyebrows in this species are very well haired, showing the same blackish colour as the rest of the body, it seems that the specimen on which figure and description are based, was a sick or aberrant individual.

(no vernacular name).— *Erythrocebus patas* (Schreber, 1774)

Handbook, 1: 74; Theatrum, 3: 41 (?); Marcgrave, 1648: 228 (?); Marcgrave, 1942: [nil]; Piso, 1658: nil; Schreber, 1774: 98, 185 (pl. 16); Lichtenstein, 1818: 213; Lichtenstein, 1961: 39, [151]; Allen, 1939: 154; Wagener, 1964: nil

Annotations: "p. 74 Ein ordinar Meerkatz" (an ordinary Monkey).

A poor, but recognizable drawing of the "Patas Monkey", the only species with a colour pattern similar to that given here, though the face and ventral surface are far too dark grey, and the whiskers are too white. The species is common in West Africa.

Lichtenstein associated the Handbook painting with Marcgrave's description of *Cercopithecus alius guineensis*, to which Linnaeus refers in his diagnosis of *Simia cephus* (1758: 27; 1766: 39). According to Lichtenstein, the Handbook painting clearly matches the other figures of this species; no reference is made to the Theatrum. However, neither the manuscript drawing, nor the descriptions by Marcgrave and Linnaeus show any similarity to *Cercopithecus cephus*. The latter species has no red except in the distal part of the tail; its whiskers are yellow, and the face is adorned with a striking moustache over the nose. Moreover, it does not occur west of Cameroon, which makes it less likely that it would have been introduced into Brazil. Without being able to consult the original Handbook and Theatrum paintings, the

problem must remain unsettled.

A similar monkey occurs on the tapestry "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), probably based on the same original.

Aguti.— *Dasyprocta leporinus* (Linnaeus, 1758)

Handbook, 1: 80; Theatrum, 3: 67; Marcgrave, 1648: 224 (fig.); Marcgrave, 1942: [LXXX (note 650)]; Piso, 1658: 102 (fig.); Piso, 1957: [238 (fig.)]; Linnaeus, 1758: (59); Linnaeus, 1766: 80; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153]; Thomas, 1911: 146; Cabrera, 1961: 585; Wagener, 1964: 203 (fig. 67), [252, 358]

Annotations: "p. 80. Aguti. Ein Canin wird dieses von den deutschen genennt, weil er sich in derden helt, hatt eine grosse behendikeit, und läuft sehr schnell, ist so gross als ein haase" (this is called a Rabbit by the germans, since it keeps under ground, has a great agility, and runs very fast, is as big as a hare).

A fairly good drawing, though the muzzle is too pointed and the number of toes on the hind foot is given as four instead of three. The figure agrees well with the woodcut in Marcgrave and Piso (in reverse), but in the latter, the number of toes is correct. Wagener's figure too, may have been based on the same animal.

Linnaeus (1766) refers to Marcgrave in his description of *Mus aguti*. This is now commonly regarded as a synonym of his 1758 *Mus leporinus* which, however, he assumed to occur in Java and Sumatra. The species is still commonly known as "Aguti".

Tamanduaguaçu.— *Myrmecophaga tridactyla* Linnaeus, 1758

Handbook, 1: 84; Theatrum, 3: 93, 95; Marcgrave, 1648: 225 (fig.); Marcgrave, 1942: [LXXX (notes 651-652)]; Piso, 1658: 320 (fig.); Piso, 1957: [661 (fig.)]; Linnaeus, 1758: 35; Linnaeus, 1766: (51), 52; Lichtenstein, 1818: 214; Lichtenstein, 1961: 40, [152, 263 (note 299)]; Thomas, 1911: 132; Cabrera, 1957: 202; Wagener, 1964: 207 (fig. 82), [259, 364]

Annotations: "p. 85. Tamanduaguaçu. Ist ein grosser Mierenfresser, so gross als ein wasserhund, sein zunge steckt er in die löcher, die mieren sezen sich darauf, so zeucht sie ein. die zung ist 1,5 elle lang, dick wie die grösste seite auf einer bass-geigen. wan er schleft, deckt sich mit den schwantz, kan ganz nicht lauffen" (is a large Ant-eater, as big as a waterdog, it sticks its tongue into the holes, the ants set themselves on it, it sucks them this way. the tongue is 1,5 ell long, as thick as the biggest chord of a bass. it covers itself with its tail while sleeping, is unable to walk). "Ameisenfresser" (Ant-eater).

A fairly primitive drawing, in close agreement with the woodcut in Marcgrave and Piso, though tail shape and colour pattern are very different, being far less accurate in the manuscript than in the woodcut. However, the manuscript figure correctly shows the number of toes on the hind feet as five, Marcgrave in his picture shows four. Wagener's picture too, is clearly based on the same animal, though the proportions of the tail are exaggerated here. The species is represented on the tapestry "L'éléphant" (Anciennes and Nouvelles Indes).

There exists a photograph of the painting in *Theatrum*, 3: 95, showing an extremely characteristic and lively ant-eater; it closely resembles the drawing on folio 31.

Linnaeus (1758) refers to Marcgrave; in 1766, however, Linnaeus apparently had formed the opinion that his *Myrmecophaga tridactyla* occurred in India, and re-described the South American species as *M. jubata*, again citing Marcgrave; this second name is now correctly regarded as a synonym. In view of the reference to Marcgrave, Thomas restricted the type locality to Pernambuco. The species is still known under the name "Tamanduáguacu".

### Folio 9

(no vernacular name).— *Ovis aries* Linnaeus, 1758

Handbook, 1: 88; *Theatrum*, 3: 147; Marcgrave, 1648: 234 (fig.); Marcgrave, 1942: [LXXXIII (note 688)]; Piso, 1658: nil; Linnaeus, 1758: 71; Linnaeus, 1766: 98; Lichtenstein, 1818: 221; Lichtenstein, 1961: 47, [161] Thomas, 1911: 153; Wagener, 1964: nil

Annotations: "p. 88. Ein Guinesch ram, so gross alss ein hiesiges schaff zweh mahl ist, sehr kurtz von haaren" (a Guinean ram, twice the size of an indigenous sheep, very short-haired).

A domestic ram, very well agreeing with the woodcut in Marcgrave (in reverse); even the colour pattern is quite similar. It represents a different animal than painted in *Theatrum*, 3: 147 (as "Zúnu"), a photograph of which exists. The colour pattern of the latter specimen is different and it does not show the long manes in the neck; here too, however, the tail is black and white. The *Theatrum* painting bears the annotations "Angola" and "Uyt Congo" (From Congo). This animal, with the same colour pattern, also occurs on the tapestry "Le roi porté" (Anciennes Indes) and probably, though without colour pattern, on "La négresse portée" (Nouvelles Indes).

Linnaeus quotes Marcgrave in his description of *Ovis guineensis*, a synonym of *Ovis aries*. Similar sheep are still very common in Africa.

Jaguara.— *Canis familiaris* Linnaeus, 1758

Handbook, 1: 92; *Theatrum*, 3: nil; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: (38); Linnaeus, 1766: (56); Lichtenstein, 1818: 219; Lichtenstein, 1961: 45, [159]; Thomas, 1911: 134; Wagener, 1964: nil

Annotations: "p. 92. Jaguara. Ein Brasilischer Hund, so gross alss ein ordinarie hund. ist sehr faul u. unförmlich, wird nich viel hasen fangen" (a Brazilian Dog, as big as an ordinary dog, is very lazy and ugly, will not catch many hares).

A rough sketch of a domestic dog. The name "Jaguara" must be a mistake for "Aguara", which also occurs on folio 29 and in *Theatrum*, 3: 91, but which clearly represents a wild species, as Lichtenstein already emphasized.

Paca.— *Agouti paca* (Linnaeus, 1766)

Handbook, 1: 96; Theatrum, 3: 71; Marcgrave, 1648: 224 (fig.); Marcgrave, 1942: [LXXX (note 649)]; Piso, 1658: 101 (fig.); Piso, 1957: [237 (fig.)]; Linnaeus, 1766: 81; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153]; Cabrera, 1961: 594; Wagener, 1964: nil

Annotations: "p. 96. Paca. dieses thier helt in den wäldern, ist gross alss ein klein schwein sehr guht zu essen" (this animal keeps in the forests, is as big as a small pig very good eating).

A fairly good drawing, though the rows of spots seem to have been "glued" onto the body, and do not follow its curvature. The drawing is in close agreement with the woodcut in Marcgrave and Piso (in reverse), in which the spots appear even less natural. The species is still generally known as "Paca".

Coatimonde.— *Nasua nasua* (Linnaeus, 1766)

Handbook, 1: 100; Theatrum, 3: 89; Marcgrave, 1648: 228; Marcgrave, 1942: [LXXXI (note 664)]; Piso, 1658: nil; Linnaeus, 1766: 64; Lichtenstein, 1818: 217; Lichtenstein, 1961: 43, [156, 265 (note 38)]; Cabrera, 1957: 247; Wagener, 1964: nil

Annotations: "Nasenthier". "p. 100. Coatimonde Ein fuchss so gross alss ein hiesiger, doch etwas kleiner, klettert die bäume nauß" (A fox as big as an indigenous one, but slightly smaller, climbs up the trees).

A good picture, apparently based on another specimen than the one depicted on folio 6, and in Marcgrave, Piso and Wagener. Already Linnaeus regarded the "Coati" and "Coatimondi" of Marcgrave as one and the same species, the latter just being a darker form. Sawaya (in Marcgrave, 1942) regards the "Coatí-mundéu" as probably representing old males.

Tatuete.— *Dasypus novemcinctus* Linnaeus, 1758

Handbook, 1: 104; Theatrum, 3: 105; Marcgrave, 1648: 231 (fig.); Marcgrave, 1942: [LXXXII (note 679)]; Piso, 1658: 100; Piso, 1957: [234]; Linnaeus, 1758: 51; Linnaeus, 1766: 54; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153, 263 (note 31)]; Thomas, 1911: 142; Cabrera, 1957: 225; Wagener, 1964: nil

Annotations: "p. 104. Tatuete. diese thiere haben schilde, können den kopf u. füsse darunter ziehen, u. sich gantz rund machen, ist ein sehr guht essen haben den schmak alss ein hun, sein so gross alss eine grosse hand spannen kan, die höchste noch eins so lang" (these animals have shields, are able to draw their head and feet under these, and make themselves completely round, is very good eating taste like a chicken, are as big as a large hand is able to stretch, the highest even twice as long).

A good picture of the "Nine-banded Armadillo" in two positions. The woodcut in Marcgrave does not have any relation to this drawing, but has been copied from De Laet (1630 or 1633). Moreover, the woodcut in Marcgrave follows the description of the "Tatu & Tatu-peba", which represents *Euphractes sexcinctus* (Linnaeus, 1758), the "Tatu-ete" being described in the next paragraph. The species also occurs on the tapestry "Le cheval rayé" (Nouvelles Indes), probably based on the same original as



the manuscript drawing. Also, it has been figured on "Le cheval rayé" (Anciennes Indes), but there the number of bands is too large.

The species is still known as "Tatuêê", according to Sawaya (in Marcgrave, 1942).

### Folio 10

Maracaja.— ?*Leopardus wiedii* (Schinz, 1821)

Handbook, 1: 124; Theatrum, 3: 55; Marcgrave, 1648: 233; Marcgrave, 1942: [LXXXII (note 683)]; Piso, 1658: nil; Lichtenstein, 1818: 218; Lichtenstein, 1961: 44, [158, 266 (notes 41-42)]; Schinz, 1821: 235; Cabrera, 1957: 289; Wagener, 1964: nil

Annotations: "p. 124. Maracaja. Ein Wildkatz nicht grösser als ein hiesige, sehr schön u. böss, sprinkt von ein baum auf den andern" (a Wild cat not larger than an indigenous one, very beautiful and angry, jumps from one tree onto the other). "von Kinderhand falsch illuminiert" (wrongly coloured by a Child's hand).

A sketch of an unidentifiable cat, with fantasy "tiger stripes". Lichtenstein points out that the Handbook and Theatrum paintings of the "Maracaja" differ considerably from each other; the Handbook painting he regards as unidentifiable, the Theatrum one as representing *Felis pardalis* Linnaeus, 1758, though he does not exclude the possibility of *Felis tigrina* Schreber, 1777. Schreber's species, however, is regarded by Lichtenstein as "sehr verdächtig" and as possibly representing a young specimen of *Felis pardalis*. Pinto (in Lichtenstein, 1961) regards Marcgrave's "Maracaja" as *Felis pardalis*, and considers *Felis tigrina* as a synonym of *Felis wiedii* Schinz, 1821.

Definite identification will remain impossible, at least as long as we are unable to consult the Handbook and Theatrum paintings. The manuscript comment, however, seems to point to the "Margay" *Leopardus wiedii* (Schinz, 1821), a species of approximately the size of a domestic or European wild cat and arboreal in habits. *Leopardus pardalis* (Linnaeus, 1758) also is arboreal, but about twice the size of *L. wiedii*. *Leopardis tigrina* (Schreber, 1777), the third species of spotted small cat occurring in north-eastern Brazil, is small, but terrestrial in habits. The vernacular name "Maracajá" apparently is used for all three species indiscriminately, but seems to refer more particularly to *L. wiedii*, the "Margay". It should be kept in mind that *L. wiedii* had not yet been described when Lichtenstein published his paper.

Tatuapara.— *Tolypeutes tricinctus* (Linnaeus, 1758)

Handbook, 1: 128; Theatrum, 3: 101, 103; Marcgrave, 1648: 232 (fig.); Marcgrave, 1942: [LXXXII (note 680)]; Piso, 1658: 100 (fig.); Piso, 1957: [234 (fig.)]; Linnaeus, 1758: 51; Linnaeus, 1766: 53; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153, 263 (note 31)]; Thomas, 1911: 141; Cabrera, 1957: 222; Wagener, 1964: nil

Annotations: "p. 128 Tatuapara. Ein and ahrnt von thier mit schilden so gross als das vorige guht zu essen" (another kind of animal with shields as big as the previous one good eating).

A fairly inaccurate, but well recognizable drawing of the "Three-banded Armadillo" in two positions; in good agreement with the woodcuts in Marcgrave and Piso. The manuscript picture shows the bristles in the wrong place; on the back; Marcgrave correctly situates them on the ventral surface of the body. The red muzzle and feet in Marcgrave's figure, however, are incorrect.

The species is still known under the name "Tatú apara".

(no vernacular name).— *Capra hircus* Linnaeus, 1758

Handbook, 1: 131; Theatrum, 3: 139; Marcgrave, 1648: 235; Marcgrave, 1942: [nil]; Piso, 1658: nil; Linnaeus, 1758: (68); Linnaeus, 1766: (94); Lichtenstein, 1818: 221; Lichtenstein, 1961: 47, [161]; Thomas, 1911: 152; Wagener, 1964: nil

Annotations: "p. 130 [= 131]. Ein geiss auss Guinea sehr klein ein par grosse spannen hoch von der erden" (a goat from Guinea very small a few large spans high from the ground).

A small goat, still common in Africa.

Taibi.— *Didelphis marsupialis* Linnaeus, 1758

Handbook, 1: 137; Theatrum, 3: 65; Marcgrave, 1648: 222 (fig.); Marcgrave, 1942: [LXXIX (notes 636-639)]; Piso, 1658: 323 (fig.); Piso, 1957: [666 (fig.)]; Linnaeus, 1758: 54; Linnaeus, 1766: 71; Lichtenstein, 1818: 216; Lichtenstein, 1961: 42, [155, 264 (note 36)]; Thomas, 1911: 143; Cabrera, 1957: 42; Wagener, 1964: 202 (fig. 65), [251]

Annotations: "p. 137 Taibi. so gross als 2 mahl eine ratt, ist sehr böse u. scharff vom biss, klattert auf die bäume, henkt sich mit dem schwantz an die äste, das frömbste daran ist, das sein junge klein wie eine mauss, lauffen den alten in den leib auss u. ein. zwischen den hinderbeinen hatt es wie sächen, welches offen ist. die ohren sein gantz dünn u. bejnahe durchsichtig" (twice as big as a rat, is very angry and has a sharp bite, climbs up the trees, suspends itself from the branches by its tail, the most peculiar of it is, that its young small like a mouse walk into and out of the adult's body. it has a small sac between the hindlegs, which is open. the ears are quite thin and nearly translucent).

A rough, but recognizable drawing, in good agreement with the woodcut in Marcgrave and Piso (Piso has added two young!) and the picture in Wagener. The colour pattern as given by Marcgrave and particularly Wagener, however, is more realistic than in the manuscript. Folio 25 obviously does not bear any relation to the present drawing.

It is not clear why Lichtenstein concluded that Marcgrave's description of the "Cariveya" does not refer to *Didelphis marsupialis*. Picture and description are in good agreement and the name "Taibi" is given by Marcgrave as another vernacular. Marcgrave's "Tai-ibi", described on the next page, clearly represents a male specimen of his preceding species, as pointed out by Pinto (in Lichtenstein, 1961). Marcgrave's indication of size and colour pattern would not permit identification with another species.

**Birds**  
(by M. Boeseman)

**Folio 11**

Tangari miri.— *Pipra rubrocapilla* Temminck, 1821

Handbook, 1: 159; Theatrum, 2: 127; Marcgrave, 1648: 215 (second spec.); Marcgrave, 1942: [LXXV (note 609)]; Piso, 1658: nil; Linnaeus, 1758: (191); Linnaeus, 1766: 339 (partly?); Lichtenstein, 1819: 172; Lichtenstein, 1961: 68, [182, 284 (note 126)]; Schneider, 1938: 87; Wagener, 1964: nil

Annotations: “p. 159. Tangara miri so gross alss ein fink. a)81 p. 159”. (as big as a finch; the meaning of “a)81” as well as “b)82” and “c)83” for the next two species is not clear).

There still is some controversy on the status of the present species: whether it is identical with *P. erythrocephala* Linnaeus, 1766, or a subspecies of the latter, or a separate species as here adopted, in accordance with most latest views. But Teixeira (1986) adheres to the subspecific status. Neither Linnaeus, 1758, nor Temminck, 1821, refer to Marcgrave.

The present vernacular name appears to be “Dançarino-de-cabeça-vermelha” (Frisch, 1981: 202).

Cabiaguaçu.— *Domacobius atricapillus* (Linnaeus, 1766)

Handbook, 1: 162 (left fig.); Theatrum, 2: 175, 177; Marcgrave, 1648: 212; Marcgrave, 1942: [LXXV (note 598)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: (295); Lichtenstein, 1819: 170-1; Lichtenstein, 1961: 66-7, [180, 282 (note 115-6)]; Schneider, 1938: 99; Wagener, 1964: nil

Annotations: “p. 162. Cabiaguaçu so gross alss eine möve b)83” (as big as a gull; meaning of “b)83” not clear).

This species, well-known in the region around Pernambuco, now has the vernacular name of “Japacanim” (Frisch, 1981: 230), similar to the “Japacani” used by Marcgrave. In the Handbook, the picture of the species was combined with the next, sharing a common background. Judging by the Handbook presentation, the belly is too white and the legs should be black.

Jaguaçati goaçu.— *Chloroceryle amazona* (Latham, 1790)

Handbook, 1: 162 (right fig.); Theatrum, 2: 47; Marcgrave, 1648: 194 (fig.)?; Marcgrave, 1942: [LXVII (note 513)]?; Piso, 1658: nil; Linnaeus, 1758: 166 (partly); Linnaeus, 1766: 180 (partly), 268?; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: “p.162. Jaguaçati goaçu so gross alss ein Wiedehopf c)83” (as big as a hoopoe; meaning of “c)83” not clear).

It seems remarkable that here the lustrous green is missing, although some occurs on the back in the Handbook originals, but further aspects of the coloration as well as the size seem to confirm the usual interpretation adopted here, in spite of a too elongate shape. A better picture of presumably the same species may be found

on fol. 15.

Teixeira (Ms., 1986) identifies the Handbook original as *Choroceryle americana* (Gmelin, 1788).

(no vernacular name).— ?

Handbook, 1: 164 (left fig.); Theatrum, 2: 171; Marcgrave, 1648: 201-2 (figs.); Piso, 1658: ?; Marcgrave, 1942: [LXIX (note 539)]; Schneider, 1938: 90; Wagener, 1964: nil

Annotations: “p. 164. So gross alss ein atzel” (as big as a magpie). In the Handbook, this picture shares a common background with the next.

It seems impossible to give a definite identification here, but the general shape and proportions, as well as the more yellowish colour in the Handbook original, suggest a cuculid species, possibly the rather common *Tapera neavia* (Linnaeus). However, the lacking of a vernacular name suggests a less common species. Schneider, providing the vernacular name “Guirapunga”, also used by Marcgrave but not recorded on the present picture and not found in the Handbook (thus presumably taken from the Theatrum caption?), identifies this bird as *Procnias averano* (Hermann), a species with a coloration rather close to that presented in the upper Marcgrave picture of our coloured copy, but both in shape and colour apparently quite distinct from the bird pictured here.

Caiiçiça.— *Hydropsalis brasiliiana* (Gmelin, 1789)

Handbook, 1: 164 (right fig.); Theatrum, 2: 221, 223?; Marcgrave, 1648: 202 (middle fig.); Marcgrave, 1942: [LXIX (note 540)]; Piso, 1658: 94 (fig.); Piso, 1957: [221 (fig.)]; Lichtenstein, 1819: 164; Lichtenstein, 1961: 60, [172, 272 (note 73)]; Schneider, 1938: 95 (fig. 4); Wagener, 1964: not 194 (fig. 42), [250, 356]

Annotations: “p. 164. Caiiçiça so gross alss ein spechts” (as big as a woodpecker).

According to Schneider (1938: 96) this species, previously known by the name of *H. torquatus* (Gmelin), originally was based on Marcgrave's “Guira querea”, although Gmelin (1789: 1031-2) does not give a direct reference. See also fol. 14.

Teixeira (MS., 1986) identifies the Handbook original as *Hydropsalis t. torquata* (Gmelin, 1789), considering the probably synonymous *H. brasiliensis* a nomen dubium.

Çaiicupeucaya.— *Tangara cayana* (Linnaeus, 1766)

Handbook, 1: 166 (left fig.); Theatrum, 2: 133; Marcgrave, 1648: 212; Marcgrave, 1942: [LXXV (note 597)]; Piso, 1658: 95 (not fig.); Piso, 1957: [223 (not fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 316; Lichtenstein, 1918: 170; Lichtenstein, 1961: 66, [180, 281-2 (notes 113, 114)]; Schneider, 1938: 88; Wagener, 1964: nil

Annotations: “p. 166. Çaiicupeucaya beyde alss fincken gross” (both as big as finches [a remark concerning also the next species]).

The present picture is too white, the Handbook (where the species is combined with the next on a mutual background) shows a more yellow colour. Marcgrave records this species as "Guirea perea", while Piso illustrates it with the woodcut accompanying Marcgrave's "Guiraguacubereba" description (1648: 212). See also second next species ("Guiraroba").

*Caicuriba*.— *Cyanerpes cyaneus* (Linnaeus, 1766)

Handbook, 1: 166 (right fig.); Theatrum, 2: 135; Marcgrave, 1648: 212; Marcgrave, 1942: [LXXV (note 596)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 188; Lichtenstein, 1819: 170; Lichtenstein, 1961: 66 [180, 281 (note 112)]; Schneider, 1938: 88; Wagener, 1964: nil

Annotations: "p. 166. *Caicuriba*" (but here also applies "Beyde alls fincken gross". — see previous species).

Marcgrave uses a different vernacular name: "Guiracoereba". The pictured bird, with the characteristic long and sharp black bill and the red legs, is far darker bluish than figured by Frisch (1981: 251), with a light blue head and lighter under wing-coverts, and in close agreement with the Handbook picture.

*Guiraroba*.— ? *Hemithraupis guira* (Linnaeus, 1766)

Handbook, 1: 168 (left fig.); Theatrum, 2: 145; Marcgrave, 1648: 212 (not fig.); Marcgrave, 1942: [LXXV (note 595)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 335; Lichtenstein, 1819: 170; Lichtenstein, 1961: 66, [180, 281 (note 111)]; Schneider, 1938: 88; Wagener, 1964: nil

Annotations: "p. 168. *Guiraroba* so gross alls ein atzel" (as big as a magpie).

Marcgrave adequately described this species under the name of "Guiraguacubereba", but the added woodcut illustration is wholly different from the present picture and does not belong there, as already observed by Lichtenstein. Since Linnaeus apparently based his species on the Marcgrave text, (c.f. note 595 in Marcgrave, 1942), while Schneider even indicated the Handbook picture as its type, it is surprising that Schauensee (1966: 490) states the species to be "not recorded from Ceará to Pernambuco", while it is also lacking in a list of "aves de Pernambuco" published by Berla (1946). If the stated size ("as a magpie") is correct, the present interpretation becomes untenable, a finch being better for comparison.

I was unable to identify the illustration erroneously added to Marcgrave's description, in spite of its striking colouration: according to our coloured Marcgrave copy, the pictured bird is brown with a light grey head, the long black bill continued by a narrow black band through the eye apparently reaching its counterpart, throat and breast yellow with small reddish dots, belly and upper legs rosaceous, outer tail feathers yellow, further legs and feet dark grey.

In the Handbook, the original is again combined with a picture of the next species, on a mutual background.

(no vernacular name?).— ?*Hemithraupis ruficapilla* (Vieillot, 1818)

Handbook, 1: 168 (right fig.)

Annotations: none, unless caption to previous picture also (partly) applies to present.

According to my notes, this is a fairly accurate copy of the Handbook picture and portrays a quite characteristic bird: black with greyish wings and a red head (but chin and throat white). Unfortunately, it does not seem to agree with any bird known from the area.

The only rather similarly coloured species there, *Pipra rubrocapilla* Temminck, is much less slender and considerably smaller (if caption applies to both species) and is already characteristically portrayed at the right top of present folio. Therefore, with a chestnut head and a more similar shape, although with a distinctly longer tail and otherwise different colouration, an identification as a (possibly melanistic?) *Hemithraupis ruficapilla* (Vieillot) may be suggested, as seems supported by its combined representation with another *Hemithraupis* species.

In spite of the above considerations, Teixeira (MS., 1986) identified the Handbook original as *Pipra erythrocephala rubrocapilla*.

Anhima.— *Anhima cornuta* (Linnaeus, 1766)

Handbook, 1: 170; Theatrum, 2: 33; Marcgrave, 1648: 215 (fig.); Marcgrave, 1942: [LXXVI (note 610)]; Piso, 1658: 91 (fig.); Piso, 1957: [214 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 232; Lichtenstein, 1819: 172; Lichtenstein, 1961: 68, [182]; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: “p. 170. Ist so gross als ein adler, hat ein horn auf dem kopf, u. scharffe spitzen wie hörner auf den fluegeln, welche sehr guht vor gift sein, als man selbe pulverisiert und wie hirschhorn einnimbt” (Is as large as an eagle, has a horn on the head, and sharp points as horn on the wings, which are good against poison, if they are pulverised and taken like antlers).

The identity of this bird poses no problem, even though the picture is inferior to the representation of the same species in the second series (fol. 104; “mitú”, or “mutu” of Marcgrave, 1648: 194). It is also portrayed on one of the Hoflössnitz paintings (see Whitehead & Boeseman, 1989: 55).

Iiereba.— *Rynchops nigra* (Linnaeus, 1758)

Handbook, 1: 172; Theatrum, 2: 25; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (138); Schneider, 1938: 83

Annotations: “p. 172. Iiereba so gross als eine moeve” (as big as a gull).

This bird is not pictured here, but a bird quite similar to its Handbook original may be found on fol. 101.

Jabiru.— *Jabiru mycteria* (Lichtenstein, 1819)

Handbook, 1: 174; Theatrum, 2: 63; Marcgrave, 1648: 200 (figs.); Marcgrave, 1942: [LXVIII (note 536)]; Piso, 1658: 87 (fig.); Piso, 1957: [207 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 163; Lichtenstein, 1961: 59, [170, 271-2 (note 71)]; Schneider, 1938: 85; Wagener, 1964: 191 (fig. 31), [246, 352]

Annotations: “p. 174. Jabiru 4 werkschuh hoch” (four feet high).

The troublesome consequences of the interchange of the Marcgrave illustrations for the present species and the “Jabiru Guacu” have been extensively dealt with elsewhere (Lichtenstein, 1961; Marcgrave, 1942). It is interesting to note that the present picture is a rather clumsy copy, adapted to the limited space (feet separate!), of a far more adequate sketch in the Handbook showing the complete bird on a meadow with a tree-trunk, with the similar black and light-grey colouration (slightly more beige on lower neck). The colours provided in the Leiden coloured Marcgrave copy are completely different and seem a combination of fantasy and adaptation to the “Jabiru Guacu” description (“Alae albae, remiges illarum pennae nigrae, rubini colore transplendente in nigro”).

Potiriguaçu.— *Sarkidiornis melanotos* (Pennant, 1769)

Handbook, 1: 176; Theatrum, 2: 7; Marcgrave, 1648: 218 (fig.); Marcgrave, 1942: [LXXVI (note 619)]; Piso, 1658: 82 (fig.); Piso, 1957: [196 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 175; Lichtenstein, 1961: 72, [186, 286 (note 133)]; Schneider, 1938: 82; Wagener, 1964: nil

Annotations: “p. 176. Potiriguaçu grösser als ein ordinari gantz” (larger than a common goose).

This is the “Ipecati Apoa” of Marcgrave, which represents the South American subspecies *S. melanotos sylvicola* Ihering & Thering, 1907, the nominate form occurring in tropical Africa and South Asia. A similar picture is found on a subsequent sheet of the present series (folio 13) and twice among the Hoflössnitz paintings (see Whitehead & Boeseman, 1989: 55).

### [Folio 11A]

Judging by the Handbook page references, a folio must be missing here. According to my (MB) notes made in Cracow and a list provided by Teixeira (MS., 1986), the missing pictures should represent the following species:

p. 180 no vernacular name	<i>Paradisaea minor</i> Shaw, 1809
p. 182 Guirajenoia Tangará	<i>Dacnis cayana paraguayensis</i> Chubb, 1910 <i>Tangara fastuosa</i> (Lesson, 1831)
p. 184 Guirâpunga	<i>Procnias a. averano</i> (Hermann, 1783)
p. 186 Araçari	<i>Pteroglossus a. aracari</i> (Linnaeus, 1758)
p. 188 Ipecú	<i>Phloeoceastes melanoleucos cearae</i> (Cory, 1915)
p. 190 Guainumbi	<i>Eupetomena macroura simoni</i> Hellmayr, 1929
P. 192 Mitú	<i>Mitu m. mitu</i> (Linnaeus, 1766)
p. 194 Nhandiguaçu	<i>Rhea a. americana</i> (Linnaeus, 1758)

## Folio 12

Eixua.— *Gampsonyx swainsoni* (Vigors, 1825)

Handbook, 1: 196 (right fig.); Theatrum, 2: 209; Marcgrave, 1648: nil; Marcgrave, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: nil; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: "p. 196. Eixua alss ein sperber" (as a sparrow-hawk).

Unfortunately no copy is presented here of the quite characteristic picture in the Handbook, the identity of which leaves no room for doubt. In the Handbook, the "Eixua" picture shares the background with the next species, presumably *Columbina passerina* (Linnaeus), while in the Theatrum it is combined with a species named "Inaie", identified as *Buteo magnirostris* (Gmelin).

(no vernacular name).— *Columbina passerina* (Linnaeus, 1758)

Handbook, 1: 196 (left fig.); Theatrum, 2: 273; Marcgrave, 1648: 204; Marcgrave, 1942: [LXX (note 548)]; Piso, 1658: 86 (fig.); Piso, 1957: [204 (fig.)]; Linnaeus, 1758: 165; Linnaeus, 1766: 285; Lichtenstein, 1819: 166; Lichtenstein, 1961: 62, [174, 274 (note 80)]; Schneider, 1938: 98; Wagener, 1964: nil

Annotations: "[p. 196.] als ein spatz" (as a sparrow).

The present picture evidently represents a dove, presumably *Columbina passerina*. In the Handbook the original of the present picture is combined with a drawing of the previous species "Eixua", missing here. In the Theatrum (209) there is in combination with the "Eixua" another species, named "Inaie", identified by Schneider as a young of *Buteo magnirostris* (Gmelin).

Among the references in Linnaeus' original description Marcgrave's "Picuipini-ma" is included, which makes Marcgrave's material typical for *passerina*. Therefore it is remarkable that in his 1942 comments to Marcgrave, Pinto states Linnaeus to have overlooked Marcgrave's "Picuipina" and (following Lichtenstein) identifies it as *Scardafella squammata* (Lesson). Marcgrave's description of the lunate spots seems to confirm that identification, but e.g. the remark on partly rusty coloured remiges confirms the presents opinion, moreover supported by the picture in the Handbook, the Piso book and in the Leningrad manuscript reproduced here, and confirmed by Sick, who visited Leningrad in 1982. See Schneider's comments.

Ajurucuru.— *Amazona aestiva* (Linnaeus, 1758)

Handbook, 1: 198; Theatrum, 2: 235; Marcgrave, 1648: 205; Marcgrave, 1942: [LXXI (note 557)]; Piso, 1658: nil; Linnaeus, 1758: (101); Linnaeus, 1766: 146; Lichtenstein, 1819: 166; Lichtenstein, 1961: 62, [175, 275 (note 83)]; Schneider, 1938: 96; Wagener, 1964: 190 (fig. 28), [244, 361]

Annotations: "p. 198. Ajurucuru alss ein ordinari papagay/Ein Papagay" ([size] as a common parrot/A Parrot).

This is a rather close copy of the Handbook picture, which only shows more yellow around the eyes and on the throat and chin, as is also shown on a similar picture, representing the same species, on the next folio.



Içoco.— *Tigrisoma lineatum* (Boddaert, 1783)

Handbook, 1: 200; Theatrum, 2: 73; Marcgrave, 1648: 199 (fig.); Marcgrave, 1942: [LXVIII (note 534)]; Piso, 1658: 90 (fig.); Piso, 1957: [212 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 239; Lichtenstein, 1819: 162; Lichtenstein, 1961: 58, [170, 271 (note 69)]; Schneider, 1938: 86; Wagener, 1964: 194 (fig. 41), [249, 356]?

Annotations: “p. 200. Içoco als ein rejjer gross” (as large as a heron).

The present picture, although unfinished, shows the characteristic reddish-brown neck and breast and a pose similar to that pictured in Marcgrave (“Soco”) and (less close) by Wagener. The identification Pinto provides in his annotations to the Wagener book, viz. *Casmerodius albus* (Linnaeus), seems most unlikely since that species does not occur in Handbook or Theatrum, and is not recorded by Marcgrave.

The colours given to the Marcgrave picture in the Leiden coloured copy are largely fantasy: the light greyish bird has a dark grey beak, a small beige area around the eye, further head dark brown to black, with two strange dark feathery protuberances (like ears!) on top; the outlines of the neck beige-brown to black, the side with three oblique beige strokes, back black, wings mostly dark brown or black with four transverse lighter beige bands; feet beige. It will be interesting to check these fancy colours in other hand-coloured copies of Marcgrave.

Curicaca.— *Theristicus caudatus* (Boddaert, 1783)

Handbook, 1: 202; Theatrum, 2: 87; Marcgrave, 1648: 191 (fig.); Marcgrave, 1942: [LXV (note 493)]; Piso, 1658: 88 (fig.); Piso, 1957: [208-10 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 240; Lichtenstein, 1819: 158; Lichtenstein, 1961: 54, [165, 268 (note 53)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: “p. 202. Curicaca so gross alss ein storch” and (different hand) “eine Art Ibis” (as large as a stork, a Kind of Ibis).

The present picture seems to be very close (but inverse) to the Marcgrave woodcut, and convincingly shows the characteristic colours and pattern. In our coloured Marcgrave copy, the bird is more brownish with lighter neck and white belly, lacks the light wing zone, and has greenish brown feet and toes, thus differing from Marcgrave's description.

Çurucua.— *Trogon collaris* Vieillot, 1817

Handbook, 1: 204; Theatrum, 2: (not 181); Marcgrave, 1648: 211 (fig.); Marcgrave, 1942: [LXXIV (note 591)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 167 (partly); Lichtenstein, 1819: 170; Lichtenstein, 1961: 66, [179, 280 (note 106)]; Schneider, 1938: 91 (not fig.p.92); Wagener, 1964: nil

Annotations: “p. 204. Çurucua alss ein atzel” (as [large as] a magpie).

The present picture is still far from complete, with the tail missing and only the red belly coloured, but since all pictures in this series appear to have been made after Handbook originals (or originals preceding these), while the Handbook “Çurucua” picture shows a distinct white collar, the present identification as *T. collaris* seems warranted.

Schneider already correctly identified the Handbook picture as *T. collaris*, but apparently without realizing its status as model (or copy thereof) for the Marcgrave illustration, which, as the oil painting in the Theatrum, was considered to represent *T. curucui* Linnaeus. From the coloured copy of Marcgrave in the Leiden Museum it is clear that Marcgrave's "Curucui" (at least his illustration) should be identified as *T. collaris*.

Fortunately, the indecisive description by Marcgrave and the Theatrum picture of the uncollared *T. curucui* (representing its lectotype, cf. Schneider) suggest a composite material, which would preclude possible unfortunate nomenclatorial consequences of the above interpretation of Marcgrave's species.

(no vernacular name).— *Numida meleagris* (Linnaeus, 1758)

Handbook, 1: 206; Theatrum, 2: 297; Marcgrave, 1648: 192 (fig.); Marcgrave, 1942: [LXVI (note 500)]; Piso, 1658: 92 (fig.); Piso, 1957: [217-8 (fig.)]; Linnaeus, 1758: 158; Linnaeus, 1766: 273; Lichtenstein, 1819: 159; Lichtenstein, 1961: 55, [166]; Schneider, 1938: 99; Wagener, 1964: 192 (fig. 36), [247, 354]

Annotations: "206. ein guinische hunn etwas völliger alls eine gemeine" (a guinea hen slightly more sturdy than the usual).

This imported West-African bird has been identified as *Numida meleagris galeata* (Pallas, 1767).

Tieguaçapiranga.— *Ramphocelus bresilius* (Linnaeus, 1766)

Handbook, 1: 208 (left fig.); Theatrum, 2: 125; Marcgrave, 1648: 192 (fig.); Marcgrave, 1942: [LXV (note 496)]; Piso, 1658: 94 (fig.); Piso, 1957: [222 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 314; Lichtenstein, 1819: 158; Lichtenstein, 1961: 54, [165, 268 (note 55)]; Schneider, 1938: 87; Wagener, 1964: 193 (fig. 38, right), [248, 354]

Annotations: "208. Tieguaçapiranga so gross alls ein markolff" (as large as a jay).

An adequate picture of the male of the species (named "Tijepiranga" by Marcgrave), far better than in our coloured Marcgrave copy, where it has a black head and only partly black wings with white margins at the tip. In the Handbook, the name "*Tanagra bresilia*" is added in a different, unidentified hand, while the picture is combined with that of the next species.

Teitei.— *Euphonia violacea* (Linnaeus, 1758)

Handbook, 1: 208 (right fig.); Theatrum, 2: 161; Marcgrave, 1648: 212; Marcgrave, 1942: [LXXV (note 594)]; Piso, 1658: nil; Linnaeus, 1758: (182); Linnaeus, 1766: 314; Lichtenstein, 1819: 170; Lichtenstein, 1961: 66, [179, 281 (note 110)]; Schneider, 1938: 89; Wagener, 1964: nil

Annotations: "[208.] Teitei". It seems doubtful if the addition "so gross alls ein markolff" applies to both the previous and the present species.

Shape, colours and pattern all point to the present identification, confirming the handwritten "*T[anagra] violacea* ♂" added to the Handbook original.

Aiaja.— *Ajaia ajaja* (Linnaeus, 1758)

Handbook, 1: 210; Theatrum, 2: 83; Marcgrave, 1648: 204; Marcgrave, 1942: [LXX (note 547)]; Piso, 1658: nil; Linnaeus, 1758: 140; Linnaeus, 1766: 231; Lichtenstein, 1819: 166; Lichtenstein, 1961: 62, [174, 274 (note 79)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: “210. Aiaja so gross alss ein Reijer” (as big as a heron). The intended picture is missing. The same species is represented in the second series (folio 118).

### Folio 13

Caracara.— *Circus buffoni* (Gmelin, 1788)

Handbook, 1: 212; Theatrum, 2: 211; Marcgrave, 1648: 211 (fig.); Marcgrave, 1942: [LXXIV (note 592)]; Piso, 1658: 82 (fig.); Piso, 1957: [195-6 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 170; Lichtenstein, 1961: 66, [179, 281 (note 107)]; Schneider, 1938: 93-4 (fig.); Wagener, 1964: nil

Annotations: “212. [correction of 202] Caracara so gross alss ein falk” (as big as a falcon).

Schneider identified the Handbook original as *Circus brasiliensis* (Gmelin) (= *Circus buffoni* (Gmelin)), but some agreement with *Polyborus plancus* (Miller) provides an alternative possibility, moreover sustained by modern usage of the vernacular name “Caracara”. Pinto, in his comments on Marcgrave (1942), adopted this alternative.

In the coloured Marcgrave copy, there is only one light cross-band on the wing, running from wing margin just above hind leg attachment rather steep up- and forward.

Jacu.— *Penelope superciliaris* Temminck, 1815

Handbook, 1: 214; 2: 123; Theatrum, 2: 291; Marcgrave, 1648: 198 (fig.); Marcgrave, 1942: [LXVIII (note 530)]; Piso, 1658: 81 (fig.); Piso, 1957: [193 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 162; Lichtenstein, 1961: 58, [169, 271 (note 66)]; Schneider, 1938: 99; Wagener, 1964: nil

Annotations: “214. Jacu so gross alss ein Auerhun” (as big as a Capercaille).

According to Schneider, the Handbook model for this sketch pictures *Penelope jacucaca* Spix, while the woodcut copy in Marcgrave is identified in Pinto's comments (1942) as *P. superciliaris*. In fact, both identifications may be argued with, I believe, some preference for *superciliaris* above the more brownish *jacucaca*. The vernacular name by Marcgrave, “Iacupema”, also is convincingly close to that still used for *superciliaris*: “Jacupemba” (Frisch, 1981: 80). However, Teixeira (MS., 1986) adopts the specific name *jacucaca* for the Handbook original.

Ajuruete.— *Amazona aestiva* (Linnaeus, 1758)

Handbook, 1: 216; Theatrum, 2: 233; Marcgrave, 1648: 205; Marcgrave, 1942: [LXXI (notes 557-8)]; Piso, 1658: 85 (fig.); Piso, 1957: [201 (fig.)]; Linnaeus, 1758: (101); Linnaeus, 1766: 146; Lichtenstein, 1819:

166; Lichtenstein, 1961: 62, [175, 275 (note 83)]; Schneider, 1938: 96; Wagener, 1964: 190 (fig. 28, left), [244, 351]

Annotations: "216. Ajuruete Dass ist der papagay, der so fromb antworten, und fragen thut, die wol 100 menschen gehöret haben u. [symbol, = nicht] anders urtheilen könnten, ob müste der teufel aus ihm geredet haben, hatt beij mir [symbol, = nicht] länger alls 14 Tage gelebet, alls er tot war, war er so hart alls ein holtz". (This is the parrot, that so smartly answers, and asks (causes?) questions, which certainly 100 people have heard and could not consider otherwise than that the devil must have spoken through him, has lived with me no longer than 14 Days, when he died he was as firm as wood).

Although this picture in several colour details differs from a similar parrot on folio 12, their Handbook originals are now generally assumed to represent the same species.

(no vernacular name).— *Psittacus erithacus* Linnaeus, 1758

Handbook, 1: 218; Theatrum, 2: 237; Marcgrave, 1646: nil; Piso, 1658: nil; Linnaeus, 1758: (99); Linnaeus, 1766: (144); Lichtenstein, 1819: nil; Schneider, 1938: 96; Wagener, 1964: 391 (fig. 30), [245, 352]

Annotations: "218. alls ein ordinari papagay" ([size] as a common parrot).  
A common West-African parrot, presumably (cf. Wagener) imported from Angola.

Potiri.— *Dendrocygna autumnalis* (Linnaeus, 1758)

Handbook, 1: 220, not 2: 129?; Theatrum, 2 (not 1?): 3; Marcgrave, 1648: not 213-4; Marcgrave, 1942: not [LXXVI (notes 606-7)]; Piso, 1658: not 83; Piso, 1957: not [197]; Linnaeus, 1758: (217); Linnaeus, 1766: (205); Lichtenstein, 1819: not 172; Lichtenstein, 1961: not 68, [181, 283 (notes 122-3)]; Schneider, 1938: 92; Wagener, 1964: nil

Annotations: [220.] "Potiri alls ein ordinari ente gross" (as large as a common duck).

Since this picture is missing, the above identification is based on Schneider and seems confirmed by my own notes on the Handbook original: red bill, greenish head, grey and brown wings, dark brown or black body (belly) and tail, reddish legs. Schneider also considered a "Potirî-guacû" picture in the Theatrum ("1":3) to represent the same species, although that vernacular name is applied here for *Sarkidiornis melanotos* (Pennant), represented on folio 11 and below on present folio.

A picture named "Potiri" in the Theatrum (2:1) was identified by Schneider as *Dendrocygna viduata* (Linnaeus), a species presumably not represented in the Handbooks and therefore not to be expected in the present set. Another "Potiri" occurs in the second Handbook (2:129), identified by Schneider as *Anas bahamensis* Linnaeus, but inclusion of a copy thereof at the present place seems unlikely since it would mean a very unusual break in the numbering.

None of the three ducks recorded by Marcgrave belongs to the present species; they have respectively been identified as *Cairina moschata* (Linnaeus), *Anas bahamensis* Linnaeus and *Amazonetta brasiliensis* (Gmelin).

Guiratinga.— *Egretta alba* (Lichtenstein, 1758)

Handbook, 1: 222; Theatrum, 2: 81; Marcgrave, 1648: 220; Marcgrave, 1942: [LXXIII (note 585)]?; Piso, 1658: nil; Linnaeus, 1758: (144); Linnaeus, 1766: (239); Lichtenstein, 1819: 169, 177; Lichtenstein, 1961: 65, [178, 279, 286 (notes 102, 134)]; Schneider, 1938: 86; Wagener, 1964: 194 (fig. 41), [249, 356]?

Annotations: “222. Guiratinga, alss ein ordinar reijer gr.” (as large as a common heron).

This monochrome sketch represents the subspecies *Egretta* (or *Casmerodius*) *alba egretta* (Gmelin, 1789). As the Theatrum picture (here represented by a sketch on folio 117) shows, the bill is wholly yellow, which precludes an identification as *Egretta thula* (Molina). Teixeira (MS., 1986) identifies the Handbook original as *Bubulcus ibis* (Linnaeus, 1758).

Migua.— *Phalacrocorax brasilianus* (Gmelin, 1789)

Handbook, 1: 224; Theatrum, 2: 13; Marcgrave, 1648: nil; Piso, 1658: 83 (fig.); Piso, 1957: [198-9 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: “224. Migua, ist die art einer schollevar auch so gross, fänget fische” (is a kind of cormorant, also that large, catches fishes).

In the Handbook original, the bird is distinctly swimming, with the water indicated, therefore the legs invisible. The species, still known by the similar vernacular name “Biguá” (Frisch, 1981: 36), is also pictured on folio 97, but complete with legs. Piso, who named this species “Maiagué”, probably had his woodcut of a swimming specimen made after the Handbook picture.

Potiriguaçu.— *Sarkidiornis melanotos* (Pennant, 1769)

Handbook, 1: 226; Theatrum, 2: 7; Marcgrave, 1648: 218 (fig.); Marcgrave, 1942: [LXXVII (note 619)]; Piso, 1658: 82 (fig.); Piso, 1957: [196 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 175; Lichtenstein, 1961: 72, [186, 286 (note 133)]; Schneider, 1938: 82; Wagener, 1964: nil

Annotations: “226. Potiriguaçu grosser alss ein ordinari gantz” (larger than a common goose).

The same species is similarly depicted on a previous folio (11), with a few added comments also applicable here.

Tiiepitanga.— *Troglodytes aedon* Vieillot, 1808

Handbook, 1: 228 (left fig.); Theatrum, 2: not 113, 129; Marcgrave, 1648: not 192, not 210; Marcgrave, 1942: not [LXV (note 496)], not [LXXIV (587)]; Piso, 1658: not 94; Piso, 1957: not [222]; Linnaeus, 1758: nil; Linnaeus, 1766: not 314; Lichtenstein, 1819: not 158, 169; Lichtenstein, 1961: not 54, 65, 165, 179, 268, 280 (notes 55, 104)]; Schneider, 1938: 87; Wagener, 1964: not 193 (fig. 38, right), [248, 354]

Annotations: “28. Tiiepitanga als ein zaunslüpfger gross” (as large as a wren). In the Handbook with next species on a mutual background.

The name "Tiiepitanga" has been used for several species (see also comments on "Tiieguaça", folio 12), and was associated by Schneider with Marcgrave's "Jacarini", *Volatinia jacarina* (Linnaeus, 1766). The Leningrad picture, however, clearly shows a different species, and concerns the "Tiiepiranga" also referred to by Schneider. The present identification, only tentatively given, is confirmed by a list recently prepared in Leningrad by Sick, who apparently accepted specific distinction between neotropical and temperate representatives and therefore (like Schneider) named this species *T. musculus*.

Guirapunga.— *Procnias averano* (Hermann, 1783)

Handbook, 1: 228 (right fig.); Theatrum, 2: 183, 185; Marcgrave, 1648: 201 (fig.); Marcgrave, 1942: [LXIX (note 539)]; Piso, 1658: 93 (figs.); Piso, 1957: [219-20 (figs)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 163; Lichtenstein, 1961: 60, [171, 272 (note 72)]; Schneider, 1938: 92; Wagener, 1964: nil

Annotations: the "p. 224" evidently belongs with the previous cormorant, where it seems subsequently added before the vernacular name, while the present legend actually should refer to Handbook p. 228, "Guirapunga so gross als ein atzel" (as big as a magpie). Combined with previous picture in Handbook originals.

The Handbook picture too is only schematic, the colour mostly light greyish with bill, most of head, chin, throat, primaries and legs black(ish). In unidentified handwriting the name *Ampelis carnobarba* is added. A copy of Handbook 1: 184 (according to my notes with the handwritten name *Ampelis variegata*, male), referred to by Schneider, is missing here, while his "238" is erroneous for "228". The same or similar species may be found on folios 128 and 129.

[Folio 13A]

Again (see 11A) the interruption in page references indicates a folio to be missing, presumably picturing the following species:

p. 230	Potiriguaçu	<i>Cairina moschata</i> (Linnaeus, 1758)
p. 232	Içóco	<i>Butorides s. striatus</i> (Linnaeus, 1758)
p. 234	Inambûguaçu	<i>Crypturelles noctivagus zabele</i> (Spix, 1825)
p. 236	Guirâtayirima "Lanius"	<i>Icterus icterus jamacaii</i> (Gmelin, 1788) <i>Taraba major stagurus</i> (Lichtenstein, 1823)
p. 238	Japûi	<i>Icterus icterus jamacaii</i> (Gmelin, 1788)
p. 240	no vernacular name Guirâpunga	<i>Paroaria dominicana</i> (Linnaeus, 1758) <i>Saltator m. maximus</i> (Müller, 1766)
p. 242	Japû	<i>Cacius c. cela</i> (Linnaeus, 1758)
p. 244	Tucuna Tiiepiranga	<i>Volatinia j. jacarina</i> (Linnaeus, 1766) <i>Tachyphonus rufus</i> (Boddaert, 1783)
p. 246	Gaiiuçu no vernacular name	<i>Thraupis s. sayaca</i> (Linnaeus, 1766) <i>Columbina t. talpacoti</i> (Temminck, 1811)

## Folio 14

Içóca.— *Ardea cocoi* Linnaeus, 1766

Handbook, 1: 248; 2:87; Theatrum, 2: 65, 67; Marcgrave, 1648: 209 (fig.?, see below); Marcgrave, 1942: [LXXIII (note 583)]; Piso, 1658: 89 (fig.?): Piso, 1957: [210 (fig.?)]; Linnaeus, 1758: nil; Linnaeus, 1766: 237; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [178, 279 (note 100)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "248. Içóca so gross alss ein reyer" (as large as a heron).

Apparently still known by the name of "Socoi" (Frisch, 1981: 42). The original Handbook picture, of which the intended copy is missing here, shows a greyish heron, with a series of black spots or stripes along front of neck, a lighter belly, yellow bill and yellow-brownish feet.

The Marcgrave illustration of "Ardeola" (1648: 210) probably rather represents the present species than *Butorides striatus* (Linnaeus) (see Marcgrave comments, 1942: LXXIII, note 486), while it is reproduced as "Cocoi I" by Piso (1658).

Anû.— *Crotophaga ani* Linnaeus, 1758

Handbook, 1: 250; Theatrum, 2: 119; Marcgrave, 1648: 193 (fig.); Marcgrave, 1942: [LXVI (note 507)]; Piso, 1658: nil; Linnaeus, 1758: 105; Linnaeus, 1766: 154; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167]; Schneider, 1938: 87; Wagener, 1964: nil

Annotations: "250. Anû so gross alss ein raab [,] gantz schwarz" (as big as a raven, wholly black).

Except in some aspects of the general shape (long upper beak, very long and slender neck), there are problems with regard to the stated size: as big as a thrush, cf. Marcgrave and Linnaeus, against as big as a raven here and in Handbook. This seems to imply that Linnaeus described the smaller smoothbilled ani, while the Handbook and present picture might represent the greater ani, *Crotophaga major* Gmelin, but the picture added to Marcgrave's description, referred to by Linnaeus, is extremely close to those in the Handbook and the Leningrad collection, and evidently all represent the same species.

Guirâcocó.— *Thamnophilus palliatus* (Lichtenstein, 1823)

Handbook, 1: 252 (left fig.); Theatrum, 2: 149; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: nil; Schneider, 1964: 88; Wagener, 1964: nil

Annotations: "252. Guirâcocó so gross alss widehopfen" (as large as hoopoes). In the Handbook, it occurs together with the next in the same picture.

For this species, Schneider refers to Marcgrave p. 202, but I was unable to find any record of it in Marcgrave, on that page or elsewhere.

Pitangua guaçu.— *Megarhynchus pitangua* (Linnaeus, 1766)

Handbook, 1: 252 (right fig.); Theatrum, 2: 159; Marcgrave, 1648: 216 (not fig.); Marcgrave, 1942:

[LXXVI (note 611)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 136; Lichtenstein, 1819: 173; Lichtenstein, 1961: 69, [183, 284 (note 127)]; Schneider, 1938: 89; Wagener, 1964: 193 (fig. 38, left), [248, 354]

Annotations: “[252.] Pitangua guacu”. Probably the words “so gross als widehopfen” (as large as hoopoes) apply to both the previous and present species.

This picture provides hardly any clues for identification. In general aspect, it seems a *Chloroceryle* species, but the Handbook original (although still schematic) shows a more accurately pictured bird, with a solid black skull cap separated by a narrow white band from a broad black band running from the black bill through the eye. The dark brownish bird further has a yellow or orange-yellow breast. All this strongly points to the present identification, although *Pitangus sulphuratus* (Linnaeus) has been suggested as more likely.

The illustration in Marcgrave seems too far different to have been made after a Handbook (or mutual) original, as already observed by Lichtenstein, but this is contested by Schneider.

Urubu.— *Cathartes aura* (Linnaeus, 1758)

Handbook, 1: 254; Theatrum, 2: 213; Marcgrave, 1648: 207 (fig.); Marcgrave, 1942: [LXXII (note 577)]; Piso, 1658: 326 (fig.); Piso, 1957: [672 (fig.)]; Linnaeus, 1758: 87; Linnaeus, 1766: 122; Lichtenstein, 1819: 168; Lichtenstein, 1961: 64, [177]; Schneider, 1938: 94; Wagener, 1964: nil

Annotations: “254. Urubu so gross als eine weihe” (as big as a kite).

In the coloured Marcgrave copy in the Leiden Museum the whole bird is very dark, bluish grey, with red bill, a red ring encircling a bluish area around the eye, and red feet, the toes again blackish.

Teixeira (MS., 1986) is convinced that the Handbook original represents *Cathartes burrovianus urubitinga* Pelzeln, 1861.

Jacurutu.— *Bubo virginianus* (Gmelin, 1788)

Handbook, 1: 256; Theatrum, 2: 199; Marcgrave, 1648: 199 (fig.); Marcgrave, 1942: [LXVIII (note 532)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 162; Lichtenstein, 1961: 58, [169, 271 (note 68)]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: “256. Jacurutu so gross als ein Schuhu” (as big as an Eagle owl).

Generally understood to represent the subspecies *B. virginianus nacurutu* (Vieillot). Als pictured on folio 130.

Ojeruba.— *Momotus momota* (Linnaeus, 1766)

Handbook, 1: 258; Theatrum, 2: 189; Marcgrave, 1648: 193 (fig.); Marcgrave, 1942: [LXVI (notes 510-2)]; Piso, 1658: 93 (fig.); Piso, 1957: [220 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 152; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167, 269 (note 62)]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: “258. Ojeruba so gross als ein kray (as big as a crow).

Marcgrave calls this species “Guira Guainumbi”, while in the Theatrum both



"Guira aymucu" and "Oieruba" are used. Pinto, in his comments on Marcgrave (1942) records the present vernacular name of "Juruva" (or "Jiruva"), which is close to our "Ojeruba".

In our coloured Marcgrave copy, head, dorsal parts, wings, tail and legs are blue or greenish blue, the lower parts from throat to under tail-coverts light rosy to liver-coloured, feet and toes dark, almost black.

Ibiiu.— ?*Hydropsalis brasiliiana* (Gmelin, 1789)

Handbook, 1: 260; 2:97-9?; Theatrum, 2: 221?; Marcgrave, 1648: 195 (middle fig.), 202; Marcgrave, 1942: [LXVII (note 516) & LXIX (note 540)]; Piso, 1658: 94 (fig.); Piso, 1957: [221 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 160, 164; Lichtenstein, 1961: 56, 60, [168, 172, 269, 272 (notes 64, 73)]; Schneider, 1938: 95 (fig. 4); Wagener, 1964: not 194 (fig. 42), [250, 356]

Annotations: "260. Ibiiu alss ein kautzen gr.". (as big as a little owl).

This scanty sketch still shows convincing agreement with the first "Ibiiu" picture of Marcgrave. See also folios 11 and especially 133.

Teixeira (MS., 1986) also seems unable to provide a definite identification for the Handbook original, and considers *brasiliiana* a species dubius.

Mairea.— *Fluvicola nengeta* (Linnaeus, 1766)

Handbook, 1: 262 (left fig.); Theatrum, 2: 163; Marcgrave, 1648: 209 (fig.); Marcgrave, 1942: [LXXIII (note 582)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 135; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [178, 279 (note 99)]; Schneider, 1938: 89 (fig. 1, p. 90); Wagener, 1964: nil

Annotations: "262. Mairea alss ein wasserschnepf gr.". (as large as a watersnipe).

The above vernacular name is evidently misspelt, the correct name being "Majera" cf. Theatrum. The present simple sketch is quite close to the Handbook original and even to the Theatrum oil painting (reproduced by Schneider). Marcgrave records it as "Guiraru Nheengeta".

Cabia.— ?*Thraupis palmarum* (Wied, 1821)

Handbook, 1: 262 (right fig.); Theatrum, 2: 175?; Marcgrave, 1648: 204?; Marcgrave, 1942: [LXX (note 548)]?; Piso, 1658: 86 (fig.)?; Piso, 1957: [204 (fig.)]?; Linnaeus, 1758: 165?; Linnaeus, 1766: 285?; Lichtenstein, 1819: 166?; Lichtenstein, 1961: 62 [174, 274 (note 80)]?; Schneider, 1938: 90; Wagener, 1964: nil

Annotations: "262. Cabia dieser etwas grösser" (this one somewhat larger [evidently in comparison with the previous species, both being combined in the Handbook picture]).

Schneider identifies the Handbook original as *Thraupis palmarum palmarum* (Wied), and the Theatrum picture (175) as conspecific. However, this sketch, both in colour, in markings and in attitude, strongly suggests a (ground) dove, and an identification as *Columbina passerina* (Linnaeus) seems more likely, at least for the present and Handbook pictures. The same species seems represented on folio 12. On the other hand, Sick (Acad. Brasil. de Ciencias, Rio de Janeiro), who studied these pic-

tures during his 1982 visit to Leningrad, also suggested the identification *Thraupis palmarum*.

### Folio 15

Tujaputeiuba.— *Aratinga aurea* (Gmelin, 1788)

Handbook, 1: 264; Theatrum, 2: 257; Marcgrave, 1648: 206; Marcgrave, 1942: [LXXI (note 561)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 167; Lichtenstein, 1961: 63, [175, 276 (note 86)]; Schneider, 1938: 97; Wagener, 1964: 191 (fig. 29), [245, 351]?

Annotations: "264. Tujaputeiuba Paroetgens so gross als spatzen" (Little parrots as big as sparrows.— [this remark also applies to the next species]).

This must be Marcgrave's species "Segunda", named "Tuim aputejuba".

Tuitirica.— *Brotogeris tirica* (Gmelin, 1788)

Handbook, 1: 264; Theatrum, 2: 259; Marcgrave, 1648: 206; Marcgrave, 1942: [LXXI (note 562)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 167; Lichtenstein, 1961: 63, [175, 276 (note 86)]; Schneider, 1938: 97; Wagener, 1964: 191 (fig. 29), [245, 351]?

Annotations: [264] Tuitirica Paroetgens..." (see previous species).

Marcgrave's species 'Tertia', with the same vernacular name as used there. Lichtenstein considered it the female of *Psittacus* (= *Forpus*) *passerinus* Linnaeus, an opinion considered unbelievable ("unbegreiflich") by Schneider, but again advocated by Pinto in Marcgrave (1942).

It is listed as *Brotogeris tirica* by Sick in his notes made during a 1982 visit to Leningrad. The bird shown here seems far to elongate, with a too long tail, to be identified as *F. passerinus*.

Aguapeuçóra.— *Jacana jacana* (Linnaeus, 1766)

Handbook, 1: 266; Theatrum, 2: 53; Marcgrave, 1648: 190 (fig.), 191; Marcgrave, 1942: [LXV (note 491-2)]; Piso, 1658: 90 (fig.); Piso, 1957: [213 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 259; Lichtenstein, 1819: 157; Lichtenstein, 1961: 53, [164, 267 (note 51)]; Schneider, 1938: 85; Wagener, 1964: not 192 (fig. 35), [247, 354]

Annotations: "266. Aguapeuçóra ist ein Wasserhun auch so gross als der hiesige" (is a Water-hen equally large as the indigenous ones).

This picture shows the bird very similar in shape and pose with that on folio 111 (and presumably in the Theatrum), while the Marcgrave woodcut also seems a reverse copy. Evidently Marcgrave's illustration is erroneously placed, as already observed by Lichtenstein, and should be added to either Marcgrave's second or fourth "Jacana".

Jaguaçati.— *Chloroceryle amazona* (Latham, 1790)

Handbook, 1: 268; Theatrum, 2: 47; Marcgrave, 1648: 194 (fig.); Marcgrave, 1942: [LXVII (note 513)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "268. Jaguaçati so gross als ein eysvogel" (as big as a kingfisher).

This picture, at least in shape, is quite similar to the Marcgrave woodcut. The present slate or bluish-grey with white bird contrasts with the picture in our coloured Marcgrave copy: almost black and white, but with upper bill, the area around the eyes and numerous streaks and small blotches on throat, neck, and chest light blue. Evidently, both pictures are unrealistic in this respect.

Jacana.— *Porphyryula martinica* (Linnaeus, 1766)

Handbook, 1: 270; Theatrum, 2: 57; Marcgrave, 1648: 190 (not fig.); Marcgrave, 1942: [LXV (note 491)]; Piso, 1658: 90 (not fig.); Piso, 1957: [213 (not fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: (259); Lichtenstein, 1819: 157; Lichtenstein, 1961: 53, [164, 267 (note 51)]; Schneider, 1938: 85; Wagener, 1964: 192 (fig. 35), [247, 354]

Annotations: "270. Jacana ein Wasserhun auch so gross" (a Water-hen also as large).

This picture shows the present species, but seems quite similar with the "Agua-peuçóca" (*Jacana jacana*) picture on the same folio on account of a too long and slender bill, a rather long neck and far too weak and small feet. However, the present identification seems confirmed by a similar but in these aspects improved picture in the second set (folio 110) and moreover agrees with the opinions of Lichtenstein, Schneider and Sick. It seems described by Marcgrave as his first "Jacana" species, unfortunately accompanied by a woodcut picture of *Jacana jacana* (Linnaeus).

Aracara.— *Ara chloroptera* Gray, 1859

Handbook, 1: 272; Theatrum, 2: 229; Marcgrave, 1648: 206 (not fig.); Marcgrave, 1942: [LXXI (note 566)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: 167; Lichtenstein, 1961: 63, [176, 276 (note 87)]; Schneider, 1938: 96; Wagener, 1964: 192 (fig. 33), [247, 353]

Annotations: "272. Aracara ein Indianischer Raab" (an Amerindian Raven).

This well executed picture adequately shows the beautiful colour pattern and therefore poses no problems.

Caninde.— *Ara ararauna* (Linnaeus, 1758)

Handbook, 1: 274; Theatrum, 2: 229; Marcgrave, 1648: 206 (fig.); Marcgrave, 1942: [LXXI (note 567)]; Piso, 1658: nil; Linnaeus, 1758: 96; Linnaeus, 1766: 140; Lichtenstein, 1819: 167; Lichtenstein, 1961: 63, [176]; Schneider, 1938: 96; Wagener, 1964: 192 (fig. 34), [247, 353]

Annotations: "274. Caninde ein Indianischer Raab grosser alss ein ordinari" (an Amerindian Raven larger than the usual).

The coloured Marcgrave woodcut in Leiden is quite similar in shape, pose and colours or markings to the present picture and, presumably, the Handbook original. The species is still named "Arara-canindé" (Frisch, 1981: 102).

Guivanna.— *Seriscossypha loricata* (Lichtenstein, 1819)

Handbook, 1: 276 (left fig.); Theatrum, 2: 151; Marcgrave, 1648: 192; Marcgrave, 1942: [LXVI (note 498)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: 314 (error); Lichtenstein, 1819: 159; Lichtenstein, 1961: 55, [166, 269 (note 57)]; Schneider, 1938: 88; Wagener, 1964: nil

Annotations: "276. Guivanna so gross alss ein stahr" (as large as a starling). The vernacular name, incorrectly copied, should read "Guirauna" cf. Theatrum index. In Handbook, this picture is combined with the next.

This has been understood to represent Marcgrave's "Iacapu", already referred to by Lichtenstein in his original description. The picture must represent the female, without the scarlet throat.

(no vernacular name.— ?*Sporophila bouvreuil* (Müller, 1776))

Handbook, 1: 276 (right fig.); Theatrum, 2: ?; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1819: nil; Schneider, 1938: nil; Wagener, 1964: nil

Annotations: [276.] "So gross alss ein bachstelz" (as large as a wagtail). In the Handbook combined with the previous species.

According to my notes made in Cracow, the Handbook original shows this bird yellow instead of reddish as represented here, with almost black bill, cap on head, wings and tail. The Handbook original is not referred to by Schneider and the identity of the present bird, considering the poor quality of the sketch and the omission of a vernacular name, remains a problem. But Teixeira (MS., 1986) identifies the Handbook original as *Sporophila bouvreuil*.

(no vernacular name).— ?*Calidris canutus* (Linnaeus, 1758)

Handbook, 1: 278; Theatrum, 2: 21; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (149); Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "278. so gross alss ein moeve" (as large as a gull). Additional caption illegible (see also second next species).

Schneider states that Lichtenstein identified the Handbook original (and the Theatrum picture referred to above) as *Arenaria calidris* (Linnaeus) (a plover), but considered *Calidris canutus rufus* (Wilson) (a sandpiper) a much more likely interpretation. Actually the shape in the present uncoloured sketch, evidently unfinished, does not seem to support any of these opinions, but judging by my notes the Handbook original shows a light beige-greyish bird, with darker upper parts (head,

neck, back) spotted with dark-brown, the bill, primaries and feet being dark. These colours and markings closely agree with those on folio 100 for the "Jacamini", here interpreted as *Calidris canutus* (Linnaeus). The name "Jacamini" is not listed by either Marcgrave or Piso.

According to Teixeira (MS., 1986), the Handbook and Theatrum originals should be identified as *Calidris alba* (Pallas, 1764).

Tuimiri.— *Agapornis pullaria* (Linnaeus, 1758)

Handbook, 1: 280; Theatrum, 2: 261; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (102); Schneider, 1938: 97; Wagener, 1964: nil

Annotations: "280. Tuimiri kleine pargitgens gross alss Zaunschleifer beyde ganz gruehn" (small parakeets as large as Wrens both wholly green).

My Cracow notes on the Handbook indicate that there both birds are coloured green, with light-reddish bill and anterior head up to eye, the right bird showing a blue spot at the bend of the wing. There are no reasons to doubt Schneider's identification, although the indicated size seems too small, since there seems to be no fitting South American alternative to the present West-African species.

(no vernacular name).— *Charadrius semipalmatus* Bonaparte, 1825

Handbook, 1: 282 (left fig.); Theatrum, 2: 31; Marcgrave, 1648: 199 (fig.), (not 217, fig.); Marcgrave, 1942: [LXVIII (note 535)]; Piso, 1658: not 95 (fig.); Piso, 1957: not [221 (fig.)]; Linnaeus, 1758: (150); Linnaeus, 1766: 253; Lichtenstein, 1819: 162; Lichtenstein, 1961: 58, [170, 271 (note 70)]; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: "282. Wasserschnepf ([as large] as a water snipe). Added is the note "beyde gemahlt in [illegible]", similar to the previous "*Calidris*" note.

The Handbook original shows the (dark brownish) colour markings exactly as shown by the lower bird on folio 103 ("Matuitui"), and evidently represents the same species. The attribution to *Charadrius collaris* Vieillot by Lichtenstein (who added this name in pencil to the Handbook picture) was corrected by Schneider. Linnaeus (1766) referred the Marcgrave picture to his *Charadrius hiaticula*, of which *semipalmatus* may be just a race.

(no vernacular name).— *Gelochelidon nilotica* (Gmelin, 1789)

Handbook, 1: 282 (right fig.); Theatrum, 2: 21 (b); Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "als ein Marbe [?]" (as a ....?; I was unable to trace this word or its significance).

Although the attitude, especially of the head, slightly differs, there is a convincing similarity to the "Jacaniguaya" on folio 101, both clearly representing the same species if not the same specimen. Also the colours and markings, here omitted, but

seen in the Handbook original, closely agree with those on folio 101: a tern with a black bill, head with black cap (slightly sprinkled with a few white spots), slightly continued down upper neck; further neck and body white, but back and wings slightly rosy; tail darker, partly black, black feet.

According to Teixeira (MS., 1986), the Handbook picture represents the subspecies *gronwöldi* Mathews.

### [Folio 15A]

Here again (see folios 11A and 13A) a folio appears to be missing, with presumably pictures of the following bird species:

p. 284	Guainumbi	<i>Amazilia leucogaster bahiae</i> (Hartet, 1899)
p. 286	Guianumbi	<i>Chlorestes n. notatus</i> (Reichenbach, 1795)
p. 288	Tamatiâguaçu	<i>Cochlearius c. cochlearius</i> (Linnaeus, 1766)
p. 290	no vernacular name	<i>Oceanites oceanicus</i> (Kuhl, 1820)
	no vernacular name	<i>Galbula ruficauda rufoviridis</i> (Cabanis, 1851)
p. 292	Tarabí	<i>Forpus xanthopterygius flavissimus</i> (Hellmayr, 1929)
	Jendaya	<i>Aratinga solstitialis jandaya</i> (Gmelin, 788)
p. 294	Guainumbi	<i>Glaucis h. hirsuta</i> (Gmelin, 1788)

### Reptiles, fishes and invertebrates

(by M.S. Hoogmoed, M. Boeseman & L.B. Holthuis)

### Folio 16

Guacucua.— *Ogocephalus vespertilio* (Linnaeus, 1758)

Handbook, 1: 300; Theatrum, 1: 19, 21?; Marcgrave, 1648: 143 (fig.); Marcgrave, 1942: [LII (note 333)]; Piso, 1658: nil; Linnaeus, 1758: 237; Linnaeus, 1766: 403; Lichtenstein, 1822: 273; Lichtenstein, 1961: 101 [215, 291 (note 160)]; Wagener, 1964: 187 (fig. 15), [237, 345]

Annotations: "300. Guacucua 1,5 fuss lang" (1,5 foot long).

This drawing, in close agreement with the Marcgrave woodcut, faintly shows the long rostrum characteristic of the long-nosed batfish, *Ogocephalus longirostris* (Valenciennes), = *O. vespertilio* (Linnaeus) cf. Menezes, 1964. Actually, Valenciennes (1837: 450) refers to Marcgrave as the first author of that species, which he considered distinct from *O. vespertilio* (Linnaeus). From his statement that the figures in the Handbook ("livre du prince") and the Theatrum ("celui de Mentzel" = "Liber Mentzeli") are far superior to that in Marcgrave, we may conclude that Valenciennes personally consulted both these sources. This adds weight to his view that "ce n'est point de ces recueils que la figure de Marcgrave est prise". Wagener's picture, though clearly representing the same species, is quite different. See also folios 45 and 91.

The present identification, if accepted in recent literature, means that Linnaeus (1758) correctly included the Marcgrave reference among those of *O. vespertilio*.

I was unable to locate any recent records of the vernacular name "Guacucua" ("Guacucua", "Guacucuja"), but the name "Vaquocoha" (Cristóvão de Lisboa, 1967: 66, pl. 23; Carvalho, 1964: 21), used for similar species, comes quite close. The species is now called "Morcego" (Fowler, 1941: 184; Carvalho & Sawaya, in Marcgrave, 1942: LII) or "Peixe morcego" and inhabits the southern part of the tropical western Atlantic.

The same species appears to occur on the tapestry "Le cheval rayé", in both series of the "Indes".

It seems notable that *vespertilio* is not included in a preliminary list of species in the northern adjacent Atlantic, prepared by Bradbury (in Fischer (ed.), 1978).

Jurara.— *Phrynops nasutus* (Schweigger, 1812)

Handbook, 1: 302; Theatrum, 3: nil; Marcgrave, 1648: 241; Marcgrave, 1942: [LXXXV (note 724)]; Piso, 1658: 105 (lower fig.); Piso, 1957: [247 (lower fig)]; Linnaeus, 1758: nil; Lichtenstein, 1822: 252; Lichtenstein, 1961: 92, [205]; Wagener, 1964: nil

Annotations: "302 Jurara so gross als das leben" (life-size).

The picture evidently represents a member of the suborder Pleurodira and, considering the width of the head, apparently of the family Chelidae. Sawaya (in Marcgrave, 1942) tentatively identified Marcgrave's "Jurura" as *Geoemyda punctularia* (Daudin), a more narrow-headed species, on the strength of Marcgrave's remark: "Infra testam se abscondere potest; & collum rursus ad trium digitorum longitudinem foras extendere". But this only means that the turtle can hide its head and neck below the margin of the carapace, not necessarily with the neck bent in a vertical S-shape as occurs in the Cryptodira. Thus, only a limited number of species need here to be considered.

The occurrence of a nuchal plate, distinctly visible in the drawing, precludes any species of *Podocnemis* (though the vernacular name "Jurura" (cf. Siebenrock, 1904) is used for female *Podocnemis expansa* (Schweigger)), and thus restricts the possibilities to the family Chelidae.

Marcgrave's descriptions of the snout as pointed and protruding, and of the proportions of the carapace, the head and the neck, only seem to fit *Phrynops (Batrachemys) nasutus* (Schweigger), a species reaching a carapace length of 30 cm. The only feature that disagrees is the yellow plastron with black patches, not just plain yellow as stated by Marcgrave, but no chelid turtle with a uniform yellow plastron is known from Brazil. Most other Chelidae differ by showing a weird habitus, a vertebral furrow, or a backward displacement of the nuchal, and thereby do not qualify, the exception being *Phrynops (Mescoclemmys) gibbus* (Schweigger). But *P. gibbus* remains smaller and never shows a lighter streak on each temple as may occur in *P. nasutus*, as indicated in the present drawing.

This drawing closely resembles the lower figure on p. 105 in Piso (1658), though that is in reverse, slightly stylised and with a few details added (small, original horny scutes on carapace). Lichtenstein commented on a presumably similar picture in the Handbooks and was of the opinion that it represented *Emys trijuga* (= *Geoemyda trijuga* (Schweigger)), a species from southern Asia! His remark that in

Marcgrave's text only four claws are mentioned, while on the drawing five are visible, is only partly true. Most species of turtles have five claws on the forelimbs and only four on the hind limbs, the fifth toe being clawless. Thus, Marcgrave probably was referring only to the hind limbs.

The (natural) size of the drawing points to a juvenile specimen of *P. nasutus* (Schweigger), a species inhabiting pools and slow flowing water in South America east of the Andes, south to Paraguay.

Guambayacuati.— *Diodon hystrix* Linnaeus, 1758

Handbook, 1: 304?; Theatrum, 1: 97?; Marcgrave, 1648: 158, 159 (fig.); Marcgrave, 1942: [LVI (note 382)]; Piso, 1658: 300 (fig.); Piso, 1957: [623 (fig.)]; Linnaeus, 1758: (335); Linnaeus, 1766: (413); Lichtenstein, 1829: 55; Lichtenstein, 1961: 123, [240, 300 (note 198)]; Wagener, 1964: 185 (fig. 9), [234, 342]

Annotations: "304. Guambayacuati 1,5 fuss lang u. 1 fuss dicke" (1,5 foot long and 1 foot thick).

The very faint sketch represents a member of the family Diodontidae and, considering the apparently rather long and slender spines (a feature badly represented in the quite similar upside-down Marcgrave woodcut), evidently a *Diodon*, though Marcgrave's text clearly describes a *Chilomycterus*. Of the two representatives known from the Brazilian coast, *D. hystrix* Linnaeus and *D. holacanthus* Linnaeus, the size and distribution of spines in *hystrix* seems to show the best agreement with the drawing. Though the evidence is not conclusive, this confirms the generally adopted interpretation of Marcgrave's species. See also the text to folios 62 and 63.

Together with the Marcgrave woodcut, the present sketch also shows a remarkable similarity to the picture in the Handbook (as found by comparison with a photographic copy) and with Wagener's illustration, even in details, which can hardly be considered accidental.

Linnaeus did not include a reference to Marcgrave among the listed publications added to his description of this well known species.

According to Fowler (1941: 183) and Carvalho & Sawaya (in Marcgrave, 1942) the species is known by the vernacular names "Baiacú (de espinho)" and "Mamaiacú de espinho". Wagener records "Paijagúuara" and Cristóvão de Lisboa (1967: 69, pl. 24) "Baiaquutim". The species occurs in the western Atlantic from Massachusetts to Brazil.

Similar fish occur on the tapestries "Le cheval rayé" and "Les chasseurs", of both "Indes" series

Pira ixanga.— *Epinephelus guttatus* (Linnaeus, 1758)

Handbook, 1: 306; Theatrum, 1: 107; Marcgrave, 1648: 152 (fig.); Marcgrave, 1942: [LV (note 363)]; Piso, 1658: 52 (fig.); Piso, 1957: [136 (fig.)]; Linnaeus, 1758: (292); Linnaeus, 1766: (486); Lichtenstein, 1822: 285; Lichtenstein, 1961: 113, [229, 296 (note 183)]; Wagener, 1964: 186 (fig. 13), [236, 344]

Annotations: "306. Pira ixanga 2 fuss lang" (2 feet long).

Marcgrave's description and quite similar woodcut illustration, as well as Bloch's (1790: 88) description and modified (cf. Valenciennes, 1828: 384) reproduction of the



Handbook plate (pl. 241, *Holocentrus punctatus* Bloch), were the bases for *Serranus pixanga* Valenciennes. Both *H. punctatus* and *S. pixanga* have since been relegated to the synonymy of *Epinephelus adscensionis* (Osbeck). As the figures provided by Marcgrave and Bloch do not show the striking characteristic of partly very intense black saddles on back and dorsal peduncle, an identification with *Epinephelus guttatus* (Linnaeus) seems more likely, as confirmed by the similarity shown by a coloured picture of *guttatus* in Randall (1968: 58, fig. 62). Judging by Randall's description, the yellowish-white ground colour (Marcgrave, Bloch) also fits *guttatus* rather than *adscensionis* ("light olivaceous with small scattered pale blotches"), the only aberrant character being the lack of a dark marginal area on the soft dorsal fin. Similar illustrations, evidently from the same source, have been published by Rochefort (1665: 189) and Wagener, the last erroneously identified by Pinto (in Wagener) as *Alphestes afer* (Bloch). Puyo (1949: 223) reproduced the Rochefort picture (fig. 117), stating in the legend rather uncritically "sans doute *Epinephelus adscensionis*".

This species, with related forms, is known by the vernacular name "Garoupa". Pinto (in Wagener) notes that the name "Pixanga", or rather "Pixana", is the local Amerindian name for cat, which explains Wagener's name "Peixe Gate" (= Peixe gato). *Epinephelus guttatus* occurs in the western Atlantic from North Carolina to Brazil.

Bloch's better original picture of *Holocentrus punctatus* still exists in Berlin, while Wagener's manuscript picture was first published both by Thomsen (1938, fig. 28) and by Wegener (1938, p. 30). Similar fish occur on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

Paru.— *Pomacanthus paru* (Bloch, 1787)

Handbook, 1: 308; Theatrum, 1: nil; Marcgrave, 1648: 144 (fig.); Marcgrave, 1942: [LII (note 336)]; Piso, 1658: 55 (fig.); Piso, 1957: [141 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 274; Lichtenstein, 1961: 102 [216, 292 (note 162)]; Wagener, 1964: nil

Annotations: "308. Paru 2 fuss lang u. mehr advenant" (2 feet long and more occurs).

Although the Marcgrave woodcut lacks the preopercular spine, it shows a remarkable similarity to the present picture and has hitherto correctly been interpreted as representing a member of the subfamily Pomacanthinae. As Bloch (1787: 57, pl. 197) claims to base his *Chaetodon paru* on a picture in the Handbooks, and provides an illustration closely resembling the present drawing, it seems clear that all these pictures portray the same species, *Pomacanthus paru* Bloch. This is confirmed by the coloration in the Leiden Museum copy of Marcgrave, which shows the yellow-edged scales of the body and peduncle and the yellowish band across the pectoral base (as illustrated by Randall, 1968: 183, fig. 206), which also agrees with Marcgrave's description. These characteristics rule out *P. arcuatus* (Linnaeus), an identification suggested by Carvalho & Sawaya (in Marcgrave) and Pinto (in Lichtenstein). Only the stated size (two feet) seems to point to *arcuatus* rather than *paru* (total length up to about 40 cm), but whoever added the caption probably did not distinguish the two species.

The species is still known by the vernacular name of "Paru" (Jordan, Evermann

& Clark, 1930: 360) and occurs along the American coasts from New Jersey to near São Paulo, Brazil. The name "Paru" also occurs on folio 68, but there represents a different species, presumably *Holacanthus tricolor* (Bloch), of the same subfamily.

Uribaco.— *Anisotremus virginicus* (Linnaeus, 1758)

Handbook, 1: 310; Theatrum, 1: 181 (not 189, 191?); Marcgrave, 1648: 147 (fig.); Marcgrave, 1942: [LIV (note 351)]; Piso, 1658: 52 (fig.); Piso, 1957: [136 (fig.)]; Linnaeus, 1758: (281); Linnaeus, 1766: (472); Lichtenstein, 1822: 280; Lichtenstein, 1961: 108, [223, 294 (note 173)]; Wagener, 1964: nil

Annotations: "310. Vribaco 1,5 fuss lang" (1,5 foot long).

The original figure of *Perca juba* Bloch (1792, pl. 308 fig. 2) was made, with some modifications especially in colour and markings (cf. Lichtenstein), after the Handbook picture, which with Marcgrave's description and similar illustration was Bloch's only source of information. It closely agrees with the present drawing and evidently portrays the same species, now named *Anisotremus virginicus* (Linnaeus). A thorough account of the liberties taken by Bloch, with regard to the coloration, is given by Valenciennes (1830: 280-283). Both Lichtenstein and Valenciennes record the Handbook fish as named "Uribaco", but Marcgrave uses the vernacular name "Guatucupa Juba", from which Bloch must have taken his specific name. Judging by the index to volume 1 of the Theatrum, of which a photographic copy is available, the "Guatucupa-juba" was pictured on p. 181, probably representing the present species; the "Uribaco" on p. 189 and 191 is presumably the "Uribaco" sensu Marcgrave (1648: 177). The "Guatucupa" of Marcgrave (1648: 177), discussed in the text to folio 75, evidently is a different species.

The porkfish, *Anisotremus virginicus*, with the characteristic dark markings and yellow stripes (also shown in the present sketch), appears to be known now by the vernacular names "Salema" (Fowler, 1941: 162) and "Catalineta" (Jordan, Evermann & Clark, 1930: 332). It occurs in the western Atlantic from Florida to the Brazilian coast.

Bloch's original manuscript picture of *Perca juba* still is in Berlin; since he refers to plate 311 of the "Handbook", there may have been two pictures. A similar fish occurs on the tapestries "Le roy porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

Acarauna.— *Acanthurus bahianus* Castelnau, 1855

Handbook, 1: 312; Theatrum, 1: 141; Marcgrave, 1648: 144 (fig.); Marcgrave, 1942: [LII (note 338)]; Piso, 1658: 55 (fig.); Piso, 1957: [142 (fig.)]; Linnaeus, 1758: nil; Lichtenstein, 1822: 274; Lichtenstein, 1961: 102, [216, 292 (note 164)]; Wagener, 1964: nil

Annotations: "312. Acarauna 2 fuss lang ist gelblich von farben, hatt bey nahe eines menschen angesicht" (2 feet long is yellowish in colour, has almost a human face).

Considering the technical limitations of woodcuts, and discounting the addition of very oversized scales, the similarity of the drawing to the Marcgrave illustration is very close. Quite distinct is the large lateral spine on the caudal peduncle, missing in

the woodcut though described in Marcgrave's text, an omission that must have posed problems to some authors. However, Lichtenstein had already observed that the Handbook picture, though otherwise quite similar, distinctly shows the spine, and Valenciennes (1835: 177) tentatively identified the fish as an *Acanthurus* species. The species here represented therefore undoubtedly belongs to the surgeonfishes (Acanthuridae) and, considering the rather elongated shape, the deeply lunate caudal fin and the lack of transverse lines on the flanks, presumably is *Acanthurus bahianus* Castelnau, be it a rather melanistic specimen judging by Marcgrave's description and the coloured picture in the Leiden copy of his book.

I found no recent records of the name "Acarauna"; it now appears to be known by the vernacular name of "Barbeiro" or "Barbero" (Fowler, 1941: 170; Jordan, Evermann & Clark, 1930: 363). It occurs in the western Atlantic from Massachusetts to southern Brazil.

### Folio 17

Reriapiya.— *Lepas hillii* (Leach, 1818) and *Conchoderma virgatum* (Spengler, 1790)

Handbook, 1: 314; Theatrum, 1: 13; Marcgrave, 1648: 188 (fig.); Marcgrave, 1942: [LXIV (note 482)]; Piso, 1658: nil; Linnaeus, 1758: (668) (partly); Linnaeus, 1767: (1109) (partly); Wagener, 1964: 189 (fig. 24), [189, 348]

Annotations: "p. 314. Reriapiya so gross alss das leben henckt sich mit solcher macht an die schiffe dass ein schiff nicht segeln kan, werden lang halsen genannt u. ist bey den muscheln ein lebendiges thier". (natural size; attaches itself in such large numbers to ships that these cannot sail; they are named "Langhalzen" [by the Dutch] and the shell-bearing part is very active).

Since for these (and most subsequent) crustaceans pictured here extensive information is available, warranting a much more thorough treatment than befits the present preliminary reviews, a detailed coverage of these by Dr L.B. Holthuis is published in a separate paper on the Marcgrave crustaceans. Therefore here and for the following crustacean species only the correct name, the basal references and the annotations are given.

Potiquiquiya.— ?*Parribacus antarcticus* (Lund, 1793)

Handbook, 1: 316; Theatrum, 1: 313?, 315?, 335 (2nd fig.)

Annotations: "p. 316. Potiquiquiya ein krebs so gross alss das leben ist, schwartz ehe er gesotten wirdt" (a lobster, natural size, black before it is cooked).

No figure is given. This species is discussed in a forthcoming paper on the Marcgrave crustaceans.

Panapana.— *Sphyrna lewini* (Griffith & Smith, 1834)

Handbook, 1: 318; Theatrum, 1: 63; Marcgrave, 1648: 160; Marcgrave, 1942: [nil]; Piso, 1658: 50 (fig.);

Piso, 1957: [132 (fig.)]; Linnaeus, 1758: nil; Lichtenstein, 1829: 57; Lichtenstein, 1961: 125, [245, 301 (note 201)]; Wagener, 1964: 184 (fig. 2), [229, 337]

Annotations: "318. Panapana ist wol 6 shuh lang" (attains a length of 6 feet).

This drawing is similar to Wagener's illustration and obviously stems from the same source. It represents a hammerhead shark but, considering the median concavity of the anterior head outline, the identification with the common *Sphyrna zygaena* (Linnaeus) must be erroneous. Moreover, that species probably does not occur in the area, or rarely, having an antitropical distribution and being apparently absent from the intervening warmer areas (Gilbert, 1967: 71, 76). It must portray either *S. mokarran* (Rüppell), if the pointed shape of the pelvics is correctly drawn, or, more likely, *S. lewini* (Griffith & Smith) considering the relative height of the first dorsal fin (compared with body height), the long second dorsal fin distinctly reaching beyond the anal fin, and possibly the head shape, although the pelvics should be tipped more bluntly. As it also appears to be the more abundant in the area, I tentatively identify the picture as *Sphyrna lewini*. It occurs in the western Atlantic from the United States to southern Brazil, probably with the exception of the warmer parts. I am not acquainted with a recent vernacular name for this species; possibly it is not distinguished from *S. zygaena* and is also called "Peixe-martelo" or "Cornuda" (Fowler, 1941: 129).

It is remarkable that Marcgrave mentions only passingly the "Panapana" as a comparable species in his description of a sawfish, without providing either description or picture. On the other hand, he twice records in some detail the related shovel-head shark, *S. tiburo* Linnaeus (1648: 172, 181), each time with almost identical descriptions and Dutch vernacular names ("Cruysheye", "Cruyshaye"), a fact overlooked by Carvalho & Sawaya (in Marcgrave, 1942: LIX (note 424), LX (note 451)), leading to misinterpretation.

The corresponding "Handbook" picture (318) has already been discussed by Schneider (1786: 276).

Guanhumi.— *Cardisoma guanhumi* Latreille, 1828

Handbook, 1: 320; Theatrum, 1: 355, 359; Marcgrave, 1648: 185 (fig.); Marcgrave, 1942: [LXII (note 466)]; Piso, 1658: 77 (fig.); Piso, 1957: [186 (fig.)]; Wagener, 1964: 189 (fig. 25), [242, 349]

Annotations: "p. 320. Guanhumu so gross als ein ordinari krab roht" (the size of a common crab[.] red [if transliteration is correct]).

A detailed discussion is given in a separate forthcoming paper on the Marcgrave crustaceans.

Jacitata.— ?

Handbook, 1: 322; Theatrum, 1: 5

Annotations: "p. 322. Jacitata 2 od. 3 spann lang hatt auch leben [?]" (2 or 3 span long has also life [?, possible incomplete]).

Unfortunately, no accompanying figure is given here. The vernacular name Jacitataguaçu, see folio 139, concerns a starfish.

### [Folio 17A]

Judging by the interrupted series of page references added to the figures (322-332), again a page seems to be missing here, probably with pictures of the following species:

p. 324	Tamarû	<i>Lysiosquilla scabricauda</i> (Lamarck, 1818)
p. 326	Guaiã apára	<i>Calappa ocellata</i> Holthuis, 1958
p. 328	Aratû péba	<i>Persephona mediterranea</i> (Herbst, 1794)
p. 330	Bett...? (illeg.)	<i>Astrophyton muricatum</i> (Lamarck, 1816)

### Folio 18

Narinari.— *Aetobatus narinari* (Euphrasen, 1790)

Handbook, 1: 332; Theatrum, 1: 31; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 433)]; Piso, 1658: 58 (fig.), 293 (idem fig.); Piso, 1957: [148, 609 (figs.)]; Linnaeus, 1758: nil; Lichtenstein, 1822: nil; Wagener, 1964: 187 (fig. 17), [239, 346]

Annotations: "332. Narinari 3 fuss lang der schwantz 6 oder 8 ist sehr stachlicht" (3 feet long, the tale 6 or 8, is very spiny).

The drawing shows a very close agreement with the illustration in the Handbook (reproduced by Gudger, 1912: 267, fig. 3) and those given by Marcgrave (twice copied by Piso) and by Wagener, which proves a mutual origin. The identification of the species apparently never caused any problem: *Aetobatus narinari* Euphrasen. The blue ground colour of the upper surface, also found in the Leiden coloured copy of Marcgrave, does not seem correct: Bigelow & Schroeder (1953: 458) describe it as olivaceous or chestnut brown.

Apparently, the name "Narinari" is no longer in use; in literature I found as vernacular names "Obispo" (Jordan, Evermann & Clark, 1930: 30) and "Raya-pintada" (Fowler, 1941: 132) or "Arraia-pintada". This circumtropical species has been recorded from the western Atlantic from Chesapeake Bay to Southern Brazil.

Cunapu.— *Epinephelus itajara* (Lichtenstein, 1822)

Handbook, 1: 336; Theatrum, 1: 113, 159, 221; Marcgrave, 1648: 146 (fig.), 169 (fig.); Marcgrave, 1942: [LVIII (note 413)]; Piso, 1658: 49 (fig.), 54 (fig.); Piso, 1957: [130, 141 (fig.)]; Linnaeus, 1758: 292 (error); Linnaeus, 1766: 486 (error); Lichtenstein, 1822: 278; Lichtenstein, 1961: 106, [221, 293 (note 169)]; Wagener, 1964: nil

Annotations: "336. Cunapu 8 fuss lang" (8 feet long).

It is clear that the figure species, though named "Cunapu", is identical with Marcgrave's "Cugupu-Guacu", considering the similarity of the figures (both with-

out pectoral fin) and the fact that in the index to vol. 1 of the *Theatrum* both names refer to the same page or plate, and with his badly illustrated "Juricapeba" (pictured in the *Theatrum* on plates 113 ad 159, cf. index to vol. 1).

Linnaeus referred this species to his *Perca guttata* by including Marcgrave's "Cugupu-Guacu" among his references. As both in the present caption and in Marcgrave's text a size is recorded of 6-8 feet, while Linnaeus' *guttata* (= *Epinephelus guttatus* (Linnaeus)) only reaches a size about two feet, Linnaeus' allocation must be incorrect. Besides this formidable size, in itself distinctive, also the morphology and the description of the colours and markings by Marcgrave leave no room for doubt about the identity: *Epinephelus itajara* (Lichtenstein). Randall (1968: 61) records a specimen of over 7 feet long, adding a picture showing a close agreement with the present drawings. *E. itajara* is also pictured on folio 79. The real *Epinephelus guttatus* also occurs in the present set (see text to folio 16), with the name "Piraixanga", but Marcgrave's (1648: 152) description is not referred to by Linnaeus. Further information may be found in the text to folio 79.

The slaty ground colour of the fish, with a reddish belly and red fins, differs from the orange colour with brown fins shown in the Leiden coloured Marcgrave copy. Presumably in this aspect both diverge from truth, but the orange version comes quite close to the brownish yellow recorded by Randall.

The species is one of several spotted seabasses called "Jacob Evertzen", after a pockmarked Dutch sailor of some renown. It is known by the vernacular names "Méro" and "Guasa" (Jordan, Evermann & Clark, 1930: 912; Fowler, 1941: 157), and occurs along the America Atlantic coast from Florida to Brazil.

The same, or a related species appears to occur on the tapestries "Le cheval rayé" and "Les chasseurs", of both versions.

Guaja.— *Mithrax hispidus* (Herbst, 1790)

Handbook, 1: 338; *Theatrum*, 1: 343; Marcgrave, 1648: 182, 183 (fig.); Marcgrave, 1942: [LXII (note 455)]; Piso, 1658: 75 (fig.); Piso, 1957: [182 (fig.)]; Wagener, 1964: nil

Annotations: "338. Guaja wie das leben" (natural size).

Treated in detail in a separate review of the Marcgrave crustaceans.

## Folio 19

Aipimixira.— *Bodianus rufus* (Linnaeus, 1758)

Handbook, 1: 340; *Theatrum*, 1: 201; Marcgrave, 1648: 145 (fig.); Marcgrave, 1942: [LIII (note 343)]; Piso, 1658: 52 (fig.); Piso, 1957: [136 (fig.)]; Linnaeus, 1758: (284); Linnaeus, 1766: (475); Lichtenstein, 1822: 276; Lichtenstein, 1961: 104, [218, 293 (note 168)]; Wagener, 1964: nil

Annotations: "340. Aipimixira wie karpers gross" (as big as carps).

This picture closely resembles the Marcgrave woodcut, which also has been used by Piso, and evidently by Rochefort (1665: 189, upper fig.). The colours are in quite close agreement with Marcgrave's description, with plate 223 by Bloch (1790; made after the Handbook picture) and, on the whole, with those shown by the illus-

tration in the Leiden coloured Marcgrave copy. Minor differences in the Marcgrave book are the occurrence of red dots of the posterior parts of the dorsal and anal fins, violet on the anterior part of the anal fin, a reddish upper head and mandible, and a white maxillary band, while it lacks the few vague blotches on the sides. The striking pattern, the colours and the described dentition confirm the now generally accepted interpretation: *Bodianus rufus* (Linnaeus), though remarkably Linnaeus did not include any reference to Marcgrave in his original text. The species is well described and illustrated by Randall (1968: 200).

The species is known by the local vernacular names "Pudiano" and "Perro colorado" (Jordan, Evermann & Clark, 1930: 425), or "Papagaio" (Fowler, 1941: 173). It has been recorded from along the American Atlantic coast from Bermuda and southern Florida to Rio de Janeiro.

The original of Bloch's picture still is in the Berlin Museum. A similar fish may be found on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

Piraquiba.— *Echeneis naucrates* (Linnaeus, 1758)

Handbook, 1: 343; Theatrum, 1: 65; Marcgrave, 1648: 180 (fig.); Marcgrave, 1942: [LX (note 447)]; Piso, 1658: nil; Linnaeus, 1758: (261); Linnaeus, 1766: (446); Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "343. Piraquiba 7 fuss lang" (7 feet long).

The drawing closely resembles the Marcgrave woodcut, showing a slender shape and an elongate disc with at least 20 laminae, which must represent *Echeneis naucrates* (Linnaeus), as understood by recent authors (Szidat & Nani, 1951; Strasburg, 1964). The fish is not coloured, but in the Leiden coloured copy of the Marcgrave book it is greenish blue with back and nape darker brown, with a dark dorsolateral line, a black margined white band from pectoral to anal fin, a bluish pectoral fin, and the other fins, the disc and the lower head and body beige. Comparison with pictures and descriptions shows these colours and marking to be highly speculative, if not mere phantasy. The size given in the caption must be a lapsus, the species rarely exceeding a length of 80 cm.

The species appears to be known by the vernacular names "Paga", "Pegador" or "Remora" (Jordan, Evermann & Clark, 1930: 448), and has been recorded from the American Atlantic coast from Cape Cod to Brazil.

Aratu.— *Goniopsis cruentata* (Latreille, 1803)

Handbook, 1: 348; Theatrum, 1: 347; Marcgrave, 1648: 185 (fig.); Marcgrave, 1942: [LXIII (note 467)]; Piso, 1658: 285, 299, 300 (not fig.); Piso, 1957: [592, 623]; Wagener, 1964: 190 (fig. 27), [243, 350]

Annotations: "348. Aratu so gross alss das leben" (natural size).

A detailed coverage of this and related pictures is given in a separate paper on the Marcgrave crustaceans.

Pirajecoa.— ?*Remora remora* (Linnaeus, 1758)

Handbook, 1: 350; Theatrum, 1: 11 ("Pirájecoa")

Annotations: "350. Pirajecoa henkt sich an die schiffen ist 2 od. 3 fuss lang" (attaches itself to ships, is 2 or 3 feet long).

The intended drawing is missing, but the annotation seems to point to a "Sucker" or "Remora, evidently different from the one represented under Handbook no. 343 ["Piraquiba", = *Echeneis naucrates* Linnaeus]. If this assumption is true, the name "Pirajecoa" must apply to a *Remora* species, of which *Remora remora* (Linnaeus), with a maximum length of over 30 inches, is the most frequent in the area. Unfortunately, the name "Pirajecoa" (or a similar vernacular name) could not be found in the consulted literature.

Ciri.— *Cronius ruber* (Lamarck, 1818)

Handbook, 1: 352; Theatrum, 1: 351; Marcgrave, 1648: 183 (fig.); Marcgrave, 1942: [LXXII(note 458)]; Piso, 1658: 76 (fig.); Piso, 1957: [184 (fig.)]; Wagener, 1964: nil

Annotations: "352. Ciri lebens gross sind auch wol grosser" (natural size[,] there are also larger).

This picture is dealt with in a forthcoming, separate paper on the Marcgrave crustaceans.

Jaboti.— *Testudo carbonaria* Spix, 1824

Handbook, 1: 356; Theatrum, 3: nil; Marcgrave, 1648: 241; Marcgrave, 1942: [LXXXIV (note 722)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 251; Lichtenstein, 1961: 91, [204, 290 (note 154)]; Wagener, 1964: 205 (left fig. 72), [255, 361]?

Annotations: "356. Jaboti lebensgrösse" (life size).

This incomplete sketch accurately portrays a juvenile specimen of *Testudo* (*Chelonoidis*) *carbonaria* Spix, as shown by the black head and limbs, which are covered with red spots, and by the hexagonal orange spots, surrounded by a black zone with concentric grooves, on the carapace. Marcgrave's description of the "Jaboti" completely agrees with the present picture, while differing from a second figure of a "Jaboti" on folio 22, which was used as an illustration by Piso (1658: 105). As pointed out in more detail in the text to folio 22, Piso appears to have misinterpreted Marcgrave's text or erroneously added an illustration based on the more complete sketch. Lichtenstein does not mention any picture of this species in the Handbooks or the Theatrum, only a figure similar to that on folio 22, which led him to misinterpret Marcgrave's "Jaboti".

*Testudo carbonaria* is found throughout tropical South America, east of the Andes, where it prefers open vegetation (savannah), but it is also found in forested areas. Together with the closely related *T. denticulata* Linnaeus, it is still known by the Brazilian vernacular name of "Jaboti" or "Jabuti".



Guebi.— *Fistularia tabacaria* Linnaeus, 1758

Handbook, 1: 360; Theatrum, 1: 73; Marcgrave, 1648: 148 (fig.); Marcgrave, 1942: [LIV (note 353)]; Piso, 1658: 62 (fig.); Piso, 1957: [157 (fig.)]; Linnaeus, 1758: (312); Linnaeus, 1766: (515); Lichtenstein, 1822: 281; Lichtenstein, 1961: 109, (225, 295 (note 175)); Wagener, 1964: 184 (fig. 4), [231, 339]

Annotations: "360. Guebi 5, 6, 7 oder 8 schuh lang" (5, 6, 7 or 8 feet long).

This figure closely agrees with those of the "Petimbuaba" by Marcgrave and Piso (which are identical), but in various aspects differs from Wagener's picture. This seems to show that Wagener not merely copied pictures but also provided original drawings. All represent the same species, *Fistularia tabacaria* Linnaeus, which confirms the current interpretation, but one may wonder why Linnaeus did not include Marcgrave among his references.

The vernacular name "Guebi" only occurs in Marcgrave, Lichtenstein, and the index to the Theatrum, the last of which also lists "Petimbuaba" with a reference to the same plate as indicated for "Guebi". As Piso, using Marcgrave's woodcut, also uses the name "Petumbuaba", it is clear that these are synonyms. *Fistularia tabacaria* is a littoral species, occurring along the tropical American east-coasts from New England and Bermuda to south-eastern Brazil, and reaching a length of at least six feet (excluding the caudal filament). Current vernacular names seem to be "Aguilhaõ", "Aguilhaõ-trombeta" or "Petumbo".

The Handbook plate of this species has already been discussed by Schneider (1786: 276).

## Folio 20

Araguagua.— *Pristis pectinata* Latham, 1794

Handbook, 1: 362; Theatrum, 1: 85; Marcgrave, 1648: 159 (fig.); Marcgrave, 1942: [LVI (note 384)]; Piso, 1658: 54 (fig.); Piso, 1957: [139, 140 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 57; Lichtenstein, 1961: 125, [244, 300 (note 200)]; Wagener, 1964: 187 (fig. 16), [238, 345]

Annotations: "362. Araguagua ein shwertfisch 6 od 7 shuh ohne den shwert welcher alleine 3 od 4 fuss lang is" (a swordfish 6 or 7 feet without the sword which alone is 3 or 4 feet long).

This picture closely resembles the Marcgrave woodcut, copied by Piso, but differs from Wagener's illustration. Lichtenstein mentions an "original", presumably in the Handbooks, but does not provide further information.

While the drawing shows only about 20 pairs of rostral teeth, and the Marcgrave woodcut 22/23, the Marcgrave text records 28 pairs of teeth. This we may assume to be the correct number, as the picture represents a sawfish without a lower caudal lobe, and no such species with about 20-23 pairs of teeth has been recorded from the area. Accepting the 28 pairs of rostral teeth, the species here portrayed must be *Pristis pectinata* Latham.

*P. pectinatus* is known from all warmer seas, in the western Atlantic from Florida to Brazil, especially in estuaries, and reaches a length of more than 5 m. As the species already measures about two feet at birth, Marcgrave's record of a "total length of one foot and seven inches" must be erroneous. The name "Peixe-serra"

probably applies to all *Pristis* species occurring along the Brazilian coast.

The sawfish figured by Wagener, with a distinct lower caudal lobe and 22/23 rostral teeth, must represent *P. perotteti* Müller & Henle, 1841.

Pirametara.— *Pseudupeneus maculatus* (Bloch, 1893)

Handbook, 1: 364; Theatrum, 1: 109; Marcgrave, 1648: 156, 181 (fig.); Marcgrave, 1942: [LVI (note 376)]; Piso, 1658: 60 (fig.); Piso, 1957: [152 (fig.)]; Linnaeus, 1758: nil; Lichtenstein, 1829: 52; Lichtenstein, 1961: 120, [238, 299 (note 193)]; Wagener, 1964: nil

Annotations: "364. Pirametara alss ein kleiner salm gross" (as big as a small salmon).

The picture almost wholly agrees with Bloch's (1793, pl. 348) illustration, made after the Handbook figure, and with the Marcgrave woodcut (copied by Piso). But Bloch has considerably increased the sizes of the fins, while in the uncoloured version the Marcgrave woodcut shows far smaller, roundish lateral spots. However, the coloured Marcgrave copy in Leiden shows complete agreement, both in the wholly red colour and in the enlarged dark ovate lateral blotches.

The identity of the fish here portrayed leaves no room for doubt: *Pseudupeneus maculatus* (Bloch), since the species was originally described after the Handbook picture and Marcgrave's information as given above.

The species reaches a size of 13 cm and occurs in the western Atlantic from Florida to Rio de Janeiro. With other goatfishes, it is probably known by the vernacular name "Salmonete" (Jordan, Evermann & Clark, 1930: 343).

The same species seems to occur on the tapestry "Le cheval rayé" (both series).

Aratu peba.— *Plagusia depressa* (Fabricius, 1775)

Handbook, 1: 366; Theatrum, 1: 349; Marcgrave, 1648: 183; Marcgrave, 1942: [LXII (note 457)]; Piso, 1658, nil; Wagener, 1964: nil

Annotations: "366. Aratu peba, lebensgross u. etlich grosser" (natural size and many larger).

An extensive discussion of the present and related pictures is published separately in a review of the Marcgrave crustaceans.

Tamoata.— *Callichthys callichthys* (Linnaeus, 1758)

Handbook, 1: 368; Theatrum, 1: 69; Marcgrave, 1648: 151 (fig.); Marcgrave, 1942: [LV (note 359)]; Piso, 1658: 71 (fig.); Piso, 1957: [175 (fig.)]; Linnaeus, 1758: 307; Linnaeus, 1766: 506; Lichtenstein, 1822: 283; Lichtenstein, 1961: 111, [227, 295 (note 180)]; Wagener, 1964: 185 (fig. 7), [233, 341]

Annotations: "368. Tamoata so gross alss die.... sein" (as big as....? are).

According to Lichtenstein, the Handbook picture (numbered 363, in error?), presumably similar to the present drawing, was the model for the Marcgrave woodcut, though with changes and additions made after an actual specimen. However, Bloch's plate (1794, pl. 377), claimed to be based on the Handbook figure, is quite different

while presumably representing the same species. If the Handbook picture was as vague as the present one, it is understandable that in the woodcut the adipose fin is shown rayed and that the ventral fin was overlooked. The Piso illustration, though much smaller, is rather similar, also lacking the ventral fin, and presumably was made after the Marcgrave woodcut. Wagener's illustration, however, shows the ventral fin as well as far more detail in the rest of the fish, but again the general aspect is much alike. A better picture of possibly the same species occurs on folio 90.

It is difficult to decide if the drawing represents a *Callichthys* or a *Hoplosternum* species, but the rather slender shape and the relatively short head seem to point to *Callichthys callichthys* (Linnaeus), in the original description of which Linnaeus referred to Marcgrave's description. Moreover, *C. callichthys* is still known by the vernacular name "Tamboatá" (Magalhães, 1931: 206), and as "Caboje", "Cascudo" or "Soldado". The species occurs in fresh water throughout tropical South America, east of the Andes, and reaches a length of almost 20 cm.

This species also may be found on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes). The Handbook plate also was discussed briefly by Schneider (1786: 276).

Guambayacuape.— *Acanthostracion quadricornis* (Linnaeus, 1758)

Handbook, 1: 372; Theatrum, 1: 41; Marcgrave, 1648: 142 (fig.); Marcgrave, 1942: [LI (note 331)]; Piso, 1658: 300 (fig.); Piso, 1957: [624 (fig.)]; Linnaeus, 1758: (331); Linnaeus, 1766: (409); Lichtenstein, 1822: 271; Lichtenstein, 1961: 101, [213, 291 (note 158)]; Wagener, 1964: nil

Annotations: "372. Guambayacuape 2 fuss gross u grösser die hat kan man [symbol, = not] durchstossen" (2 feet long and longer, one can not pierce the skin).

The present picture may well resemble the model for the Marcgrave woodcut, in which the dark median dorsal keel has been interpreted as a long and low first dorsal fin. The Marcgrave woodcut was also used by Piso, who, however, removed the horns to make it fit a second Marcgrave species ("Guamaiacu ape sine cornibus in fronte"); Wagener only treats the unhorned species (see text to folio 21). The drawing probably portrays *Acanthostracion quadricornis* (Linnaeus), in view of the rarity of the second Brazilian horned species, *A. polygonius* Poey, but it is remarkable that Linnaeus did not add a reference to Marcgrave in his original description.

*Acanthostracion quadricornis* [= *A. tricornis* auct.], reaching a size of about 40 cm, occurs along the Atlantic shores of America from Massachusetts to Brazil, and is known by the vernacular names "Taóca", "Peixe-boi" (Fowler, 1941: 182), or "Peixe Vaca" (= cowfish).

This species also occurs on the tapestry "Le cheval pommelé" (Nouvelles Indes).

## Folio 21

Guambayacuape.— *Lactophrys trigonus* (Linnaeus, 1758)

Handbook, 1: 374; Theatrum, 1: 41; Marcgrave, 1648: 142; Marcgrave, 1942: [LII (note 332)]; Piso, 1658: 300 (not fig.); Piso, 1957: [624 (not fig.)]; Linnaeus, 1758: (330); Linnaeus, 1766: (408); Lichtenstein, 1822: 272; Lichtenstein, 1961: 100, [214, 291 (notes 158,159)]; Wagener, 1964: 185 (fig. 6), [232, 340]

Annotations: "p. 374. Guambayacuape wie voriger" (as the previous).

This picture obviously portrays Marcgrave's second trunkfish species, of which he provides no woodcut illustration. Piso, evidently wanting to illustrate this species, merely uses a picture of the horned species (see folio 20) with the horns removed! Wagener's drawing is rather similar but differs in several details, thus was possibly not derived from the same source. Another drawing of the same species occurs on folio 52, but again shows some differences.

All these pictures (of course excepting Piso's) clearly represent the species *Lactophrys trigonus* (Linnaeus), appropriately named "Tryangel Fisch" (Triangle-fish) by Wagener. It may be added here that, possibly not wanting to decide on the scant description only, Linnaeus refrained from referring to Marcgrave. The species is known by the vernacular names of "Vaca-sem-chifre" (Fowler, 1941: 182), "Bauacú Caixão", "Cofre" or "Ostracião" (Carvalho & Sawaya in Marcgrave, 1942), and occurs in the western Atlantic from Massachusetts to Brazil, reaching a size of about 45 cm.

Guapua.— *Antennarius multiocellatus* (Valenciennes, 1837)

Handbook, 1: 378 (also 2: 361, 368?); Theatrum, 1: 23?; Marcgrave, 1648: 150 (fig.); Marcgrave, 1942: [LIV (note 357)]; Piso, 1658: nil; Linnaeus, 1758: nil; Lichtenstein, 1822: 283; Lichtenstein, 1961: 111, [227, 295 (note 178)]; Wagener, 1964: nil

Annotations: "378. Guapua ein fuss gross auch kleiner" (one foot long also smaller).

This picture may well represent the same species as the Marcgrave woodcut which, however, appears to have been added by the editor Johannes de Laet, who took it from a chapter on Brazilian fishes in his "Novis orbis seu descriptionis Indiae Occidentalis" (1633: 574; reference cf. Lichtenstein). Piso does not record this species, which seems to confirm that he had no access to the original drawing or considered the species medically or gastronomically unimportant.

Valenciennes (1837: 416, 417), who examined the Handbook and Theatrum pictures, considered them to represent two new species: *Chironectes principis* and *Ch. mentzelii*, while he and later authors identified Marcgrave's species as either *Antennarius scaber* (Cuvier) or *Histrio histrio* (Linnaeus). Considering the coloration and the long illicium, however, the present picture and De Laet's woodcut in Marcgrave more likely represents *Antennarius multiocellatus* (Valenciennes), of which according to Schultz (1957: 94) both *principis* and *mentzelii* are synonyms; however, Pietsch & Grobecker (1987: 56) consider *mentzelii* a synonym of *A. striatus* (Shaw & Nodder). For another picture representing a similar species, see folio 46.

Marcgrave uses also the slightly different vernacular name "Guaperua", but for an entirely different species represented in the present set of drawings on folios 69 and 70. I found no recent record of the name "Guapua", and the present species appears to be known by the vernacular name "Martin pescador" (Jordan, Evermann & Clark, 1930: 506).

The same or a similar species occurs on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), as well as on both versions of "Les chasseurs".

*Pira aca*.— ?*Monacanthus varius* Ranzani, 1842

Handbook, 1: 380; Theatrum, 1: 33; Marcgrave, 1648: 154 (fig.); Marcgrave, 1942: [LV (note 368)]; Piso, 1658: nil; Linnaeus, 1758: 328 (error); Linnaeus, 1766: 405 (error); Lichtenstein, 1822: 287; Lichtenstein, 1961: 115, [232, 297 (note 187)]; Wagener, 1964: 185 (fig. 8), [234, 342]

Annotations: "380. *Pira aca* 1 fuss gross" (1 foot long).

This picture is quite close to the Marcgrave woodcut, and probably represents the same species. Lichtenstein already convincingly disposed of the original attribution of this Marcgrave species by Linnaeus to his *Balistes tomentosus*, and by subsequent authors to *B. tomentosus* sensu Bloch. More recent authors referred it to *Monacanthus ciliatus* (Mitchill), which however is stated to have enlarged spines on the caudal peduncle (not mentioned or depicted by Marcgrave) and to reach a size of only 5.2 inches (Randall, 1968: 265). Pinto (in Wagener) presumes it to represent *M. hispidus* (Linnaeus), which indeed would be the most likely interpretation if we accept that the portrayed species indeed lacked peduncular patches of bristles, but according to Fraser-Brunner (1940: 534) that species apparently does not venture farther south than the Caribbean (a statement evidently overlooked or not shared by Randall, 1968: 267). Therefore, the only remaining possibility seems to be *Monacanthus varius* Ranzani, sensu Fraser-Brunner (1940: 532, fig.), though Berry & Voegelé (1961: 70) consider that species not convincingly defined.

*M. varius* (usually not distinguished from *M. hispidus*) appears to be known by the vernacular names "Lija", "Peixe-porca" and "Negro-mina" (Jordan, Evermann & Clark, 1930: 494; Fowler, 1941: 181). According to Fraser-Brunner it inhabits the equatorial Atlantic, from West Africa to Brazil.

A similar fish may be found on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

*Guambajacuati*.— ?*Chilomycterus atinga* (Linnaeus, 1758)

Handbook, 1: 382; Theatrum, 1: 95-97 (partly?); Marcgrave, 1648: 168 (fig.); Marcgrave, 1942: [LVIII (note 410)]; Piso, 1658: 299 (fig.); Piso, 1957: [621 (fig.)]; Linnaeus, 1758: (334); Linnaeus, 1766: (412); Lichtenstein, 1829: 55-56; Lichtenstein, 1961: 123-124, [242-243]; Wagener, 1964: nil

Annotations: "382. *Guambajacuati* 1 fuss rundt" (about 1 foot).

The drawing shows a considerable similarity to the picture on folio 63, the legend of which proves that the names "Guambaiaquate" (or "Guambajacuati" as used here) and "Guamajacu-atinga" are synonyms, which was not realized by Lichtenstein. There is, however, little similarity with the Marcgrave woodcut (copied by Piso with a few round spots added) of the "Guamaiacu Atinga", which may well be caused by the fact that here evidently a juvenile example is depicted. Therefore, though the present picture offers little to go by, it may tentatively be identified as a juvenile *Chilomycterus atinga* (Linnaeus), of which species Marcgrave's woodcut could represent an adult. It is strange that Linnaeus, while adopting Marcgrave's name, does not include that author's book among his references.

*Chilomycterus atinga* apparently is still known by the vernacular name "Atinga" (Jordan, Evermann & Clark, 1930: 502). The species presumably occurs in the western Atlantic from Florida to as far south as Brazil.

Similar fish occur on the tapestries "Le cheval rayé" (both series), "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), and "Les chasseurs" (both series).

Potiqqya.— *Panulirus echinatus* Smith, 1869

Handbook, 1: 384; Theatrum, 1: 313?, 315?, 335?; Marcgrave, 1648: 185 (fig.p.186); Marcgrave, 1942: [LXIII (note 470)]?; Piso, 1658: 77 (fig.); Piso, 1957: [187 (fig.)]?; Wagener, 1964: nil

Annotations: " 384. Potiqqya [= Potiquiquiya?] vier span lang" (four spans [= 36 inch or 90 cm] long).

Figure missing. This species is dealt with in a separate paper covering the Marcgrave crustaceans.

(no vernacular name).— *Nomeus gronovii* (Gmelin, 1788)

Handbook, 1: 386; Theatrum, 1: ?; Marcgrave, 1648: 152 (fig.); Marcgrave, 1942: [LV (note 364)]; Piso, 1658: nil; Linnaeus, 1758: nil; Lichtenstein, 1822: 285; Lichtenstein, 1961: 113, [230, 297 (note 184)]; Wagener, 1964: nil

Annotations: " 386. wie ein salm" (as a salmon).

The picture closely agrees with the Marcgrave woodcut, and must stem from the same source. Comments on this Marcgrave species were given by Lichtenstein and by Valenciennes (1833: 245), who identified it as *Nomeus mauritii* (Bloch & Schneider). In fact *N. mauritii* was based on Marcgrave's information on the present species, but the name has since been relegated to the synonymy of *N. gronovii* (Gmelin). It is a species of the warmer Atlantic and Indo-Pacific oceans, where it lives in association with the epipelagic siphonophore *Physalia* or "Portuguese man-of-war", as also stated by Marcgrave: "Victitat venenatis illis Besaenen". Jordan, Evermann & Clark (1930: 268) record the vernacular name "Pastor".

The same species seems represented on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

Jetimixira.— *Halichoeres radiatus* (Linnaeus, 1758)

Handbook, 1: 388; Theatrum, 1: 199; Marcgrave, 1648: 146 (fig.); Marcgrave, 1942: [LIII (note 344)]; Piso, 1658: 53 (fig.); Piso, 1957: [138 (fig.)]; Linnaeus, 1758: (288); Linnaeus, 1766: (472); Lichtenstein, 1822: 277; Lichtenstein, 1961: 105, [220, 293 (note 168)]; Wagener, 1964: nil

Annotations: " 388. Jetimixira wie ein karb" (as a carp).

The picture closely agrees with the Marcgrave woodcut (copied by Piso), and is also similar to the figure on folio 81. Here, the fish is yellowish, with blue belly, caudal fin and longitudinal bands on the dorsal fin, thus differing strongly from the blue reticulated fish in the Leiden coloured copy of Marcgrave. The species was described by Bloch (1791: 125) as *Labrus brasiliensis*, illustrated by a badly modified copy of the Handbook picture, and by Valenciennes (1839: 402) as *Julis principis*, in honour of Johan Maurits. The current name is *Halichoeres radiatus* (Linnaeus), as seems con-

firmed by Randall (1968: 204, fig. 228), who published a similarly coloured picture of the species. It occurs in the western Atlantic from North Carolina to Brazil, reaching a length of about 45 cm. It appears to be still known by the Marcgrave name, "Pudiano verde", or as "Doncella" (Jordan, Evermann & Clark, 1930: 426).

Bloch's original drawing of *Labrus brasiliensis* still is in Berlin. The present or (a) similar species also occurs on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes).

Miivipira.— *Dactylopterus volitans* (Linnaeus, 1758)

Handbook, 1: 390; Theatrum, 1: 103; Marcgrave, 1648: 162 (fig.); Marcgrave, 1942: [LVII(note 391)]; Piso, 1658: 61 (fig.); Piso, 1957: [154 (fig.)]; Linnaeus, 1758: (302); Linnaeus, 1766: 498; Lichtenstein, 1829: 61; Lichtenstein, 1961: 129, [249, 302 (note 207)]; Wagener, 1964: 184 (fig. 5), [232, 340]

Annotations: " 390. Miivipira ein fliegender fisch so lange die fluegel nass sein kan er ausser dem wasser fliegen gross wie ein hering fliegen mit viel 100 zugleich aus dem wasser alss sie von andere fische verjagd werden, fallen ofter in die schiffe" (a flying fish as long as the wings remain wet he can fly outside the water, as big as a herring, fly with many 100 together out of the water when hunted by other fishes, fall often on the ships).

Though this picture shows some resemblance to the Marcgrave woodcut (copied by Piso), which has the right pectoral strongly enlarged and a different first dorsal fin, it appears in some respects much closer to Wagener's illustration, although the differences seem too great to be certain of a common source. Also the colours, bluish with a yellow eye, do not agree with those shown in the Leiden coloured copy of Marcgrave: beige, with a brownish head, white belly, yellow lower jaw and second dorsal fin, bluish first dorsal fin. The species portrayed has invariably been identified as *Dactylopterus volitans* (Linnaeus). It has been recorded from the tropical and temperate Atlantic along the American coasts from Massachusetts to Argentina, where it reaches a length of over 30 cm. It is interesting to note that, according to a photographic copy of the index to vol. 1 of the Theatrum, both the vernacular names "Miivipira" (as recorded by Marcgrave) and "Pirabebe" (recorded by Marcgrave and Piso) are referred to plate 103. These names seem no longer in use for the present species, which appears to be known by the vernacular names of "Coio", "Voador" (Fowler, 1941: 172), "Volador" and "Murcielago" (Jordan, Evermann & Clark, 1930: 409). The species is also represented on folio 65.

Evidently the information on the habits provided in the annotations, though in accordance with those in Marcgrave, must concern an exocoetid fish, since the heavy-bodied *Dactylopterus* is unable to fly.

Folio 22

Guacari.— *Pterygoplichthys etentaculus* (Spix, 1829)

Handbook, 1: 392; Theatrum, 1: 51?, 53; Marcgrave, 1648: 167 (fig.); Marcgrave, 1942: [LVIII (note 405)]; Piso, 1658: 72 (fig.); Piso, 1957: [177 (fig.)]; Linnaeus, 1758: nil; Lichtenstein, 1829: 64; Lichtenstein, 1961: 132, [253, 305 (note 217)]; Wagener, 1964: nil

Annotations: "392. Guacari wie ein baars gross" (as large as a perch).

There is a striking similarity between the picture and the Marcgrave woodcut (copied by Piso), so these must have a common source. The name "Guacari", or variations thereof, is still used for *Hypostomus* species, but the fish portrayed here differs from these by having a larger dorsal fin with more rays, thereby better fitting the related genus *Pterygoplichthys*. As pointed out by Valenciennes (1840: 499), the Marcgrave woodcut (and as a consequence the present picture) presumably represent his *Hypostomus duodecimalis* [= *Pterygoplichthys etentaculus* (Spix)].

Lichtenstein, presuming the Marcgrave illustration to show errors in the representation of the fins, identified the species as *Hypostomus plecostomus* (Linnaeus), stating that he found it more accurately depicted on plate 392 of the Handbook. This seems to imply that the Handbook picture indeed represents a *Hypostomus* species, but certainly not *H. plecostomus* as that species apparently does not occur in the area here considered (Boeseman, 1968: 13, 35). However, during a visit to Cracow, I found the Handbook fish to have a large dorsal fin (D 11), as correctly copied in the Marcgrave woodcut and about as shown here. It is interesting to note that both Marcgrave and Lichtenstein record a second species of "Guacari", presumably illustrated on plate 300 of vol. 1 of the Theatrum, but I found no such reference to this "Guacari secunda species" in a photographic copy of the index to that Theatrum volume, although "Guacari" pictures are stated to occur on two plates: 51 (missing) and 53. See also text to folio 56.

The species is known by the vernacular names "Panaque" and "Coroncho" (Fowler, 1954: 205), and occurs in north-eastern Brazil (Rio São Francisco), in the formerly Dutch area.

There is a very close resemblance with a fish occurring on the tapestry "Les chasseurs" (both versions).

Puraque.— *Rhinobatos percellens* (Walbaum, 1792)

Handbook, 1: 394; Theatrum, 1: 33; Marcgrave, 1648: 151 (fig.); Marcgrave, 1942: [LV (note 361)]; Piso, 1658: 301 (fig.); Piso, 1957: [625 (fig.)]; Linnaeus, 1758: nil; Lichtenstein, 1822: 283; Lichtenstein, 1961: 111, [228, 296 (note 181)]; Wagener, 1964: nil

Annotations: "394. Puraque welcher von diesen fisch esset wirdt ganz nährisch davon bleibt auch also biss der fisch verzehret ist, alss dann gehets über" (whoever eats of this fish becomes quite peevish which remains until the fish is digested, then it passes).

This picture shows a very close similarity to the Marcgrave woodcut (copied by Piso), which surely points to a common source. Lichtenstein, who evidently overlooked pertinent publications by Walbaum (1792: 525) and Schneider (1786: 275), was unable to identify Marcgrave's species and presumed it new. It seems, however, that Walbaum wholly based his *Raja percellens* on Marcgrave's information, while the species now known as *Rhinobatos percellens* is the only rhinobatid form in the area here considered that agrees both in shape and coloration.

*Rhinobatos percellens* is a littoral species of the warmer western Atlantic, from the Caribbean to southern Brazil. Fowler (1941: 130) records the vernacular name "Vióla"; Jordan, Evermann & Clark (1930: 23) still use "Puraque".



A similar fish, mostly hidden by a large sea-bass, *Epinephelus itajara* (see folio 79), seems represented on the tapestries "Le cheval rayé "(Anciennes Indes)" and "Le cheval pommel  "(Nouvelles Indes)".

Jaboti.— *Testudo geometrica* Linnaeus

Handbook, 1: 396; Theatrum, 3: nil; Marcgrave, 1648: 241; Marcgrave, 1942: [LXXXIV (note 722)];Piso, 1658: 105 (fig.); Piso, 1957: [246-7 (fig.)]; Linnaeus, 1758: (199, Piso); Linnaeus, 1766: (353, Piso); Lichtenstein, 1822: 251; Lichtenstein, 1961: 91, [204, 290 (note 154)]; Wagener, 1964: 205 (right fig.72), [255, 361]

Annotations: " 396. Jaboti lebensgross" (life size).

The picture represents an incomplete sketch of the carapace of a tortoise, with head and limbs only vaguely indicated in pencil. The pattern of yellow lines, which form rhomboid and triangular shapes, with large yellow patches in the centres of the horny scutes from which a number of lines radiate, is characteristic of the South African species *Testudo (Psammobates) geometrica* Linnaeus, restricted to the south-western part of Cape Province. The pattern shown here closely resembles that of a specimen depicted by Rau (1969, fig. 9). In former days, the natives of Cape Province used to work up carapaces of these tortoises, with a carapace length of 5-10 cm, to be used as vanity cases. Rau mentions seven of these objects, made of carapaces of *T. geometrica*, in the collection of the Senckenberg Museum at Frankfurt, presumably made in the Cape Province during the period just after the first settlers started to invade the country. Ships returning from or via the Cape to Europe frequently called at harbours in Brazil. Therefore it does not seem too far-fetched to assume that at a time when both the Cape and north-eastern Brazil were in Dutch hands such vanity cases reached Recife, one of which becoming the model for the present picture. This would also explain the sketchy representation of head and feet, as these most probably were just made up to complete the picture of the tortoise. Unfortunately, the added head and legs belonged to a turtle, not a tortoise. It may be added here that the size of the depicted carapace, 7.5 cm, is perfectly within the size range of carapaces used for the fabrication of vanity cases.

The vernacular name added to the picture is used for both the indigenous species of tortoises recorded from Brazil, *Testudo (Chelonoides) carbonaria* Spix and *T. (Ch.) denticulata* Linnaeus, none of which fit the present figure: *T. carbonaria* has a blackish carapace with yellow spots in the centres of the horny scutes, while *T. denticulata* has a brown carapace with the lighter spots in the centres of the horny scutes hardly discernible.

The illustration of the "Jaboti" (or "Iaboti") by Piso closely resembles the present sketchy picture, being only slightly more stylised and in reverse, but with the pattern of the light lines (yellow in the present figure) exactly matching. Piso's illustration also shows head, legs and tail, but these are clearly added after an aquatic turtle as has already been pointed out. Marcgrave did describe a "Jaboti", but no illustration was added. The most informative part of the description reads: "Testa nigra est tecta, cui multae figurae hexagonae sunt insculptae" (carapace black covered with many engraved hexagonal figures), which seems to point to *T. carbonaria* Spix, a species with hexagonal scutes on the carapace showing deep concentric grooves caused by

growth. Piso (1658: 106) appears to have misinterpreted Marcgrave's description of the "Jaboti", believing that he was describing the colour pattern of the carapace and consequently used the present picture of *T. geometrica* Linnaeus in combination with Marcgrave's description of *T. carbonaria* Spix. Piso's figure was correctly interpreted by Linnaeus, who referred it to his *T. geometrica*, but Lichtenstein considered the Brazilian species different and described it as *T. foveolata* on the basis of a picture similar to the present one in the Nassau Handbooks, and also on a Brazilian specimen, thus on composite material. For the sake of stability in nomenclature I propose to designate the specimen after which presumably the figure in the "Handbook", the present picture, and the Piso illustration were made, as the lectotype of *T. foveolata* Lichtenstein, 1822, which thereby becomes a junior synonym of *T. geometrica* Linnaeus.

Wermuth & Mertens (1961) do not mention *T. foveolata* Lichtenstein, 1822, but record *T. foveolata* Schinz, 1833, a nomen nudum, as a doubtful synonym of *T. denticulata* Linnaeus. Although Schinz (1833: 40) does not refer to Lichtenstein, it seems most likely that he merely listed the name proposed by that author; as a consequence, Schinz's *T. foveolata* is not to be considered as representing a new species but is identical with *T. foveolata* Lichtenstein, a synonym of *T. geometrica* Linnaeus if the lectotype selection proposed above is accepted.

#### Nhandiguaçu.— *Avicularia* species

Handbook, 1: 402; Theatrum, 3: 237 (right fig.); Marcgrave, 1648: 248 (fig.); Marcgrave, 1942: [LXXXVIII (note 738)]; Piso, 1648: 44; Piso 1658: 284 (fig.); Piso, 1957: [590 (fig.p. 591)]; Linnaeus, 1758: 622; Linnaeus, 1767: 1034; Wagener, 1964: 210 (fig. 89), [264, 368]

Annotations: "402. Nhandiguaçu eine Spinne so gross als das leben, wirdt von den brasiliern gegessen von den Zehnen macht man Zahnstocher" (a spider at life size, is eaten by the brazilians [,] of the teeth toothpicks are made).

The picture intended to fill the open space below the legend is missing, but fortunately a photographic colour picture of the Handbook "Nhandiguaçu" with approximately the same annotations is available. It shows a large spider (far too big for the space allotted in the Leningrad manuscript) not unlike the Marcgrave and Piso woodcuts, for which presumably it has been the model. Therefore, it must represent a syntype of Linnaeus' *Aranea avicularia*, based on six sources and possibly requiring a lectotype selection. According to Holm (1957) Linnaeus studied two specimens in the Adolphi Friderici collection (without known locality) and one from the Gryll collection (Surinam) which may still be available.

It also remains to be verified if the records and figures provided by Marcgrave, Piso, Wagener, and in Handbook and Theatrum all pertain to the same species, since several differences occur.

#### Nhandu.— ? *Micrathena* species

Handbook, 1: 404; Theatrum, 3: 235?; Marcgrave, 1648: 248?; Marcgrave, 1942: [LXXXVIII (notes)]; Piso, 1658: not 285 (fig.); Piso, 1957: [not 593 (fig.)]; Linnaeus, 1758: not 624; Wagener, 1964: not 210 (fig. 89), [264, 368]?

Annotations: " 404. Nhandu"

This very vague pencil sketch hardly allows identification, and the present tentative allocation needs to be confirmed or corrected, if possible, after a careful study of the Handbook and Theatrum originals.

Lane (in Marcgrave, 1942) identified Marcgrave's "Nhandu" as possibly *Gasteracantha cancriformis* Linnaeus (with a conspicuously different shaped abdomen), while to the original(?) figure on Handbook, 1, page 404, in pencil the name "*Epeira principalis* N" is added (presumably an unpublished collection name).

Marcgrave's next species "*Araneus valde elegans*" and "*Araneus alius figura praecedenti*", identified by Lane (in Marcgrave, 1942) as *Argiope argentata* (Fabricius) and possibly *Nephila* species, do not seem applicable to the present picture.

Enema.— *Megasoma gyas* (Herbst, 1758)

Handbook, 1: 406; Theatrum, 3: not 251; 253?; Marcgrave, 1648: 246 (fig.); Marcgrave, 1942: [LXXXVIII (note)]; Piso, 1658: nil; Linnaeus, 1758: 345 (partly); Linnaeus, 1767: 541 (partly); Wagener, 1964: nil

Annotations: " 406. Enema lebensgrosse braun von farbe" (life size brown colour).

Although this pencil drawing is vague, it clearly pictures (reversed) the specimen illustrated in Marcgrave (1648) and a common source for the Handbook original and the Marcgrave woodcut seems beyond doubt. The vernacular name "Enema" seems not restricted to the present species, as illustrated by a specimen of that name on present folio 151, indicated to have been made after a picture in Theatrum, 3: 251.

It is remarkable that in the caption the specimen is stated to be of a brown colour, while Marcgrave describes the species as shining black with yellowish hairs; the coloured Marcgrave copy in Leiden shows it beige with two approximately transverse series of brownish blotches and several smaller dark spots, the legs (minus coxa) being bluish black, possibly picturing a specimen with damaged hair coating.

Lane (in Marcgrave, 1942) records that according to Burmeister this species was erroneously included by Linnaeus (1758) in his *Scarabaeus actaeon* and should be relegated to *Scarabaeus typhon* Olivier, considered a junior synonym of *Megasoma gyas* (Herbst). The present picture may represent the subspecies *M. g. rumbucheri* Fischer, 1968.

Nhandii.— *Heteropoda venatoria* (Linnaeus, 1767)

Handbook, 1: 408; Theatrum, 3: 235 or 237 (missing); Marcgrave, 1648: 249; Marcgrave, 1942: [LXXXIX (note)]; Piso, 1658: 285; Piso, 1957: [592 (fig.)]; Wagener, 1964: 210 (fig. 89), [264, 368]?

Annotations: " 408. Nhandii"

This picture evidently is based on the same Handbook picture as Marcgrave's woodcut illustration, and there is no convincing argument to doubt the identification previously given by Lane (in Marcgrave, 1942).

Ibirapoacoa.— ? Sphingidae, spec. incert.

Handbook, 1: 410; Theatrum, 3: ?; Marcgrave, 1648: 252?; Marcgrave, 1942: [LXXXIX (note)]?; Piso, 1658: nil; Wagener, 1964: 210 (fig. 90), [264, 369]?

Annotations: "410. Ibirapoacoa".

This very rough and vague sketch does not allow further identification, even though it seems to represent a similar species as pictured in far more detail by Wagener. Wagener also provides the different vernacular name "Isoco", which, however, may apply only to the caterpillar. Recent comments to Marcgrave (1942) and Wagener (1964) support the present allocation.

### Comments on the Leningrad pictures: B Series

#### Folio 23

12 Blätter Säugethiere; 4 Blätter Reptilien; 52 Blätter Fische; 41 Blätter Vögel; 15 Blätter Krebse Insecten Sepien u Seesterne zusammen 124 Blätter alter Copien aus den 1-3 Bänden der von Frans Post in den Jahren 1639-44 unter Moritz von Nassau und auf dessen Befehl zu Pernambuco gemachten Zoologischen Abbildungen. Die Originale (der 4te Band enthält Pflanzenabbildungen) sind mit Oelfarben auf Papier gemahlt. Lichtenstein hat dieses Manuscript was Moritz von Nassau ungefähr 1654 dem grossen Kurfürsten schenkte weil er den Mahler nicht kannte, nach dem Ordner das liber Mentzelii genannt. Ein Name der nun wohl wegfallen muss ich nenne sie daher die Postischen Abbildungen (I.P.), auf den Bänden steht der Titel "Thesaurus rerum naturalium brasiliensium Tom I. Icones Piscium brasiliae [partly deleted: brasiliensium]". Tom 2.— "Icones avium Brasiliae" u Tom III. "Icones animalium Brasiliae". Horkel.

Free translation:

"12 sheets mammals; 4 sheets reptiles; 52 sheets fishes; 41 sheets birds; 15 sheets crustaceans, insects, cephalopods and starfishes.

Together 124 sheets of old copies of zoological pictures in the volumes 1-3, made in Pernambuco during the years 1639-44 by Frans Post, in the service of Moritz von Nassau and by his order. The originals (the fourth volume contains pictures of plants) have been painted in oil on paper. As he did not know the painter, Lichtenstein called this manuscript, which had been presented by Moritz von Nassau to the Great Elector around 1654, after its arranger, the "Liber Mentzelii". A name that now has to be abandoned, therefore I call them "Post's pictures" (I.P.). The volumes bear the title "Thesaurus rerum naturalium brasiliensium", Vol. I. "Icones Piscium Brasiliae". Vol. II. "Icones avium Brasiliae" and Vol. III. "Icones animalium Brasiliae". Horkel".

Remarks.— The incorrect attribution implied by the words "Postischen Abbildungen" has already been discussed elsewhere in this paper.

**Mammals**  
(by C. Smeenk)

**Folio 24**

12 Blätter *Säugethiere* aus Tom III. (12 folios Mammals from Vol. III).

**Folio 25**

Taibi.— *Didelphis marsupialis* Linnaeus, 1758

Handbook, 1: 137; Theatrum, 3: 65; Marcgrave, 1648: 222 (fig.); Marcgrave, 1942: [LXXIX (notes 636-639)]; Piso, 1658: 323 (fig.); Piso, 1957: [666 (fig.)]; Linnaeus, 1758: 54; Linnaeus, 1766: 71; Lichtenstein, 1818: 216; Lichtenstein, 1961: 42, [155, 264 (note 36)]; Thomas, 1911: 143; Cabrera, 1957: 42; Wagener, 1964: 202 (fig. 65), [251, 357]

Annotations: "I.P. Tom III. p. 65 Taibi [twice, in different handwriting] secundum descripti non est Taibi; sed Mg spec Carigueya p. 222 HB". (Second[species] described is not Taibi, but Marcgrave species Carigueya p. 222 [1648]).

A very good and accurate drawing of the "Common Opossum", not related to the figure on folio 10 and the woodcut in Marcgrave and Piso.

Marcgrave's descriptions of "Carigueya" and "Tai-ibi" refer to the female and male, respectively, of the same species. The description of the "Carigueya", the female, is far more detailed, and accompanied by the woodcut referred to under folio 10. The drawing therefore probably would have been more easily recognizable as the "Carigueya" rather than the "Tai-ibi". See also the text to folio 10.

**Folio 26**

Acuti, Aguti.— *Dasyproctus leporinus* (Linnaeus, 1758)

Handbook, 1: 80; Theatrum, 3: 67; Marcgrave, 1648: 224 (fig.); Marcgrave, 1942: [LXXX (note 650)]; Piso, 1658: 102 (fig.); Piso, 1957: [238 (fig.)]; Linnaeus, 1758: (59); Linnaeus, 1766: 80; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153]; Thomas, 1911: 146; Cabrera, 1961: 585; Wagener, 1964: 203 (fig. 67), [252, 358]

Annotations: "I.P. Tom III. p. 67 Acuti Aguti p. 224 HB".

See text to folio 8. A very good and naturally looking picture of the "Aguti", unrelated to the figure on folio 8 and to the woodcut in Marcgrave and Piso.

**Folio 27**

Apereà.— *Cavia aperea* Erxleben, 1777

Handbook, 1: 120; Theatrum, 3: 69; Marcgrave, 1648: 223 (fig.); Marcgrave, 1942: [LXXX (notes 644-

645)]; Piso, 1658: 103 (fig.); Piso, 1957: [239 (fig.)]; Erxleben, 1777: 348; Lichtenstein, 1818: 215; Lichtenstein, 1961: 41, [153, 264 (note 33)]; Cabrera, 1961: 576; Wagener, 1964: nil

Annotations: "I.P. Tom III p. 69. Apereà p. 103 HI p. 223 HB Apereà".

A delightful picture of a cavia-like rodent, almost certainly representing *Cavia aperea*, though the eye seems far too large. The figure has no relation to the very poor woodcut in Marcgrave and Piso, which would be unidentifiable without the context. Lichtenstein refers to Theatrum, 3: 69, a page number omitted in Menzel's index, evidently by mistake.

Erxleben refers to Marcgrave in his description of the species. The animal is still known under the name "Preá".

### Folio 28

Eirára.— *Galictis vittata* (Schreber, 1776)

Handbook, 1: nil; Theatrum, 3: 75; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Schreber, 1776: pl. 124; Schreber, 1778: 447; Lichtenstein, 1818: 220; Lichtenstein, 1961: 46 [159, 266 (note 45)]; Cabrera, 1957: 259; Wagener, 1964: nil

Annotations: "I.P. Tom III. p. 75. a Eirára [twice in different hands] an Iiya, p. 234 HB".

A fairly good picture of the "Grison", though apparently drawn after a badly prepared skin. The hind part of the body seems too dark, and the white line from forehead to shoulder is poorly defined. The reference to Marcgrave's "Iiya" (= *Lutra enudris* F. Cuvier) evidently is not correct.

### Folio 29

Aguara.— *Cerdocyon thous* (Linnaeus, 1766)

Handbook, 1: nil; Theatrum, 3: 91; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1766: (60); Lichtenstein, 1818: 219; Lichtenstein, 1961: 45, [158, 266 (note 43)]; Cabrera, 1957: 238; Wagener, 1964: nil

Annotations: "I.P. Tom III p. 91. a Aguara Eine art Schackal" (A kind of Jackal).

A fairly good picture of a dog, identifiable as the "Savanna Fox". The coloration does not seem wholly correct, but agrees fairly well with the Brazilian subspecies *Cerdocyon thous azarae* (Wied, 1820), which has reddish legs. This probably accounts for the fact that Lichtenstein did not associate the Theatrum painting with *Canis thous* Linnaeus, but regarded it as possibly representing an undescribed species; *Canis azarae* Wied, 1824, had not yet been described when Lichtenstein published his paper.

### Folio 30

Aguaraguaçu.— *Procyon cancrivorus* (G. Cuvier, 1798)

Handbook, 1: nil; Theatrum, 3: 91; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Cuvier, 1798: 113; Lichtenstein, 1818: 219; Lichtenstein, 1961: 45, [158]; Cabrera, 1957: 243; Wagener, 1964: nil

Annotations: "I.P. Tom III. p. 91. b. Aguaraguaçu".

A very good picture of the "Crab-eating Raccoon". It is not clear why Lichtenstein discounted the association of the Theatrum painting with this species; obviously he was unable to compare the picture with specimens or figures, and thus came to regard it as possibly representing an undescribed species of dog.

Aguaja.— *Caluromys philander* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 3: 63; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Linnaeus, 1758: (54); Linnaeus, 1766: (72); Lichtenstein, 1818: 217; Lichtenstein, 1961: 43, [156]; Thomas, 1911: 143; Cabrera, 1957: 4; Wagener, 1964: nil

Annotations: "Aguaja".

A very good drawing of the "Philander Opossum". Lichtenstein apparently was unable to compare the Theatrum painting with specimens or figures, and so did not associate it with *Caluromys philander*. He thus regarded it as an undescribed marsupial.

### Folio 31

Tamandui guacu.— *Myrmecophaga tridactyla* Linnaeus, 1758

Handbook, 1: 84; Theatrum, 3: 95; Marcgrave, 1648: 225 (fig.); Marcgrave, 1942: [LXXX (notes 651-654)]; Piso, 1658: 320 (fig.); Piso, 1957: [662 (fig.)]; Linnaeus, 1758: 35; Linnaeus, 1766: (51), 52; Lichtenstein, 1818: 214; Lichtenstein, 1961: 40, [152, 263 (note 29)]; Thomas, 1911: 132; Cabrera, 1957: 202; Wagener, 1964: 207 (fig. 82), [259, 364]

Annotations: "I.P. Tom III. p. 95 *Tamandui guacu* p. 225 HB Ameisenfresser" (Ant-eater).

See the annotations to folio 8. The drawing almost perfectly matches the Theatrum painting of the "Giant Anteater", of which a photograph exists. It is, however, slightly less accurately executed; particularly the snout and hindfeet are less natural than on the Theatrum painting.

### Folio 32

Tamanduai.— *Tamandua tetradactyla* (Linnaeus, 1758)

Handbook, 1: 62; Theatrum, 3: 97; Marcgrave, 1648: 226 (fig.); Marcgrave, 1942: [LXXX (notes 653-654)]; Piso, 1658: 320 (fig.); Piso, 1957: [662 (fig.)]; Linnaeus, 1758: 35; Linnaeus, 1766: 52; Lichtenstein, 1818: 214; Lichtenstein, 1961: 40, [152, 263 (note 29)]; Thomas, 1911: 133; Cabrera, 1957: 205; Wagener, 1964: nil

Annotations: "I.P. Tom III p. 97. a. Tamanduai. p. 225 HB Ameisenfresser" (Ant-eater).

A beautiful drawing of the "Striped Tamandua", far better than the sketch on

folio 7, and probably unrelated to this and to the woodcut in Marcgrave and Piso. For other comments, see folio 7.

### Folio 33

Tapiirete.— *Tapirus terrestris* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 3: 107, 109; Marcgrave, 1648: 229 (fig.); Marcgrave, 1942: [LXXXI (notes 665-666)]; Piso, 1658: 101 (fig.); Piso, 1957: [236 (fig.)]; Linnaeus, 1758: 74; Linnaeus, 1766: nil; Lichtenstein, 1818: 221; Lichtenstein, 1961: 47, [161]; Thomas, 1911: 155; Cabrera, 1961: 314; Wagener, 1964: nil

Annotations: "I.P. Tom III. p. 109. b. Tapiirete p. 229 HB".

A fairly good picture of a young "Tapir". Although the figure resembles the woodcut in Marcgrave and Piso to some extent in the general shape of the body, the figures probably are not related, since the coloration in our coloured Marcgrave copy clearly points to an adult specimen.

The species figures prominently on the tapestries "Combat d'animaux" (both versions), but in both cases an adult specimen is given.

### Folios 34 & 35

(no vernacular name).— *Lama pacos* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 3: 133, 135; Marcgrave, 1648: 244 (fig.); Marcgrave, 1942: [LXXXV (notes 727-728)]; Piso, 1658: nil; Linnaeus, 1758: (66); Linnaeus, 1766: 91; Lichtenstein, 1818: 221; Lichtenstein, 1961: 47, [160]; Thomas, 1911: 150; Cabrera, 1961: 332; Wagener, 1964: nil

Annotations: "I.P. Tom III. p. 133." "I.P. Tom III. p. 135. Ovis chilensis p. 244 HB Chilesische Schaf" (Chilean sheep).

Two pictures of Chilean "Alpacas", both well recognizable, folio 34 being the better of the two. The forefeet of the animal on folio 35 are very strange indeed. Folio 35 agrees well with the woodcut in Marcgrave (in reverse), though the coloration is quite different. As a matter of fact, the "Alpaca" is very variable in colour, which may account for the differences in this respect between the figures.

The animal of folio 35 also occurs on the tapestry "Le cheval rayé" (Nouvelles Indes).

### Folio 36

Tamanduapitinga.— *Cyclopes didactylus* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 3: 97; Marcgrave, 1648, 1942: nil; Marcgrave, 1942: [LXXX (note 653)]; Piso, 1658: nil; Linnaeus, 1758: (35); Linnaeus, 1766: (51); Lichtenstein, 1818: 214; Lichtenstein, 1961: 40, [152, 263 (note 30)]; Thomas, 1911: 132; Cabrera, 1957: 206; Wagener, 1964: nil

Annotations: "I.P. Tom III p. 97. b. Tamanduapitinga. Ameisenfresser" (Ant-eater).



A beautiful drawing of the "Two-toed Ant-eater". According to Sawaya (in Marcgrave, 1942), this is the species known under the vernacular name "Tamanduá-í", see folio 7.

**Reptiles**  
(by M.S. Hoogmoed)

**Folio 37**

4 Blätter *Reptilien* aus Tom. III (4 folios Reptiles from Vol. III).

**Folio 38**

Senembi.— *Iguana iguana iguana* (Linnaeus, 1758)

Handbook, ?; (no notes available); Theatrum, 3: 165, 167, (161, 163?); Marcgrave, 1648: 236 (fig.); Marcgrave, 1942: [LXXXIII (notes 694-697)]; Piso, 1658: 103 (fig. 1); Piso, 1957: [242 (fig.)]; Linnaeus, 1758: 206, 207 (partly); Linnaeus, 1766: 336 (partly); Lichtenstein, 1822: 241; Lichtenstein, 1961: 81, [193, 287 (note 136)]; Wagener, 1964: 205 (fig. 73), [255, 361]

Annotations: "I.P. Tom III p. 167. Cenembi Senembi p. 236 HB. p. 164 HI" (164, error for 104, page with picture in Piso).

This picture is completely different from the woodcut illustration of the "Senembi" in Marcgrave.

The identity of the lizard here portrayed poses no problem. This clear and, considering the date when it was made, remarkably accurate picture undoubtedly represents the common iguana, *Iguana iguana iguana* (Linnaeus), the original description of which included a reference to the present Marcgrave species. The species can easily be identified by the large scale below the ear-opening, the large gular appendage and the dorsal crest running from the head backward onto the tail. It occurs from Mexico to southern Brazil and Paraguay, the subspecies pictured here not going farther north than southern Costa Rica. It is an arboreal lizard which frequents forest-edges along the rivers, occurring in rain-forest, savannas and gardens, and even on beaches.

As stated above, this picture did not serve as a model for the woodcut in Marcgrave, copied by Piso, which according to Lichtenstein was taken from Clusius (1601?-not verified-, or 1605: 116). It has been reproduced by Soloviev (1934: 223).

**Folio 39**

Ameiua.— *Tropidurus torquatus torquatus* (Wied, 1820)

Handbook, 1: 436, 2: 415?; Theatrum, 3: 181; Marcgrave, 1648: 238; Marcgrave, 1942: [LXXXIV (note 706)]; Piso, 1658: 284?; Piso, 1957: [589 (fig.)?]; Linnaeus, 1758: (202, error); Linnaeus, 1766: (362, error); Lichtenstein, 1822: 245; Lichtenstein, 1961: 85, [198, 288 (note 143)]; Wagener, 1964: 211 (fig. 91), [265, 369]

Annotations: "I.P. Tom III p. 181. a Ameivà p. 238 HB".

The head covered with small scales and the presence of two deep folds of skin on the neck prove that the picture represents a member of the family Iguanidae and not of the Teiidae, to which the vernacular name "Ameiua" (= "Ameiva") seems to point. It evidently portrays *Tropidurus* group *torquatus* (Wied), a species-group known to occur in north-eastern Brazil. Marcgrave's description does not provide any pertinent information other than stating that it agrees with his "Taraguira" except that it has a bifurcated tail, a quite common aberration caused by damage, as already stated by Lichtenstein: from the wound a second tail develops, forming a bifurcation. Neither the present species nor the "Taraguira" is illustrated by Marcgrave, but a picture of the same species occurs in Wagener.

Sawaya (in Marcgrave, 1942: LXXXIV) and Pinto (in Lichtenstein, 1961: 288), unaware of the existence of the present picture, had to rely on the vernacular name only, leading to an incorrect interpretation: *Ameiva ameiva* (Linnaeus), a teiid lizard. However, the slightly more informative description of Marcgrave's "Taraguira" together with the present picture of a lizard stated to be similar, make it possible to confirm the identification of the "Taraguira" by Goeldi (1902: 518) and by Sawaya (in Marcgrave, 1942: LXXXIII) as *Tropidurus torquatus* (Wied). Lichtenstein, after examining a picture (436) of the "Taraguira" in the Nassau "Handbooks" and material the Berlin Museum had received from Brazil, came to the conclusion that the species had not yet been properly described, and added to his description the new name *Agama operculata*. His description matches quite well that of *Tropidurus torquatus* (Wied), published two years earlier (Wied, 1820). Therefore, *Agama operculata* Lichtenstein (a name only cited in 1961 by Pinto and absent in the work by Peters and Donoso-Barros (1970)) becomes a junior synonym of *Tropidurus torquatus* (Wied).

Species of *Tropidurus* group *torquatus* (Wied) occur in Argentina, Paraguay, Bolivia, Brazil, the Guianas and Venezuela (Hoogmoed, 1973: 191), where they inhabit areas with an open vegetation like cerrado and caatinga, but also stony mountains and clearings in the forest. After this manuscript was written Rodrigues (1987) studied this group and reached the same conclusion.

#### Folio 40

Jiboya.— *Boa constrictor constrictor* (Linnaeus, 1758)

Handbook, 1: 434; Theatrum, 3: 197; Marcgrave, 1648: 239; Marcgrave, 1942: [LXXXIV (note 711)]; Piso, 1648: 42 (fig.), 1658: 276 (idem fig.); Piso, 1957: [576 (fig.)]; Linnaeus, 1758: (215); Linnaeus, 1766: (373); Lichtenstein, 1822: 247; Lichtenstein, 1961: 87, [200, 289 (note 146)]; Wagener, 1964: 212 (fig. 92), [265, 370]

Annotations: "I.P. Tom III p. 197. Jiboya Boiguaçu p. 277 HI".

The identification of this water-colour does not pose any problems, and the same evidently applies to the figures related to it and to Marcgrave's description, as all previous authors seem to have correctly interpreted the "Boiguaçu" as *Boa constrictor* (Linnaeus), a member of the family Boidae. While not used for the preparation of a woodcut illustration in Marcgrave's book, the present picture evidently was based on the model for the illustrations published by Piso, or at least came from the same

source. Piso's illustrations present a rather accurate reversed copy, though the artist or woodcutter took some liberties. This especially applies to the pattern, in which there are some differences, mainly evident in the head region and at the middle of the body: the square, lighter spots have been transformed into round spots and, further back, some lozenge-shaped blotches were changed into round dots, but all this does not essentially alter the general pattern. Unfortunately, the shape of the head has been changed for the worse in Piso's illustrations.

*Boa constrictor* (Linnaeus) occurs on the American continent from Mexico southwards to Argentina as well as on some of the Antilles. In this large area several subspecies have developed of which the nominate form, *Boa constrictor constrictor* (Linnaeus), recorded from north-eastern Brazil, is represented here.

Darmstaedter (1928: 652) provides a completely different picture of this species presumably taken from the "Handbooks".

### Folio 41

Boiricanga.— *Chironius ?carinatus* (Linnaeus, 1758)

Handbook, ? : nil? (no notes available); Theatrum, 3: 205(1); Marcgrave, 1648: 240 (fig.), 241; Marcgrave, 1942: [LXXXIV (note 718)]; Piso, 1658: 279 (fig.) ; Piso, 1957: [580 (fig.)]; Linnaeus, 1758: (222?, 223?) (partly); Linnaeus, 1766: (383?, 384?) (partly); Lichtenstein, 1822: 249, 250; Lichtenstein, 1961: 89, 90, [202, 203, 290 (notes 151, 153)]; Wagener, 1964: nil

Annotations: "I.P. Tom III p. 205. Boiricanga Boitiapó. p. 279 HI".

This water-colour leaves much to be desired and a definite identification seems hardly possible; nevertheless, several authors based very firm opinions on the published version of a similar picture provided by Marcgrave, with a description, and repeated by Piso. These woodcut copies are in reverse and the snake is shown slightly shorter and thicker, but essentially they seem quite accurate.

The description of the "Boicinga" by Marcgrave is clear and evidently does not refer to the species pictured in the accompanying woodcut or represented here. For instance a rattle mentioned in the text is not indicated in the illustration, and it seems evident that the description actually concerns *Crotalus durissus* Linnaeus. Lichtenstein was the first to point out that the illustration was misplaced and should have been added to Marcgrave's "Boitiapo" on the next page, as was correctly done by Piso. He also records a correct picture in the Theatrum (191).

Marcgrave provided a rather inadequate description of his "Boitiapo", and Piso's slightly longer description does not provide additional clues as he only adds information about indigenous superstition. Lichtenstein pointed out that Marcgrave's name "Boitiapo" was used by Seba (1735) on plate 87 (fig. 1), and that Linnaeus referred to this Seba species in the synonymy of his *Coluber fuscus* (= *Chironius fuscus*), a species not occurring in NE Brazil. However, Lichtenstein was of the opinion that the Brazilian specimens he had before him agreed with Seba's picture and with Marcgrave's version of the present water-colour, and that they represented a separate species which he described as *Coluber boitiapo*. Sawaya (in Marcgrave, 1942: LXXXIV) identified the "Boitiapo" as *Chironius fuscus* Linnaeus, while Pinto (in Lichtenstein, 1961: 290) considered it to represent *Chironius carinatus* (Linnaeus), relegating

*Coluber boitiapo* Lichtenstein to its synonymy.

In view of the size and colours as described by Marcgrave, and the yellow belly in the woodcut illustration of the species as found in the Leiden coloured copy of Marcgrave, *Chironius carinatus* clearly is the more likely interpretation.

Considering Marcgrave's description and the various pictures referred to by Linnaeus, it seems warranted to refer the "Boitiapo" to the genus *Chironius*. However, the available information is too scanty to provide a definite specific identification, as the description by Marcgrave fits several species. As a consequence it remains uncertain of which species of *Chironius* *Coluber boitiapo* should be considered a synonym, until Lichtenstein's types are re-examined. Wiest (1978) in his revision of the genus *Chironius* does not mention the name in any of his synonymies.

The name "Cipo" or "Sipo", mentioned by Marcgrave, appears to be used in Brazil for a number of large snakes (Sawaya, in Marcgrave, 1942: LXXXIV).

### Fishes

(by M. Boeseman; crustacean (folio 43) by L.B. Holthuis)

#### Folio 42

52 Blätter *Fische* aus Tom 1. (52 folios Fishes from Vol. 1).

#### Folio 43

Punaru.— *Ophioblennius atlanticus* (Valenciennes, 1836)  
and ?*Blennius pilicornis* Cuvier, 1829

Handbook, ?; nil? (no notes available); Theatrum, 1: 15; Marcgrave, 1648: 165 (figs.); Marcgrave, 1942: [LVIII (note 400)]; Piso, 1658: 65-66 (figs.); Piso, 1957: [162 (figs.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 63; Lichtenstein, 1961: 131, [251, 304 (note 213)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 15. Punaru".

The vernacular name "Punaru" was used by Marcgrave for two species, presumably both represented in the present picture. As stated by Lichtenstein, Marcgrave's first description belongs to the species portrayed by his second woodcut (copied by Piso), and possibly by the upper, free fish picture here. It was identified by Valenciennes (1836: 322) as a new species, *Salarias atlanticus*, now named *Ophioblennius atlanticus* (Valenciennes). The rather inaccurate drawing, with too short and, presumably, artificially split fins, allows scant opportunity for identification, except what can be deduced by circumstantial evidence: the same vernacular name and source as Marcgrave's species, and the prominent bulging frontal part of the head (agreeing with Marcgrave's second woodcut). If on account of these indications we accept this picture as representing the first species described by Marcgrave, it may tentatively be identified as *Ophioblennius atlanticus* (Valenciennes), a species moreover apparently still known by the vernacular name "Punaru" (Fowler, 1941: 179), but considerably less slender than depicted here or in Marcgrave (Springer, 1962: 429, fig. 3; Randall,

1968: 238, fig. 270). It occurs along the American Atlantic shores from North Carolina to Brazil, reaching a length of about 5 cm.

The second "Punaru", almost hidden, shows a distinctly more prognathous head, and probably represents the second species Marcgrave described, illustrated by his first woodcut (also copied by Piso), and tentatively interpreted by Valenciennes (1836: 255) as *Blennius pilicornis* Cuvier. Unfortunately, the present picture does not provide the means to either support or dispute this interpretation. *Blennius pilicornis* occurs along the Brazilian coast, where it seems to be known by the vernacular name of "Macaco" (Fowler, 1941: 179); more northern records are uncertain as the species has been confused there with the similar *B. marmoreus* Poey, occurring in the Caribbean and around the Bahamas (Longley & Hildebrand, 1941: 266).

In the Leiden coloured copy of Marcgrave, both fishes are coloured brown with a white belly.

Reriapiya.— *Balanus tintinnabulum* (Linnaeus, 1758)  
and (no vernacular name).— *Eurypanopeus* spec.

Handbook, 1: nil (not 314); Theatrum, 1: 43; Marcgrave, 1648: 189; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "Reriapiya. p. 188. HB". Not the "Reriapiya" of folio 17.

The crustaceans on this folio are discussed extensively in a separate paper on the Marcgrave representatives of that group.

#### Folio 44

Jacareptimbuaba.— *Hippocampus erectus* Perry, 1810

Handbook, ? : ? (no notes available); Theatrum, 1: 17; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: 22 (fig. 22), [241, 348]

Annotations: "I.P. Tom 1. p. 17. Jacareptimbuaba".

The vernacular name ("Jacareptimbuaba" in the index to vol. 1 of the Theatrum) is remarkable, since according to Marcgrave (who does not mention the present species) "Jacare" is the name for a cayman, and "Petimbuaba" that for the fish species: "*Fistularia tabacaria* Linnaeus" (see folio 19). Wagener, in his text to a different picture of probably the same species of seahorse, uses the name "Peixe Cauhalho", the same name as used by Cristóvão de Lisboa (1967, pl. 22).

Our knowledge of Brazilian seahorses is scanty. Fowler (1941: 147-148) lists three species: *Hippocampus punctulatus* Guichenot (now considered a subspecies of *H. erectus* Perry), *H. guttulatus* Cuvier (record based on an evident misidentification of Brazilian Challenger material by Günther (1880: 8), the species *H. guttulatus* being known only from European coastal waters), and *H. villosus* Günther. The latter was also based on a Challenger specimen, described and pictured by Günther in the same publication; of the presumed distinctive characters, the low number of dorsal finrays is probably either a miscount or based on an aberrant example, while the low numbers of rings in body and tail: 10 + 34 according to Ginsburg, 1937: 582, but based

only on a Panamanian specimen of dubious identity. Judging by Günther's plate 1 fig. 4, may well be 11 + 35, a number fitting *H. erectus* Perry, of which I am inclined to consider it a synonym. As a consequence, only *H. erectus* seems to have been recorded with certainty from Brazil, where it anyhow must be the most abundant species, and it seems warranted to thus identify the present picture. Probably the same species has been recorded by Cristóvão de Lisboa from Maranhão (1967, pl. 22); it was similarly interpreted by Carvalho (1964: 20), as *H. punctulatus* Guichenot (= *H. erectus* Perry).

This species occurs in the American coastal seas from Nova Scotia to Argentina, the subspecies *punctulatus* Guichenot occupying the southern part of this range. I did not find the name "Jacareptimbuaba" or any other Brazilian vernacular name in the available literature, against the Portuguese translation "Cavalo-marinho" (Pinto in Wagener, 1964: 348).

A similar species occurs on the tapestry "Le combat d'animaux" (both versions).

#### Folio 45

(no vernacular name).— *Ogcocephalus vespertilio* (Linnaeus, 1758)

Handbook, 1: 300; Theatrum, 1: 19, 21?; Marcgrave, 1648: 143 (fig.); Marcgrave, 1942: [LII (note 333)]; Piso, 1658: nil; Linnaeus, 1758: 237; Linnaeus, 1766: 403; Lichtenstein, 1822: 273; Lichtenstein, 1961: 101, [215, 291 (note 160)]; Wagener, 1964: 187 (fig. 15), [237, 345]

Annotations: "I.P. Tom 1 p.19".

The picture shows the ventral view of, evidently, the long-nosed batfish, *Ogcocephalus vespertilio* (Linnaeus). The species is also portrayed on folio 16, in the text to which it is extensively discussed, and on folio 91. Lichtenstein remarks that it occurs as "Guacucuja" on page 19 of the first volume of the Theatrum, both in dorsal and in ventral view, which makes it quite likely that one of these at least came from the same source as the present picture. In the index to the Theatrum volume, the name "Guacucua" also refers to page 21, not mentioned by Lichtenstein.

#### Folio 46

Guaperua.— *Antennarius striatus* (Shaw & Nodder, 1794)

Handbook, 1: 378?; 2: 361, 363; Theatrum, 1: 23; Marcgrave, 1648: 150 (fig.); Marcgrave, 1942: [LIV (note 357)]; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 283; Lichtenstein, 1961: 111, [227, 295 (note 178)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1 p. 23. Guaperua [symbol, = est] spec Guapera 150 HB., id eo ad Guacucua pertinet" (is species Guaperua Hist. Braz.: 150, therefore belongs to Guacucua) [actually the opposite seems true].

This (left) picture evidently portrays the dark phase of either *Antennarius multio-cellatus* (Valenciennes), here also represented on folio 21, or of *A. striatus* (Shaw & Nodder), which occurs in the western Atlantic from New Jersey to Rio de Janeiro. Considering the apparent lack of spots or ocelli and the rather short illicium (pic-

tured too stout), an identification as *A. scaber* seems preferable, even though the illicium is drawn without the characteristic large white bait at the tip. This may well be the black species or variety referred to by Marcgrave at the end of his description of the "Guaperua". Additional information may be found in the text to folio 21.

The "Guacucua", referred to in the handwritten legend, is pictured on folios 16, 45 and 91, and is a related but dissimilar species, in contradiction to the legend.

Auacatuaja.— *Selene vomer* (Linnaeus, 1758)

Handbook, 2: 399; Theatrum, 1: 151 (not 31?); Marcgrave, 1648: 161 (fig.); Marcgrave, 1942: [LVII (note 389)]; Piso, 1658: 55 (fig.); Piso, 1957: [142 (fig.)]; Linnaeus, 1758: (266), 267; Linnaeus, 1766: 454; Lichtenstein, 1829: 59; Lichtenstein, 1961: 127, [247, 302 (note 205)]; Wagener, 1964: nil

Annotations "—p. 31. Auacatuaja No.22. p. 55 [in Piso, 1658] ubi Abacatuaja sed af[finis] spes" (but a related species).

As also already stated by Lichtenstein, the woodcut illustration in Marcgrave was included by the editor, Johannes de Laet, who took it from his 1633 book (see text to folio 21, Guapua). The present (right) picture evidently represents the same species as the Marcgrave woodcut referred to above, which was also copied by Piso as the 22nd fish picture; compare present annotations. It excellently portrays the very characteristic *Selene vomer* (Linnaeus), a carangid known to occur in the tropical to moderate areas of the Atlantic, along the American shores from New England and Bermuda to Uruguay, and known in Brazil by the vernacular names of "Jorobado" (Jordan, Evermann & Clark, 1930) or "Galo" (Fowler, 1941: 154).

Though Cuvier (1833: 177 et seq.) and Lichtenstein both stated that the woodcut in Marcgrave was taken by the editor De Laet from his 1633 book on America, this is not indicated in De Laet's note to Marcgrave's species, as erroneously presumed by Lichtenstein. By considering the woodcut based on an oriental species, early authors considerably contributed to the confusion Lichtenstein so seriously deplores in his discussions.

### Folio 47

Jabibirtè.— *Dasyatis guttata* (Bloch & Schneider, 1801)

Handbook, ? : ? (no notes available); Theatrum, 1: 27; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 432)]; Piso, 1658: 59 (fig.), 294 (idem fig.); Piso, 1957: [149, 611 (figs.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1.p. 27. a Jabebirtè Jabebara No.29. p. 59".

The two variations of the vernacular name recorded in the annotations both occur in the index to vol. 1 of the Theatrum, both with references to the same page 27.

There is here a convincing agreement with the Marcgrave woodcut of the "Jabebirete", which species has been identified by Ribeiro (1923: 43) and Carvalho & Sawaya (in Marcgrave, 1942: LIX, after Ribeiro) as *Dasyatis gymnura* (Müller). The modern name for this species is *Dasyatis guttata* (Bloch & Schneider) (cf. Boeseman,

1948: 33; Bigelow & Schroeder, 1953: 369). Both the description by Marcgrave and the relevant figures provide only scanty information, but the above identification can have the benefit of the doubt and has already been accepted previously (1948) by the present author. The woodcut to Marcgrave's description was copied by Piso on page 59 as "Iabebára" (the 29th fish illustration, as indicated by the present annotations), and repeated on page 294, as "Iabebireté".

According to Ribeiro (1923: 43) and Fowler (1941: 131), *Dasyatis guttata* (syn.: *D. gymnura*) is now known by the Brazilian vernacular name of "Jabebiretè" or "Raya-Licha". The species is known to occur in the warmer western Atlantic from Panama and Cuba to Rio de Janeiro and Santos. For further information, see comments to next picture (folio 48).

#### Folio 48

Jabiretépinima.— *Dasyatis guttata* (Bloch & Schneider, 1801)

Handbook, ? : ? (no notes available); Theatrum, 1: 27; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 432)]; Piso, 1658: 59 (fig.), 294 (idem fig.); Piso, 1957: [149, 611 (figs.)?]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1 p. 27. b Jabiretépinima".

This picture evidently represents the second "species" Marcgrave records in his paragraph on the "Jabebirete", without an illustration being supplied. Except for the colour markings, the only difference of importance between the two forms that Marcgrave mentions is the lack of claspers, as also shown in the present figure, a merely sexual character the function of which Marcgrave apparently was not aware of. Therefore, it seems safe to assume that the present picture should be interpreted as the female of *Dasyatis guttata* (Bloch & Schneider), especially as the colour and markings of that species are known to be variable: "upper surface brown, sometimes yellowish or olivaceous, either plain or with darker spots, or uniform pale gray" (Bigelow & Schroeder, 1953: 368). See also the comments on folio 47.

It is remarkable that according to Marcgrave, and judging by the present pictures, both "species" (= sexes) were considered to lack spines on the tail, while these occur regularly in *D. guttata*. Possibly the portrayed specimens were caught by native fisherman, who are known to frequently remove these spines, either for the sake of safety or to use them for various purposes.

#### Folio 49

Ajeréba.— ? *Potamotrygon ajereba* (Walbaum, 1792)

Handbook, ? : ? (no notes available); Theatrum, 1: 29; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 431)]; Piso, 1658: 293 (fig.); Piso, 1957: [610 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1 p. 29. Ajeréba p. 294".

This picture shows a close agreement with the Marcgrave woodcut, copied by



Piso (p. 294), neglecting the more roundish and symmetrical shape and the somewhat longer tail (c. 2.5 disc lengths versus 1.5 in woodcuts). In both cases the spines on the tail are omitted, although described in the Marcgrave and Piso texts.

The identity is problematical, the body shape seeming to point to the freshwater genus *Potamotrygon* Garman, 1877, the long tail to marine *Dasyatis* or related forms, but neither Marcgrave nor Piso provide information on the habitat. Castex (1963: 7), in a paper on early information regarding *Potamotrygon* species, provides data from a manuscript by Dobrizhoffer, a Jesuit missionary who stayed for some time during the 18th century in the Plata region (published in 1822). This author describes a ray with an oval, disc-shaped body, dorsally black and with a white underside, adding a picture (reproduced by Castex) which shows a striking similarity to the Marcgrave woodcut (possibly copied), but with a tail of about twice the disc length. The dark dorsal colour agrees with the information provided by the Leiden coloured copy of Marcgrave, so we may assume that Dobrizhoffer recorded, among others, the same species as figured here. Unfortunately, the quotations provided by Castex include no information regarding its habitat, but his paper seems to imply that Castex attributes the species to the freshwater genus *Potamotrygon*, and that the presumed length of the tail leaves room for doubt. Ribeiro (1923: 39) claims that all "*Ellipesusurus*" (= *Potamotrygon*) species from Brazil have the tail "pouco maior do que o disco", which still leaves a considerable gap.

The information provided by Marcgrave (and a Handbook picture) were the only basis for the original diagnosis of *Raja ajereba* Walbaum of 1792, and *Raja orbicularis* Bloch & Schneider of 1801; therefore, both are objective synonyms, and the specific name *ajereba* Walbaum can be accepted as correct. However, as no specimens seem to have been recorded since Marcgrave (Ribeiro, 1923: 44, merely records information provided by fishermen), the identity of the species still remains problematical.

It may be noted that *Raja ajereba* is the type species of *Paratrygon* Duméril, 1865, which therefore, if the Marcgrave species proves to be a "*Potamotrygon*", should replace that name.

### Folio 50

Nari nari.— *Aetobatus narinari* (Euphrasen, 1790)

Handbook, 1: 332; Theatrum, 1: 31; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 433)]; Piso, 1658: 58 (fig.), 293 (idem fig.); Piso, 1957: [148, 609 (figs.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: 187 (fig. 17), [239, 346]

Annotations: "I.P. Tom 1 p. 31. Nari nari No. 28 p. 58 et 293".

There is no similarity to the woodcut illustration in Marcgrave, copied twice by Piso, or Wagener's picture, and from a zoological point of view, this figure is rather poor. Still, there is little doubt that it represents the same species as the illustrations mentioned above. Moreover, this is confirmed by the added vernacular name and by the reference to Piso's illustrations. Marcgrave's species has been invariably identified as *Aetobatus narinari* (Euphrasen), and the rather exemplary description by Marcgrave leaves no room for doubt. The species is known to occur in the warm to temperate parts of the Atlantic, along the American coasts from North Carolina to

Santos, including the Caribbean. The current Brazilian vernacular name appears to be "Raya-pintada" (Ribeiro, 1923: 47; Fowler, 1941: 132).

The similar picture in oil, in the *Theatrum*, has been copied in a few popular papers on Marcgrave (Gudger, 1912: 269; translated version by Breitenbach, 1914: 25). The same species occurs on folio 18 and, probably the same specimen seen from below, on folio 92.

### Folio 51

Piraroba.— ? *Paralichthys vorax* (Günther, 1862)

Handbook, ? : ? (no notes available); *Theatrum*, 1: 35; Marcgrave, 1648: (181, fig.); Marcgrave, 1942: [LX (note 450)]; Piso, 1658: 66 (fig.), 296; Piso, 1957: [163, 615 (figs.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 35. Piraróba".

This pleasant picture shows the dorsal and anal fins much shorter than is known from any hitherto recorded Brazilian species, and its identification poses serious problems. Considering the rather elongate shape of the fish, the size and position of the eyes, the large mouth with the remarkably long maxillary, and the seemingly straight lateral line, it seems to represent a species of *Psettodes*, but unfortunately the only Atlantic representative, *P. belcheri* Bennett from the tropical African coastal waters, never seems to have crossed the ocean and reached South America. It is true that quite a few African species are represented in this set of drawings, probably made after specimens brought to the Recife zoological garden of Johan Maurits from the Dutch possessions on the Gold Coast and in Angola, but most of these are mammals and birds, and would not have been preserved in spirits (for which the Dutch sailors surely had a better use). Therefore, dismissing this possibility, we have to assume that the lateral line is incorrectly (or indistinctly) pictured, and should show a distinct curve anteriorly, while the maxillary is shown too long and the fins are inaccurate. The picture may then well represent a species of the genus *Paralichthys*, possibly *P. vorax* (Günther), which has been recorded from the area (Ginsburg, 1952, a detailed review of the genus).

A rather similar picture, presumed to represent the closely related species *P. bicyclophorus* Ribeiro (= *P. patagonicus* Jordan & Goss), has been published by Ribeiro (1915, *Heterosomata*, no pag., pl., upper fig.) but that species apparently has not been recorded from farther north than Rio de Janeiro. The sympatric species *P. brasiliensis* (Ranzani) seems to have smaller canines and scales than are here (vaguely) indicated.

The added vernacular name, "Piraróba" or "Pirakóba", shows a convincing similarity to Marcgrave's "Piracoaba", which, however, concerns an entirely different species belonging to the Polynemidae (Marcgrave, 1648; 1942: 176, LIX note 435). Valenciennes (1830: 74) mentions a picture in the Nassau "Handbooks" (volume 1: 323) named "Pira-coaba", which, however, he states to represent a sciaenid species. The only species recorded by Marcgrave that shows a faint resemblance to the present figure (but pictured inversely, in contradistinction to Marcgrave's description) is named "Aramaca" (1648; 1942: 181, LX note 450), and has been identified by Caralho

& Sawaya (in Marcgrave, 1942) as a species of *Paralichthys*. However, Linnaeus (1758: 271) entirely based his *Pleuronectes papillosus* on that Marcgrave species, which is now known as *Syacium papillosum* (Linnaeus). Still, as seems to be the case with the vernacular name, the woodcut illustration to Marcgrave's "Aramaca" may be erroneous, and his description may apply to the species here portrayed.

*Paralichthys vorax* has been recorded from Recife, but as the species has frequently been confused with similar species, the exact range of its distribution is unknown. According to Fowler (1941: 144) *Paralichthys brasiliensis* is known by the Brazilian vernacular name of "Linguado" or "Aramaça".

For another fish, actually indicated as originating from Africa, and portrayed in the present set of pictures, see the text to folio 57.

The front part of a similar fish occurs on the tapestry "Le cheval rayé" (Nouvelles Indes) next to an *Ogcocephalus*.

### Folio 52

Bajacuapé.— *Lactophrys trigonus* (Linnaeus, 1758)

Handbook, 1: 374; Theatrum, 1: 41; Marcgrave, 1648: 142; Marcgrave, 1942: [LII (note 332)]; Piso, 1658: 300 (not fig.); Piso, 1957: [624 (not fig.)]; Linnaeus, 1758: (330); Linnaeus, 1766: (408); Lichtenstein, 1822: 272; Lichtenstein, 1961: 100, [214, 291 (notes 158, 159)]; Wagener, 1964: 185 (fig. 6), [232, 340]

Annotations: "I.P. Tom 1. p. 41. Bajacuapé (Guamajacu ape sine cornibus): 142 p. 2. HB Marggr.". (without horns).

As is confirmed by the reference and the alternative name (used by Marcgrave), there is no doubt that the present picture portrays Marcgrave's second species, of which no woodcut illustration was given. Both vernacular names in the caption, besides being similar to a considerable extent, occur in the index to volume 1 of the Theatrum, each with references to the same picture.

The figure is quite adequate and characteristic, especially the deep nuchal concavity in the outline, making an identification as *Lactophrys trigonus* (Linnaeus) most plausible. Only the caudal peduncle is drawn much too short, possibly a consequence of the limited space available. More information on this species may be found in the text to folio 21.

In the handwritten legend, the addition "2" to the page number evidently means the second Marcgrave species on page 142 of the 1648 book.

This picture has already been reproduced by Schaeffer (1973: 197).

### Folio 53

Guiri.— *Pimelodus maculatus* Lacépède, 1803

Handbook, ? : ? (no notes available); Theatrum, 1: 43, or 47; Marcgrave, 1648: 174 (fig.); Marcgrave, 1942: [LIX (note 430)]; Piso, 1658: 63 (fig.); Piso, 1957: [158 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: : "I.P. Tom 1. p. 43. a Guiri".

For this species, which is illustrated by a remarkably similar woodcut, Marcgrave does not record a vernacular name, but Piso provides the name "Curui" for the same species, adding to his description a copy of the Marcgrave woodcut. Marcgrave's species has been identified by Carvalho & Sawaya (in Marcgrave, 1942: LIX) as *Pimelodus clarias* (Linnaeus). However, the name *P. clarias* was based on mixed information, from both Africa and South America, and has since been restricted to the African species. Furthermore, the South American *P. clarias* of earlier authors is now considered to include at least two separate species, *P. blochii* Valenciennes in the Guiana's and *P. maculatus* Lacépède occurring more southward (type locality: La Plata), which is most likely the one represented in the present picture. This confirms the opinion expressed by Valenciennes (1840: 195).

As *Pimelodus maculatus* has frequently been confused with related species up to the present time, the extent of its distributional area is still far from clear. It occurs in south-eastern Brazil and presumably in eastern Brazil, where it is known by the vernacular names of "Mandy-guassú", "Mandy-hú", or "Mandy-pintada" (Magalhães, 1931: 137). Fowler (1951: 555) records "Bagre pintado", "Bagre amarillo", "Bagre overo", "Bagre branco" and "Mandi tinga". I found no record of "Guiri" for this species, but it was thus recorded in the *Theatrum I* index.

A related, unspotted species occurs on the tapestries "Le roi porté (Anciennes Indes)" and "La négresse portée" (Nouvelles Indes), among a bundle of fishes hanging from a forked stick.

#### Folio 54

Guiri(tinga).— *Arius passany* (Valenciennes, 1839)

Handbook, ? : ? (no notes available); *Theatrum*, 1: 45; Marcgrave, 1648: 173 (fig.); Marcgrave, 1942: [LIX (note 428)]; Piso, 1658: 64 (fig.); Piso, 1957: [159 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 45. Guiri Guiritinga 3 No. 44. p. 64." (in Piso, 1658).

The present picture closely resembles the inverse woodcut illustration of Marcgrave's second "Bagre" (copied by Piso) and both certainly were not made independently. This second "Bagre" is referred to by Valenciennes three times, first (1839: 452), where he doubts conspecificity with his *Bagrus commersonii* (= *Netuma barba* (Lacépède)); secondly (1840: 39), where he actually means Marcgrave's third "Bagre"; and thirdly (1840: 128), again erroneously, in his statement "Ce deuxième bagre de Marcgrave est un Doras", which clearly points to Marcgrave's fourth "Bagre". Unfortunately, Carvalho & Sawaya (in Marcgrave, 1942: LIX) only discuss the second and third references, overlooking the first which, apparently, was not far from the truth.

Besides the general shape and the three pairs of short barbels, as also illustrated in Marcgrave, the possible interpretations of the species are specially limited by the stated size of two feet, three inches, the very short snout with a transverse skin fold and the described yellow colour, in close agreement with the illustration in the coloured copy of Marcgrave in Leiden. With the exception of the yellow colour, these characters all quite well agree with *Arius passany* (Valenciennes). The yellowish

colour recorded by Marcgrave as well as his omission to mention the characteristic internarial skin fold may suggest that his text (partly?) concerns a different species, possibly *Sciadeichthys luniscutis* Puyo.

Both species occur in coastal waters from Surinam south to Rio Grande do Sul, and reach a length of about five feet.

### Folio 55

Guiri, Urubu.— *Franciscodoras marmoratus* (Reinhardt, 1874)

Handbook, ? : ? (no notes available); Theatrum, 1: 49; Marcgrave, 1648: 174 (fig.); Marcgrave, 1942: [LIX (note 429)]; Piso, 1658: 65 (fig.); Piso, 1957: [160 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 49. Guiri Urubu No. 47. p. 65." (in Piso, 1658).

This picture closely agrees with the woodcut illustrating the fourth "Bagre" of Marcgrave, copied by Piso (which must have had a similar origin). The species here represented, as described by Marcgrave, has been identified by Valenciennes (1840: 283) as *Doras maculatus* Valenciennes (= *Pterodoras granulatus* (Valenciennes)), but seems to differ by having a much longer adipose dorsal fin, a less anterior position of the eyes, and the occurrence of dorsal and ventral fulcra before the insertion of the caudal fin (exaggerated in the woodcut, not or hardly indicated in the present picture, but described in Marcgrave's text). Considering these fulcra, the long adipose fin, the situation of the eyes, the long sword-shaped humeral process, the rather narrow series of serrated lateral shields, and the locality, it seems well warranted to tentatively identify the present picture and Marcgrave's species as *Franciscodoras marmoratus* (Reinhardt), as pictured by Fowler (1951: 490). This species appears to have been recorded from the Rio São Francisco. No recent Brazilian vernacular name was found in the available literature; the name "Urutú" appears to be used for a different Rio São Francisco species, *Duopalatinus emarginatus* (Valenciennes) (Fowler, 1951: 587), without the lateral series of spiny scutes, while the somewhat similar name "Jurupóca" (Magalhães, 1931: 131) is used for the species *Hemisorubim platyrhynchos* (Valenciennes), which also differs in various aspects.

### Folio 56

Guacará.— *Hypostomus* species

Handbook, 1: 392?; Theatrum, 1: 53?; Marcgrave, 1648: 166 (not fig.); Marcgrave, 1942: [LVIII (note 405)]; Piso, 1658: 72 (not fig.); Piso, 1957: [177 (not fig.)]; Linnaeus, 1758: (238); Linnaeus, 1766: 508; Lichtenstein, 1829: 64; Lichtenstein, 1961: 132, [253, 305 (note 217)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 53. Guacará No. 74. p. 74 [error, = 72]. [symbol, = est] altera spes autoris" (other species of the author).

This picture differs considerably from a "Guacari" on folio 22, and from the similar Marcgrave woodcut, and must represent a different species, most likely of the genus *Hypostomus*. Unfortunately, the very unsatisfactory quality (for zoological pur-

poses, at least), does not allow a specific interpretation, especially as Fowler (1954: 347) already listed seven species for the Rio São Francisco alone. But it definitely does not portray *H. plecostomus* (Linnaeus), as that species does not have spots on the (anterior) belly, as described by Marcgrave, while moreover it does not occur in the area (Boeseman, 1968: 13, 35).

It has generally been understood that the Marcgrave woodcut provided an illustration of that author's extensively described first form, and not his second species, from the Rio São Francisco. However, the Leiden coloured copy of Marcgrave shows the "Guacari" to be wholly dark brown, with a round black blotch on each scute, as described for the second species, and not light yellow as described for the first one. This quite convincingly shows that the short remark on the Rio São Francisco species and the woodcut both concern *Pterygoplichthys etentaculatus* (Spix), discussed in the text to folio 22, while the extensive description of Marcgrave must be based on a yellowish *Hypostomus* species.

### Folio 57

Pixedádi.— *Mola mola* (Linnaeus, 1758)

Handbook, ? : ? (no notes available); Theatrum, 1: 55; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (334); Linnaeus, 1766: (412); Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil;

Annotations: "I.P. Tom 1. p. 55. Pixedádi Angola".

The identification of this fish, indicated as from Angola, poses no problems. It is evidently a *Mola* (*Ranzania* being more oblong), and *Mola mola* (Linnaeus) is the only representative in the area. But there remain a few questions: even though the picture may represent a juvenile specimen of about 30-40 cm long, why and how was such an inconveniently shaped fish transported to Brazil (where the same species also occurs in the coastal waters); when and by whom has the indication "Angola", written in a different hand, been added; and where does the vernacular name come from, Angola or Brazil? As more African animals are included here, it is possible that some enlightened sailors, presumably officers, were willing to sacrifice a barrel with rum or arrack to preserve strange animals for Johan Maurits, hoping for some favours as a reward. The attribution of the word "Angola" has so far proved impossible, due to lack of convincingly similar specimens of handwriting. It differs from the writing of Nassau, Piso or Horkel, is very close to that of Marcgrave (but such an attribution seems unlikely), while I lack examples from Eckhout or Jan de Laet. We can only assume that this locality was added either when the information was new and had arrived with the specimen, or it may have been taken at some later date from information found in the Theatrum or possibly the Handbook. Finally, the vernacular name, obviously (at least partly) derived from the Portuguese, does not seem to show any similarity with recent Portuguese vernacular names ("Peixe-lua", "Bezedor", "Lua", "Orelhão", "Pendão", etc., Castro, 1954: 197), while I found no Angolan or Brazilian names.

The species occurs in most tropical to temperate seas, but appears to be rare off Brazil.

## Folio 58

Amore-pixuma.— *Eleotris pisonis* (Gmelin, 1789)

Handbook, ? : ? (no notes available); Theatrum, 1: 59; Marcgrave, 1648: 166 (fig.); Marcgrave, 1942: [LVIII (note 402)]; Piso, 1658: 72 (fig.); Piso, 1957: [176 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 63; Lichtenstein, 1961: 131, [252, 304 (note 214)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 59. Amore-pixuma No. 72. p. 72. [Piso, 1658] Amoréçima".

This picture closely resembles the Marcgrave woodcut (copied by Piso), thus obviously stemming from the same source.

Marcgrave described three species of "Amore", the one here being the second, all of which pose serious problems to taxonomists. Gronovius (1756: 16, 17) refers Marcgrave's first and second species to *Eleotris*, wisely ignoring the third, not illustrated species. Valenciennes (1837: 222) was certainly correct in interpreting the first species as a goby, the ventral fins being described by Marcgrave as united, while he confirmed the identification of the second species, here discussed, as an eleotrid. Lichtenstein merely adds confusion by overlooking Marcgrave's description of united ventral fins for his first species, and by suggesting an identification as a pimelodid catfish for the second.

Gmelin (1789: 1206) was the first to provide a name, *Gobius pisonis*, for the present species, wholly basing it on the information supplied by Marcgrave and by Piso. With the present allocation to the genus *Eleotris*, this name is now in general use for a rather common tropical American species with the Brazilian vernacular name of "Peixe-macaco" (cf. Fowler, 1941: 175).

A correct identification of the present picture is hampered by some evident errors. If we accept the narrow streaks below the left pectoral as representing the (strangely situated) ventrals, we find that no species is known to science possessing these in combination with the figured long and many rayed dorsal and anal fins (in contradistinction to the woodcut even continuing to close before the insertion of the caudal fin), and I presume that most fins represented are far from correct. Therefore, the current identification as *Eleotris pisonis* may well be accepted, but *Guavina guavina* (Valenciennes) seems an even more likely interpretation considering its longer second dorsal and anal fin, its more rounded caudal fin, its shorter pectoral fin, and the more wide and round snout and head. However, as an identification as *Guavina guavina* would have serious nomenclatural consequences, I tentatively maintain the usual interpretation of *Eleotris pisonis* (Gmelin). This species is rather abundant along the tropical Atlantic shores of America, from the Caribbean and Florida to southern Brazil, and it is still known by the vernacular name "Amoré" (Magalhães, 1931: 80). *Guavina guavina* (Valenciennes) occurs less frequently in about the same area, north to Cuba, and is known by the Brazilian vernacular name of "Moreia-do-mangue" (Fowler, 1941: 176) or "Moré-preto" (Lima & Oliveira, 1978: 19).

**Folio 59**

Tajasicá.— *Gobioides broussonneti* Lacépède, 1800

Handbook, ? : ? (no notes available); Theatrum, 1: 73; Marcgrave, 1648: 144 (fig.); Marcgrave, 1942: [LII (note 335)]; Piso, 1658: 68 (fig.); Piso, 1957: [169 (fig.)]; Linnaeus, 1758: nil; Linnaeus: 1766: nil; Lichtenstein, 1822: 273; Lichtenstein, 1961: 101, [215, 292 (note 161)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 73. Tajasicá No 62. p 68 [Piso, 1658] et p.144.HB [Marcgrave, 1648] Táyaçica".

There is a striking similarity between this picture and Marcgrave's woodcut of the "Tajastica", even though it differs in some details: the widely interrupted dorsal fin and the shorter anal fin. It is interesting to note that Marcgrave only describes a single long dorsal fin. With regard to the number of fins he evidently made a mistake, stating first that there are six fins, but calling the caudal the seventh fin. The Portuguese translation (1942) is not correct.

Lichtenstein remarks also that in the picture in the Theatrum there are two widely separated dorsal fins and a much shorter anal fin than represented in the Marcgrave woodcut. Therefore, the maker of this woodcut (copied by Piso) here seems to have improved the picture, possibly induced by Marcgrave's text.

In the same publication, Lichtenstein considered a Brazilian goby in the Berlin collections identical with Marcgrave's "Tajastica" and described it as *Gobius tajastica*. However, subsequent authors (e.g., Valenciennes, 1837: 122, 123) found that Lichtenstein's specimen, the holotype of *Gobius tajastica* (= *Awaous tajastica* (Lichtenstein)), in various aspects differs from Marcgrave's species "Tajastica", being presumably identical with Marcgrave's "Amore Guacu" (1648, 1942: 166, note 401). The real "Tajastica" of Marcgrave, as portrayed here, is probably identical with *Gobius brasiliensis* Bloch & Schneider, stated to have been based on information in the Johan Maurits manuscripts, now as a junior synonym referred to *Gobioides broussonneti* Lacépède. If we accept the dorsal fin to have been continuous and the caudal fin to be mutilated in the pictures, *Gobioides broussonneti* seems a most likely interpretation.

This species is known to occur in the tropical western Atlantic from the West Indies to Brazil. I found no specific Brazilian vernacular name for it in recent literature.

**Folio 60**

Caramuru.— ?? *Echiophis intertinctus* (Richardson, 1844)

Handbook, ? : ? (no notes available); Theatrum, 1: 75; Marcgrave, 1648: nil; Piso, 1658: 296; Piso, 1957: [615]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 75. Caramuru".

This "Caramuru" appears to have been recorded only by Piso, who states that it is a marine snake (evidently meaning eel) measuring 10-12 palms (= 100-120 cm), but unfortunately without providing an illustration. The Leningrad picture adds scant pertinent information besides showing that the species possesses a pectoral fin, subequal jaws, a relatively small eye above angle of mouth, and rather characteristic colour markings. There seems to be no trace of an anal fin, while a vague dorsal fin



originates at about half body length (below the middle of the vernacular name), causing problems by ending in a distinct, elevated posterior part, which gives the impression of a caudal fin.

Magalhães (1931: 213) records the name "Caramurú" for the lungfish, *Lepidosiren paradoxa* Fitzinger, a wholly different freshwater species not occurring in north-eastern Brazil. Castelnau (1855: 82, pl. 42 fig. 1) described and illustrated a species *Muraenophis caramuru* (since considered identical with *Gymnothorax moringa* (Cuvier)), stating: "On lui donne à Bahia le nom de Caramuru, qui s'applique également à d'autres Murènes". Unfortunately, all morays differ considerably from the present picture, e.g. by having no pectoral fins.

I am not aware of the existence of a species showing all the characters mentioned in the first paragraph. Most likely, the picture represents a snake eel (Ophichthidae), possibly *Echiophis intertinctus* (Richardson), taking considerable artistic licence in fin shapes and markings for granted. It is one of the few species reaching the stated length, and is reported to occur in the western Atlantic from North Carolina to Bahía (Brazil).

### Folio 61

Pirá ibíra.— *Trichiurus lepturus* Linnaeus, 1758

Handbook, 1: not 388; Theatrum, 1: 79, 81?; Marcgrave, 1648: 161; Marcgrave, 1942: [LVII (note 388)]; Piso, 1658: nil; Linnaeus, 1758: (246); Linnaeus, 1766: 430; Lichtenstein, 1829: 58; Lichtenstein, 1961: 126, [246, 301 (note 204)]; Wagener, 1964: 184 (fig. 3), [230, 338]

Annotations: "I.M. Tom 1. p. 79. Pirá ibíra".

This picture evidently represents the same species as the woodcut erroneously illustrating Marcgrave's "Mucu" (which judging by the description is evidently *Synbranchus marmoratus* Bloch, known by the vernacular names "Mussum", "Mus-sú", "Piramboia" or "Peixa-cobra" (Carvalho & Sawaya in Marcgrave, 1942: LVII)). As already stated by Lichtenstein, the woodcut in Marcgrave was added by the editor, Johannes de Laet, who took it from his 1633 book on the America's, so there is no connection with the present figure.

The species here portrayed is undoubtedly *Trichiurus lepturus* Linnaeus. A reference to Marcgrave was omitted in its original Linnaean description, but was added in the 1766 version. I was unable to find any record of the name "Pirá ibíra" (pirá = fish, cf. Piso, 1658: 48; ibíra may have been derived from the Marcgrave name "Tbyara", for an amphisbaenid); it is known now by the vernacular name of "Peixe-espada" (Fowler, 1941: 151), and occurs rather commonly in all warmer seas, including the American Atlantic coast from Virginia south to Argentine.

### Folios 62 & 63

Guamajacuguará.— ? *Diodon hystrix* Linnaeus, 1758

Guamajacu-atinga.— ? *Chilomycterus atinga* (Linnaeus, 1758)

Handbook, 1: 304?, 2: 303?; Theatrum, 1: 95, 97?; Marcgrave, 1648: 158 (fig.), 168 (fig.); Marcgrave, 1942: [LVI (note 382), LVIII (note 410)]; Piso, 1658: 299, 300 (figs.); Piso, 1957: [621-623 (figs.)]; Linnaeus, 1758: (335, 334); Linnaeus, 1766: (413, 412); Lichtenstein, 1829: 54-56; Lichtenstein, 1961: 122-124, [240-244 (note 198)]; Wagener, 1964: 185 (fig. 9), 234, 342]

Annotations: "I.P. Tom 1. p. 95. Guamajacuará alias atí p. 300." (Piso, 1658), and "I.P. Tom 1 p. 97 [?] Guambaiacuaté Guamajacu-atinga. p. 299." (Piso, 1658).

Both these pictures seem to represent juvenile diodontids, perhaps those referred to by Marcgrave in an addition to his description of the "Guamajacu Guara"(p. 159). A similar adult specimen is portrayed on folio 16.

All pose serious problems with regard to their correct identification, partly because of discrepancies between Marcgrave's texts, the woodcuts, and the current interpretations. As stated in the discussion to folio 16, Marcgrave's "Guamajacu Guara" is described as having the triangular spine bases of a *Chilomycterus*, while the woodcut illustration appears to be based on a sketch of a *Diodon*. On the other hand, his "Guamajacu Atinga" description and woodcut do not provide such information, but that species has invariably been referred to *Chilomycterus*, with fixed spines. It is fortunate that Linnaeus did not base his species *hystrix* and *atinga* on Marcgrave's information.

The present two pictures do not show any particular resemblance to any of the two Marcgrave woodcuts and cannot be identified with sufficient certainty with any of the seven species of diodontids hitherto recorded from Brazil. The suggested interpretations are mainly based on the present annotations and on the opinions of previous authors.

Similar fishes occur on the tapestries "Le cheval rayé" (both versions), "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), and especially "Les chasseurs" (both versions). Folio 62 has already been published by Schaeffer (1973: 193).

#### Folio 64

Niqui.— *Thalassophryne nattereri* Steindachner, 1876

Handbook, ? : ? (no notes available); Theatrum, 1: (101); Marcgrave, 1648: (178, fig.); Marcgrave, 1942: [LIX (note 439)]; Piso, 1648: 50 (fig.), 1658: 294 (fig.); Piso, 1957: [612 (fig.)]; Linnaeus, 1758: 265 (error); Linnaeus, 1766: 451 (error); Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 101. Niqui. p. 294." (in Piso, 1658).

This picture differs considerably from the "Niqui" woodcut in Marcgrave, copied by Piso ("Niqui II"), but agrees well with Piso's first "Niqui" illustration (excepting the erroneous addition of scales on the head) and with the Theatrum figure (cf. Valenciennes, 1837: 505).

Marcgrave's "Niqui" has usually been identified as *Nautopaedium porosissimum* (Valenciennes), a species Valenciennes partly based on Marcgrave's information, but this appears subject to serious doubt, being partly based on a presumed record of pores where Marcgrave only mentions black spots 'the size of poppy-seeds'. Valenciennes was probably misled by the indication of the spots in the woodcut by small circles, but in the Leiden coloured copy these are filled in with black. Therefore,

Marcgrave's "Niqui" may well represent a *Thalassophryne* species, possibly *T. punctata* Steindachner (which appears to be identical with *T. nattereri*, cf. Collette, 1966: 858).

The present picture must also represent a *Thalassophryne*. The impression of confluent second dorsal, caudal and anal fins must be erroneous (possibly caused by the deflated ends of dorsal and anal fins overlapping the caudal base; in the Piso version this seems partly corrected), as the only Brazilian species showing that feature, *T. amazonica* Steindachner, lacks the lateral line so well indicated in the figure. Considering the distinct white margin of the pectorals, the most likely interpretation appears to be *Thalassophryne nattereri* Steindachner, a species not infrequent along the South American shores from Tobago to San Salvador, Brazil (Collette, 1966: 857). For this species Fowler (1941: 180, under *T. branneri* Starks) records the vernacular name "Moreiatim", Lima & Oliveira (1978) "Aniquim".

The same species occurs on the tapestry "Le cheval rayé" (both versions).

### Folio 65

Pirameiui.— *Dactylopterus volitans* (Linnaeus, 1758)

Handbook, 1: 390; Theatrum, 1: 103; Marcgrave, 1648: 162 (fig.); Marcgrave, 1942: (LVII (note 391)); Piso, 1658: 61 (fig.); Piso, 1957: [154 (fig.)]; Linnaeus, 1758: (302); Linnaeus, 1766: 498; Lichtenstein, 1829: 61; Lichtenstein, 1961: 129, [249, 302 (note 207)]; Wagener, 1964: 184 (fig. 5), [232, 340]

Annotations: "I.P. Tom 1. p. 103. a Pirameiui".

This picture does not agree with the Marcgrave woodcut (copied by Piso) of the "Miivi-pira" (a name similar to that in the above annotations, but with first and second halves interchanged), or the pictures in the Handbook and Theatrum (cf. Lichtenstein), but presumably it represents a subadult specimen of the same species: *Dactylopterus volitans* (Linnaeus). In adults, there is quite a distinct first dorsal fin, here lacking, the preopercular spines become shorter, and the caudal fin is distinctly bifurcate. The species also occurs on folio 21, and is discussed in the accompanying text.

### Folio 66

Pirameiuy.— *Prionotus alipionis* Teague & Myers, 1945

Handbook, ? ? (no notes available; Theatrum, 1: 103; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 103. b. Pirameiuy".

The fish here represented, although with almost the same vernacular name as the previous species, obviously is not conspecific. No similar species is recorded by Marcgrave, Piso or Wagener, but Cuvier (1829: 100) appears to refer to the same species on the basis of a picture, named "Pira meivy", in the Theatrum, which he considered to represent an unidentifiable species of *Prionotus*. Cuvier, while abstaining from giving a scientific name, described the colour and markings of the species,

apparently in complete agreement with the present picture, but mentions a first dorsal fin, which is missing here.

Though the picture evidently shows several inaccuracies, it appears that Cuvier's allocation is correct, and it seems warranted to assume that it represents a Brazilian *Prionotus punctatus* auct. (a composite species), now known by the name *P. alipionis* Teague & Myers. Detailed information on this western Atlantic species, occurring from the West Indies and Venezuela to Argentine, is given by Teague & Myers (1945) and by Teague (1951: 52; 1952: 16). It does not seem rare along the Brazilian coast and may be known by the vernacular name "Rubio volador" (Jordan, Evermann & Clark, 1930: 407, as *P. punctatus*).

### Folio 67

Pirabebe.—*Exocoetus obtusirostris* Günther, 1866

Handbook, ? : ? (no notes available); Theatrum, 1: 105; Marcgrave, 1648: 162 (note?); Marcgrave, 1942: [nil]; Piso, 1658: 61 (fig.); Piso, 1957: [154 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 521 (partly); Lichtenstein, 1822, 1829: nil; Wagener, 1964: 186 (fig. 14), [237, 344]

Annotations: "I.P. Tom 1. p. 105. Pirabebe 2. No. 27. p. 61." (in Piso, 1658).

This picture has no affinities with any Marcgrave species. That author uses the vernacular names "Miivipira" and "Pirabebe", but describes only the wholly different species *Dactylopterus volitans* (Linnaeus) (see comments to folios 21 and 65), though perhaps referring to the present species in a final note. Piso provides, for his "Pirabebé II", a rather similar woodcut illustration, correctly adding a ventral fin, missing in the present figure. It may be noted that Piso's illustration is not the 27th fish woodcut, as stated in the present annotations, but the 37th.

This fish evidently is an exocoetid species. If the ventral fins were not omitted but hidden by the pectoral, then they would have been small. Taking into account also the snub-nosed, blunt head, an identification with *Exocoetus obtusirostris* Günther, a species recorded from the area, seems warranted (Bruun, 1935: 37, fig. 25, pl. II fig. 2). Linnaeus (1766: 521) erroneously included it in his *E. evolans*, now considered identical with *E. volitans* Linnaeus, a species also occurring in the area.

*Exocoetus obtusirostris* occurs in the warmer Atlantic, along the South American coast south to around Rio de Janeiro. Judging by Pinto's comments on Wagener, it is known by the general names of "Peixe-voador" and, being frequently confused with *E. volitans*, presumably "Tainhota".

A similar fish may be found on the tapestry "Le cheval rayé" (both versions), situated above the diodontid fish.

### Folio 68

Paru.—*Holacanthus tricolor* (Bloch, 1795)

Handbook, ? : ? (no notes available); Theatrum, 1: 123; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 275; Lichtenstein, 1961: 102, [217]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 123. Paru. No. 20. p. 55." (in Piso, 1658).

This picture is not the real "Paru" of Marcgrave (1648: 144), represented in the present series on folio 16 (= *Pomacanthus paru* (Bloch)).

Also, it is lacking in Piso, the reference in the annotation (fish picture 20, page 55) also referring to the real "Paru". On account of the shape and especially the characteristic colours and pattern, the fish here portrayed must be *Holacanthus tricolor* (Bloch) (see Randall, 1968: 185, col. fig. 208). A reference by Bloch to plate 144 in volume 2 of the Handbook appears to be erroneous (Cuvier, 1831: 163, footnote).

*Holacanthus tricolor* occurs in the warmer western Atlantic, ranging from Georgia and Bermuda to Bahia, Brazil. It appears to be known by the vernacular names of "Soldado" (Fowler, 1941: 170), "Catalineta" or "Vaqueta de los colores" (Jordan, Evermann & Clark, 1930: 361).

The same species apparently occurs on the tapestry "Les chasseurs" (both versions).

### Folio 69

Guaperua.— *Balistes vetula* (Linnaeus, 1758)

Handbook, 2: 311; Theatrum, 1: 125; Marcgrave, 1648: 163 (fig.); Marcgrave, 1942: [LVII (note 396)]; Piso, 1658: 57 (fig.); Piso, 1957: [146 (fig.)]; Linnaeus, 1758: (329); Linnaeus, 1766: (406); Lichtenstein, 1829: 62; Lichtenstein, 1961: 130, [250, 303 (note 210)]; Wagener, 1964: nil

Annotations: "L.P. Tom 1. p. 125. Guaperua. No 26. p. 57." (in Piso, 1658).

Marcgrave records four species as "Guaperua" or "Guarerua" (1648: 145, 150, 163, 178), of which only the third shows a close agreement with the present picture and is evidently the same species. Still, differences in several details make it unlikely that Marcgrave's woodcut (copied by Piso) came from the same source as the present picture (shape of mouth and caudal fin, colour markings).

The fish here portrayed is evidently *Balistes vetula* (Linnaeus), as already observed by previous authors. This species occurs in the warmer parts of the Atlantic, along the American coast from Nova Scotia to Argentine. It appears to be known by the vernacular names "Cangulo" (Fowler, 1941: 181) or "Cochino" (Jordan, Evermann & Clark, 1930: 491).

The similarity of the drawing with the picture in the Theatrum, of which a photographic copy has been published by Soloviev (1934: 223), is striking.

### Folio 70

Guaperuà.— *Chaetodipterus faber* (Broussonet, 1782)

Handbook, ? : ? (no notes available); Theatrum, 1: 127; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 127. b Guaperuà".

The species pictured here seems not represented in the publications of Marcgrave, Piso or Wagener. It evidently is a sub-adult specimen of *Chaetodipterus faber* (Broussonet), with the soft dorsal and anal fins not yet falcate and the cross-bands on

head and body still not distinct. But the shape, especially of the dorsal fins, is highly characteristic (note the resemblance with fig. 237 in Cervigon, 1966: 567). The species occurs in the warmer western Atlantic from Massachusetts to Santos, Brazil, where it seems to be known by the vernacular name of "Enxada" (Fowler, 1941: 169).

**Guaperuá.**— *Pomacanthus arcuatus* (Linnaeus, 1758)

Handbook, ? : ? (no notes available); Theatrum, 1: 127; Marcgrave, 1648: 145 (not fig.), 178 (fig.); Marcgrave, 1942: [LIII (note 339), LX (note 440)]; Piso, 1658: nil; Linnaeus, 1758: (273); Linnaeus, 1766: (462); Lichtenstein, 1822: 275; Lichtenstein, 1961: 103, [217, 292 (note 165)]; Wagener, 1964: nil

Annotations: "[I.P. Tom 1] p. 127. a Guaperuá p. 178. HB" (Marcgrave, 1648).

This picture shows a considerable resemblance to Marcgrave's "Guarerua" woodcut, and may stem from the same source. Cuvier (1830: 166) at first identified this Marcgrave species as *Chaetodon arcuatus*, but subsequently (1831: 210) presumed it to be identical with his *Pomacanthus quinquecinctus*, which he considered distinct from *arcuatus*. Subsequent authors referred Cuvier's *arcuatus* to *Pomacanthus paru* (Bloch), and his *quinquecinctus* to the true *arcuatus* of Linnaeus. Though young specimens of both these species are quite similar, I identify the fish here represented as a young specimen of *Pomacanthus arcuatus* (Linnaeus), especially on account of the rather large scales. This species has been recorded from the western Atlantic from New England to south-eastern Brazil, and appears to be known by the vernacular names of "Frade", "Parú-da-pedra" (Fowler, 1941: 170), or "Chirivita" (Jordan, Evermann & Clark, 1930: 360).

It is interesting to note that Marcgrave's text to his first "Guaperua" (p. 145) is almost verbally the same as his description of the present species, which he named "Guarerua" (p. 178), and evidently concerns the same species. However, to the first text, Johannes de Laet erroneously added a picture of *Selene vomer*, also illustrated in Marcgrave on page 161 and represented here on folio 46.

## Folio 71

**Camarupi.**— *Tarpon atlanticus* (Valenciennes, 1846)

Handbook, ? : ? (no notes available); Theatrum, 1: 153; Marcgrave, 1648: 177 (fig.); Marcgrave, 1942: [LX (note 445)]; Piso, 1658: 65 (fig.); Piso, 1957: [161 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 153. Camarupi. Camaripuguaçú No. 48. p 65" (in Piso, 1658).

There is a remarkable resemblance between this picture and the woodcut illustrating Marcgrave's "Camaripuguacu" (though the latter shows much better the prominent lower jaw), and somehow a mutual source must be assumed. The same woodcut was used by Piso.

Excepting some minor flaws (the apparently too far spread caudal fin, which seems almost truncate but was described correctly as bifurcate by Marcgrave, this figure quite adequately portrays the well-known *Tarpon atlanticus* (Valenciennes).

Valenciennes (1846: 399), in a discussion following the original description, refers to Marcgrave's "Camaripuguacu" woodcut, adding comments on a more accurate picture in the Handbooks; apparently he was not aware of the Theatrum figure, referred to in the present annotations and in the index to the Theatrum, which lists both vernacular names for plate 153 (photographic copy consulted).

Though presumably the name *Tarpon giganteus* (Shaw, 1804) should be applied, I concur with Myers (in Hildebrand, 1963: 121, footnote) that retention of the well established name *atlanticus* is preferable.

The present species is widespread in the tropical to temperate Atlantic, and ranges along the American coasts from Cape Cod, Massachusetts, to southern Brazil. It reaches a length of over eight feet and is known by the vernacular name of "Camurupim" (Lima & Oliveira, 1978: 24).

## Folio 72

Camurí.— *Centropomus parallelus* Poey, 1860

Handbook, ? : ? (no notes available); Theatrum, 1: 163, 233?; Marcgrave, 1648: 160; Marcgrave, 1942: [LVI (note 385)]; Piso, 1658: 74 (not fig.?); Piso, 1957: [180 (not fig.?)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 57; Lichtenstein, 1961: 125, [245, 301 (note 202)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 163. Camurí. ad p. 74 No. 77." (Piso, 1658).

This picture, though evidently portraying a *Centropomus* species, is rather lacking in detailed information on specific characters. Besides the general rather robust shape, only the far reaching pelvic fin, the forward position of the spinous dorsal fin, and the size up to at least two feet if we accept it to represent the "Camurí" of Marcgrave (who also records the wide black lateral line), provide reasonable indications of *Centropomus parallelus* Poey, an identification convincingly supported by a comparison of the present picture with the *Centropomus* species as figured by Rivas (1962, fig. 1) and by Cervigon (1966, figs. 110-112). The only other species reaching two feet, *C. undecimalis*, is much more slender and has a distinctly more backward spinous dorsal fin.

This species, of which Marcgrave provides no figure, seems illustrated by Piso, but if so that illustration is extremely poor. Piso records several "Camurí" species, of which he states to have illustrated only the most common and notable, subsequently described as having a wide black lateral line. Though this seems to confirm the current interpretation of Piso's fish as *Centropomus undecimalis*, his picture shows only a rather vague lateral line, situated far too high, and rather resembles a sphyraenid (see text to folio 93).

*Centropomus parallelus* Poey is a common species along the warmer coast of the western Atlantic, where it ranges from Florida to Santos, Brazil. A length of almost two feet has been recorded. Vernacular names appear to be "Robalo", "Cangoropeba" and "Camurupeba" (Fowler, 1941: 155), or "Camurim" (Lima & Oliveira, 1978: 4).

A similar fish occurs on the tapestry "Le combat d'animaux", version Anciennes Indes.

## Folio 73

## "Monstrum biceps" .— ?

Handbook, ? : ? (no notes available); Theatrum, 1: 173 (or 179?); Marcgrave, 1648: nil; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 173. Ohne Namen, Fisch ohne Schwanz, aber mit zwei Köpfen" (very vague, in pencil, below figure: Without Name, Fish without Tail, but with two Heads).

This evidently is a hoax, either at the expense of or—more likely—by the artist who made the picture, and not a "monstrum", as it seems to be named in the Theatrum. In the index to the first volume of the Theatrum is a reference to a "monstrum biceps", which must be the one here represented, although the picture is stated to be on plate 179, not 173 as in the present annotation. As the index also contains the record of a "Piraatiati" on plate 179, the reference to page 179 for the "monstrum" appears to be a lapsus. The name "Piraatiati", to be found on the next folio, must be identified with *Elops saurus* Linnaeus.

It is interesting to note that the artist evidently must have had quite some knowledge of the anatomy of a fish head; each half of the pictured specimen (neglecting the eyes) shows a very close resemblance to the front part of the snout of a *Fistularia*.

## Folio 74

Pirá atiatí.— *Elops saurus* Linnaeus, 1766

Handbook, 2: 339; Theatrum, 1: 179; Marcgrave, 1648: 154 (fig.); Marcgrave, 1942: [LV (note 367)]; Piso, 1658: 63 (fig.); Piso, 1957: [157 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: (518); Lichtenstein, 1822: 287; Lichtenstein, 1961: 115, [232, 297 (note 186)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 179. Pirá atiatí".

This picture evidently represents Marcgrave's "Uubarana", the woodcut illustration of which shows a considerable similarity, neglecting a few inaccuracies (which preclude the assumption of a common source). Marcgrave's species has been identified as *Albula vulpes* (Linnaeus) and also as *Elops saurus* Linnaeus, but the present and better picture strongly supports the second interpretation: the slender body, the shape of the head, the more forward position of the ventral fins.

Marcgrave also records a "Piratiapia" (p. 157), but this is a wholly different species, presumably a serranid sea-perch. On the other hand, Valenciennes (1846: 378) records a "Pirâ-ati-âti" in the Theatrum in his discussion of *Elops saurus*. It seems plausible to assume that the editor, Johannes de Laet, introduced this confusion in Marcgrave, while subsequently Piso merely copied this erroneous usage by naming the present species "Uubarána". A further complication seems that Magalhães (1931: 252) identifies a similarly named "Urubarana" as a catfish! See also the comments to folio 89.

*Elops saurus* Linnaeus occurs in the warmer Atlantic, along the American coasts from Massachusetts to Rio de Janeiro. Latin American vernacular names are "Matajuelo real" or "Lisa francesa" (Jordan, Evermann & Clark, 1930: 39), or "Ubaranaçu" (Lima & Oliveira, 1978: 19).



## Folio 75

Guatucupá.— *Cynoscion guatucupa* (Cuvier, 1830)

Handbook, ? : ? (no notes available); Theatrum, 1: 181; Marcgrave, 1648: 177 (fig.); Marcgrave, 1942: [LIX (note 437)]; Piso, 1658: 62 (fig.); Piso, 1957: [155 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: 479 (error); Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 181. Guatucupá. p. 177. HB" (Marcgrave, 1648).

The agreement of this picture with the woodcut illustrating Marcgrave's "Guatucupa" is quite close, the main difference being that this picture evidently portrays the fresh fish naturalistically, with the fins depressed, while the woodcut, as usual, provides a more ideal view. The general shape, the (dorsal) fins, and Marcgrave's information on the size (2 feet) and his Portuguese name "Corvina", all point to a sciaenid species. Cuvier (1830: 75) identified Marcgrave's species with the *Otolithus guatucupa*, of which he had at hand a specimen from Montevideo; the principal aberrant character he mentions concerns Marcgrave's remark on the "dentes minimos", but distinct canines are indicated in the woodcut (though lacking in the fish pictured here). *Otolithus guatucupa* has since been considered a junior synonym of *Cynoscion striatus* (Cuvier) (Travassos & Rego-Barros, 1941: 64), but *striatus* Cuvier (1828: 173.— not 180 as stated by Travassos & Rego-Barros, footnote) is a nomen nudum, and the first valid name seems to be *guatucupa* Cuvier, 1830. It is recorded by the aforementioned authors to occur along the Brazilian coast, south to Rio de la Plata, where the vernacular names "Pescada-olhuda" and "Maria-mole" are applied.

## Folio 76

Paratí.— *Mugil liza* Valenciennes, 1836

Handbook, ? : ? (no notes available); Theatrum, 1: 187; Marcgrave, 1648: 166 (fig.), 181; Marcgrave, 1942: [LVIII (note 404), LX (note 449)]; Piso, 1658: 71 (fig.); Piso, 1957: [174 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 64; Lichtenstein, 1961: 132, [253, 305 (note 216)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 187. a Paratí No. 69. p. 71." (Piso, 1658).

Marcgrave twice records a "Paratí", on the first occasion as "Pastor" with a woodcut illustration copied and named "Paratí" by Piso; however, the woodcut does not show many affinities with the present picture and seems far inferior in accuracy. Probably both Marcgrave descriptions refer to the same mugilid species as portrayed in the present picture.

In comparison with the fish pictured on folio 82, which is a closely related species, this figure seems to differ by showing fewer and larger scales, a less blunt snout, a longer lower jaw, and distinct longitudinal stripes, but hardly any of the characters usually employed for identification can be verified. As the few characters available do not provide any reason or opportunity to doubt the current interpretation of Marcgrave's "Paratí", the present picture may be identified as *Mugil liza* Valenciennes (= *M. brasiliensis* auct.), a species known to be slender, with a conical snout, and with longitudinal stripes, and occurring in the western Atlantic from Bermuda and Florida to Argentina. A remarkably similar picture of the species (though

lacking the longitudinal stripes or bands) has been given by Dahl (1971: 191). According to Jordan, Evermann & Clark (1930: 253) and Fowler (1941: 149), it is known by the vernacular names "Liza", "Lebranchi" and "Tainha".

The reasons for using the specific name *liza* Valenciennes (1836: 83) instead of *brasiliensis* Spix (1831: 134) have been dealt with by Trewavas (1950: 149), and were presumably accepted by Mago (1970: 103), though apparently not (or overlooked) by Cervigon (1966: 271) and Dahl (l.c.).

### Folio 77

#### Acarapitánga.— *Lutjanus griseus* (Linnaeus, 1758)

Handbook, ? : ?, not 2: 355; Theatrum, 1: 187?; Marcgrave, 1648: not 155; Marcgrave, 1942: [LVIII (note 408)]; Piso, 1658: not 50, 67 (figs.); Piso, 1957: [not 133, 165 (figs.)]; Linnaeus, 1758: (283); Linnaeus, 1766: (474); Lichtenstein, 1829: 49; Lichtenstein, 1961: 117, [235, 290 (notes 189, 190)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 187. b. Acarapitánga No. 7. p. 51." (Piso, 1658).

Evidently this is not the "Acarapitamba" pictured in Marcgrave (p. 155), and copied by Piso (p. 50), which with a figure in the Handbooks (2: 355) formed the base for *Ocyurus chrysurus* (Bloch), a well-known lutjanid occurring in the warmer western Atlantic. This is confirmed by the index to volume 1 of the Theatrum, which lists both an "Acarapitamba" (page 187) and an "Acarapitanga" (page 189). As Lichtenstein states that page 187 of the Theatrum represents a species quite different from Marcgrave's "Acarapitamba", thus probably the species pictured here, there must have occurred an interchange in vernacular names or page numbers.

The identification therefore poses serious problems, especially as the present figure does not seem to fit any of Marcgrave's woodcuts. The closest appears to be that author's "Acaraya" (p. 167), which also is problematical: it has often been identified as a common lutjanid, the "Red snapper", *Lutjanus aya* (Bloch), a species originally described and figured after Marcgrave's information and a picture in the Handbooks (2: 351), but this interpretation of Bloch's (and Marcgrave's) species was doubted by recent authors. Rivas (1966: 119) is inclined to regard it as a sciaenid, but he seems to have put too much trust in detailed information by the authors of these old sources: Bloch stated to have made his description after the Handbook picture, so his counts of branchostegals, rays and spines are subject to serious doubt (in Bloch's plate, the dorsal has 9 spines, but in Marcgrave's woodcut there are 12). Similar critical remarks are made by Lichtenstein.

Whatever may be the correct interpretation of Marcgrave's "Acaraya" or Bloch's identical *Bodianus aya*, Rivas' arguments do not apply to the "Acarapitánga". This seems rather a lutjanid species than a sciaenid as presumed by Lichtenstein and, considering the general shape and the colour description, is here tentatively identified as *Lutjanus griseus* (Linnaeus), with *Rhomboplites aurorubens* (Cuvier) as an unlikely second possibility, as that species occurs at a considerable depth. Taking into account the depressed dorsal fins, the resemblance to the coloured picture in Randall (1968, p. 122, plate 139) seems quite convincing. *Lutjanus griseus* occurs in the western tropical Atlantic from Massachusetts to south-eastern Brazil, and grows to a length of three feet. Vernacular name: "Cabellerote" (Jordan, Evermann & Clark, 1930: 325).

One of the fishes on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes) may represent this species. A coloured reproduction of this drawing has been published by Schaeffer (1968, Addendum).

### Folio 78

[?Guara Tereba].— *Caranx hippos* (Linnaeus, 1766)

Handbook, ? : ? (no notes available); Theatrum, 1: 190?, 207?; Marcgrave, 1648: 172 (fig.); Marcgrave, 1942: [LIX (note 422)]; Piso, 1658: 57 (fig.); Piso, 1957: [147 (fig.)]; Linnaeus, 1758: 298 (error); Linnaeus, 1766: 493 (error), (494); Lichtenstein, 1822, 1829: nil; Wagener, 1964: 186 (fig. 10)?, [235, 343]

Annotations: "I.P. Tom 1. p. 190. een Doradus dolfinus Van de grote als een Cabellau, guht zu essen" (a *Doradus dolfinus* Of the size of a Cod, good to eat).

Remarkable in the Dutch text of the annotation is the usage of a German "r" in "grote", and also the additional remark on the culinary properties in German; furthermore the name "*Doradus dolfinus*", usually employed for the "Dolphin", *Coryphaena hippurus* Linnaeus. There is reference to page 190 in volume 1 of the Theatrum, but the "Guaratereba" (see below) is stated in the index to figure on page 207, while none of the (evidently blank) even numbered pages is ever referred to.

There is a considerable resemblance between the pencil drawing and Marcgrave's "Guara Tereba" woodcut (copied by Piso), possibly representing the same species, though insufficient to convincingly assume a mutual source. As usual, the present picture seems to have been made after a fresh specimen, and is incomplete, lacking the spinous first dorsal fin (possibly hidden), the pre-anal spines, the lateral line and some peduncular scutes; in the more idealized woodcut, an unrealistic squamation has been added, as well as two pre-anal spines (interconnected by a membrane), the lateral line and the first dorsal fin. Marcgrave's vernacular name "Corcovado" is also used by Wagener, for a similar species, again depicted without the spinous dorsal fin, the pre-anal spines or a lateral line (neglecting other artistic licences).

Though the missing first dorsal fin at first sight seems to point to a *Trachinotus* species, the long falcate pectoral rather points to a *Caranx*. Cuvier (1833: 96) tentatively identified Marcgrave's "Guara Tereba" as *Caranx fallax* (= *Caranx latus* Agassiz), strangely with the statement that Marcgrave's illustration does not resemble any picture in either the Handbooks or the Theatrum, while furtheron recording figures of the same species in both these sets of plates (both without the first dorsal fin!). Considering the very steep rounded profile of the anterior head, an identification with *Caranx hippos* (Linnaeus) seems preferable.

This is a cosmopolitan species of the tropical to temperate seas, occurring in the western Atlantic from Nova Scotia to Uruguay, and known by the vernacular names "Jiguagua" (Jordan, Evermann & Clark, 1930: 273) or "Xaréó" (Fowler, 1941: 153).

This drawing (as the next) closely matches the pencil drawing in the Theatrum, of which photographs are available (published by Thomsen, 1938: 102), including the caption. A strikingly similar fish occurs on the tapestry "Les chasseurs", in both versions.

## Folio 79

"Merou".— *Promicrops itajara* (Lichtenstein, 1822)

Handbook, 1: 336; Theatrum, 1: 113, 159, 221?; Marcgrave, 1648: 146 (fig.), 169 (fig.); Marcgrave, 1942: [LIII (note 345), LVIII (note 413)]; Piso, 1658: 49 (fig.), 54 (fig.); Piso, 1959: [130, 141 (figs.)]; Linnaeus, 1758: 292 (error); Linnaeus, 1766: 486 (error); Lichtenstein, 1822: 278; Lichtenstein, 1961: 106, [221, 293 (note 169)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 192. [error, no pictures on even numbered pages]. Meerou so grot als een grote Cabelau" (as big as a large cod).

This pencil drawing obviously represents the species Marcgrave names "Cugupu-Guacu", although its rather primitive woodcut illustration (copied by Piso) differs in many details. The same species occurs on folio 18 and is discussed in the accompanying text. It seems not unlikely that *Serranus mentzelii* Valenciennes (1828: 291), partly based on a Theatrum picture, is also the same species, though frequently identified as *Epinephelus guaza* Linnaeus, a species known as "Guasa" but measuring hardly over three feet. The European cod (see annotations) may reach a length of five feet, while Marcgrave records for his "Cugupu-guacu" six feet.

As stated earlier, Linnaeus erroneously included the present Marcgrave species among the references for his much smaller *Perca guttata* (= *Epinephelus guttatus* (Linnaeus)), pictured here on folio 16, while it actually represents *Promicrops itajara* (Lichtenstein), a species based (1822: 278) on a much smaller example as also recorded and rather badly illustrated by Marcgrave (p. 146, as "Jurucepeba"). The agreement with a picture by Randall (1968: 61, fig. 66) is quite close and seems convincing.

The present picture is, in a sketchy way, almost identical with the Theatrum pencil drawing reproduced by Lück (1947: 433), which shows remarkable anatomical detail, especially in the configuration of the maxillaries, and which may be the iconotype of *Serranus mentzelii* Valenciennes.

*Promicrops itajara*, occurring in the western Atlantic from Bermuda and Florida to Brazil, is known as "Mérou" or "Guasa" (Jordan, Evermann & Clark, 1930: 912), but these names are also used for related species.

This drawing, as the previous, closely matches a pencil drawing in the Theatrum, including part of the caption. The same species appears in the tapestries "Le cheval rayé" (both versions) and "Les chasseurs" (also both versions).

## Folio 80

Araberi.— ?*Etrumeus teres* (De Kay, 1842)

Handbook, ? : ? (no notes available); Theatrum, 1: 197; Marcgrave, 1648: 178; Marcgrave, 1942 [LX (note 442)]; Piso, 1658: 69; Piso, 1957: [169]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 197. Araberi".

This picture of the "Araberi", a species briefly described without an illustration in Marcgrave and only mentioned in Piso, at most allows only a tentative identification, even with Marcgrave's information. The only other record of the name

"Araberi" seems to be in a manuscript even slightly antedating Marcgrave, prepared by Cristóvão de Lisboa in Maranhão around 1625 and recently edited and published by Walter (1967: 59, pl. 14). Although it clearly concerns a different, engraulid species, it confirms Marcgrave's interpretation of the "Araberi" as a "Sardinha" or "Sprott", thus a clupeoid fish. This seems also indicated by the described lack of teeth and the rather "marine" coloration. In this group, considering the slender shape, the produced lower jaw, and the shape and position of the fins, the most acceptable interpretation seems an identification with *Etrumeus teres* (De Kay), a species hitherto not recorded from farther south than French Guiana (Whitehead, 1973: 16) and apparently growing considerably larger than indicated by Marcgrave.

Another possibility, previously suggested (comments in Marcgrave, 1942), and supported by similar vernacular names as "Araciry", "Araniry" or "Arary-pirá" (Magalhães, 1931: 84, 234; = *Chalceus* or *Triporthesus* species), seems to be an interpretation as a characoid species. This means that the figure either represents a species without an adipose fin, or a aberrant specimen, or that the adipose was overlooked. However, the anterior position and pointed slender shape of the dorsal fin (which both seem exaggerated) and the described coloration rule out any of the region's recorded characins. Apart from the anterior position of the dorsal fin, which is confirmed by Marcgrave's text, the figure seems vaguely reminiscent of a pyrrhulinid species.

Reconsidering these arguments, an identification as a clupeoid fish seems preferable. Further interesting remarks on the "Araberi", and many similar vernacular names, are given by Carvalho (1964: 15).

### Folio 81

Jetigmicira.— *Halichoeres radiatus* (Linnaeus)

Handbook, 1: 388; Theatrum, 1: 199; Marcgrave, 1648: 146 (fig.); Marcgrave, 1942: [LIII (note 344)]; Piso, 1658: 53 (fig.); Piso, 1957: [138 (fig.)]; Linnaeus, 1758: (288); Linnaeus, 1766: nil; Lichtenstein, 1822: 277; Lichtenstein, 1961: 105, [220, 293 (note 168)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 199. Jetigmiciza [,] videte spes [see species] Tetimixira No 14. p. 53." (Piso, 1658).

This picture shows a considerable agreement with a similarly named fish on folio 21 and, to a lesser degree, with a woodcut illustration of Marcgrave's "Pudiano verde", copied by Piso. The vernacular name "Tetimicira" also occurs in Marcgrave, but is placed in the text to the previous species, the "Pudiano vermelho", possibly by the editor Johannes de Laet.

Although the colour of the present figure is rather rosy and brownish, it probably represents the same species as the yellowish figure on folio 21, *Halichoeres radiatus* (Linnaeus). Such an identification is supported by the postocular lines and those below the pectoral fin base as well as by Marcgrave's description of the dentition and markings. The species is described as mostly coloured orange yellow to green with blue, never rosy, but as the added vernacular name obviously concerns the "Pudiano verde" (cf. Piso and Valenciennes, 1839: 403), the colour of this picture evidently is not correct. In the Leiden coloured copy of Marcgrave, the fish is light yellowish,

with the scale margins, the pectoral and caudal fins, and a vertical band on posterior head light blue. The same species seems to occur on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes). For further information see the discussion of folio 21.

### Folio 82

Curemá.— *Mugil curema* Valenciennes, 1836

Handbook, ? : ? (no notes available); Theatrum, 1: 205; Marcgrave, 1648: 181; Marcgrave, 1942: [LX (note 448)]; Piso, 1658: 70 (not fig.); Piso, 1957: [173 (not fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 205a. Curemá. p. 70. No 68." (in Piso, 1658).

There is no similar woodcut in Marcgrave, while a "Curemá" picture in Piso.— as already stated by Valenciennes (1836: 88).— evidently was taken from Rondelet (1654: 260). The fish depicted is clearly related to that on folio 76, but differs by having more and smaller scales, a more blunt snout and no longitudinal stripes or bands. Considering that Marcgrave records for the species a length of two feet, which rules out most other possibilities, and does not mention longitudinal markings, it seems warranted to confirm Valenciennes' interpretation and identify the species as *Mugil curema* Valenciennes. Of course, the fish is drawn too slender, with the depth of the body more than six times in standard length (against at most five times recorded for *curema*), the number of scales is exaggerated and the blunt snout must be erroneous, as no species showing all these characters occurs along the Brazilian coast. The species occurs in all warmer waters, along the American Atlantic coast from Massachusetts to Santos, Brazil, and is known by the vernacular names "Lisa", "Lisa Blanca", "Parati-ôlha-de-fogo", "Curimã", "Saúna", "Taíinha" ("parati" or "-verdadeira") (Jordan, Evermann & Clark, 1930: 253; Fowler, 1941: 150; Schubart, 1936: 155; Lima & Oliveira, 1978: 22).

### Folio 83

Curematá.— *Prochilodus marggravii* (Walbaum, 1792)

Handbook, ? : ? (no notes available); Theatrum, 1: 205; Theatrum, 1: 205; Marcgrave, 1648: 156 (fig.); Marcgrave, 1942: [LVI (note 375)]; Piso, 1658: 70 (fig.); Piso, 1957: [171 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 51; Lichtenstein, 1961: 199, [237, 299 (note 192)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 205. b Curematá. No 65. p. 70." (in Piso, 1658).

This figure closely resembles the Marcgrave woodcut (copied by Piso) of the "Curimata", and both must have a mutual source. Marcgrave's text and illustration were apparently the only information used by Piso and Ray, whose descriptions via Gronovius (1763: 123), who also consulted a specimen, led Walbaum to establish his *Salmo marggravii* (Walbaum, 1792: 80). It appears to be the same species as that currently known by the name *Prochilodus argenteus* (Spix, 1829), as also perceived by Fowler (1950: 220), which makes *argenteus* a subjective junior synonym of *marggravii*. Valenciennes (1849: 71, 78) also correctly interpreted Marcgrave's species, but over-

looked the earlier Walbaum name. It is interesting to note that he records another picture of the species found in the Theatrum, stated to agree better with the Marcgrave woodcut, but according to my notes, the previous species (folio 82) is the only other "Curema(ta)" in the Theatrum.

*Prochilodus marggravii* inhabits the fresh waters of north-eastern Brazil and seems to occur in sufficient numbers to be of commercial importance. While it appears to be known with congeners by the vernacular name "Curimbatá" (Fowler, 1950: 215), the specific name appears to be "Curimatá-pacu" (Nomura, 1973: 94) or "Papaterra" (comments in Marcgrave, 1942).

### Folio 84

Tareira.— *Hoplerythrinus unitaeniatus* (Spix, 1829)

Handbook, 2: 373; Theatrum, 1: 213; Marcgrave, 1648: 157 (fig.); Marcgrave, 1942: [LVI (note 378)]; Piso, 1658: 68 (fig. II); Piso, 1957: [168 (fig. II)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 53; Lichtenstein, 1961: 120, [239, 299 (note 195)]; Wagener, 1964: nil

Annotations: "I.P.Tom 1. p. 213. Tareira 2 No. 60. p. 68." (in Piso, 1658).

Though evidently representing a similar species, this figure does not show any close affinity with the Marcgrave woodcut (reproduced by Piso) of the "Tareira do Rio", usually identified as *Hoplias malabaricus* (Bloch). While the woodcut shows a more pointed head, 'snooklike' as stated by Marcgrave, the fish here depicted has a blunt, *Amia*-shaped head which makes an identification with *Hoplerythrinus unitaeniatus* (Spix) most likely. The absence of the usual dark lateral band might have pointed to the similar *Erythrinus erythrinus* (Bloch & Schneider), but that species seems never to have been recorded from the crucial area, while on the other hand specimens of *H. unitaeniatus* occur with the lateral band obscure or missing. *H. unitaeniatus*, known by the vernacular name "Traira pixuna" (Fowler, 1950: 360), is widely distributed in tropical South America, from Peru and Paraguay to Venezuela and north-eastern Brazil.

It seems of interest to note here that the marine "Tareira d'Alto" of Marcgrave (p. 157, fig.), tentatively identified as a sphryaenid by most authors, evidently is a synodid, probably *Synodus intermedius* (Spix).

### Folios 85 & 86

Pirája, Piratinga.— *Serrasalmus (Pygocentrus) piraya* Cuvier, 1820

Handbook, ? : ? (no notes available); Theatrum, 1: 223; Marcgrave, 1648: 164 (fig.); Marcgrave, 1942: [LVII (note 398)]; Piso, 1658: 69 (fig.); Piso, 1957: [170 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1829: 62; Lichtenstein, 1961: 130, [250, 303 (note 212)]; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 223. a. Pirája Piranha. No 64. p. 69." (in Piso, 1658) and "I.P.Tom 1. p 223. b Piratinga [symbol, = est] Spes Piranha No 64 p. 69" (Piso, 1658).

Marcgrave describes three species of "Piraya" or "Piranha", the first with the sec-

ond dorsal fin lacking and evidently an aberrant or damaged specimen, the second with a scaled second dorsal, and the third with a less blunt head. The single woodcut illustration to these, showing a blunt-headed specimen with a scaly second dorsal fin therefore must picture the second of Marcgrave's species. Unfortunately, the description of colours and markings does not agree with those found in the coloured Marcgrave copy in the Leiden Museum: golden yellow with scale margins, finrays, dorsal and ventral parts brown. Marcgrave cannot be expected to have realized the variability in coloration within the same species, largely depending on age, sex and season, and his two bluntheaded forms might well be conspecific. This seems confirmed by the fact that only one species with such heavy jaws, a wholly rounded steep head-outline and a rayed second dorsal fin seems to occur in north-eastern Brazil: *Serrasalmus (Pygocentrus) piraya* Cuvier (Myers, 1972: 31-35). Marcgrave's third species may well be *Serrasalmus (S.) brandtii* Reinhardt, and not *S. (S.) rhombeus* (Linnaeus) as frequently presumed, since that species has never been recorded from the area (Fowler, 1950: 384).

The present two pictures, though showing a fish with a less blunt head and with a rather short lower jaw (shorter than usual in serrasalmids) both have the uninterrupted convex dorsal head-outline and a rayed second dorsal fin, and presumably represent *S. (P.) piraya* Cuvier, possibly at a slightly younger stage than that illustrated in Marcgrave. Note that the height of the (first) dorsal fin shows a considerable, possibly sexual variation (see Géry, 1972: pls. 11-14).

Most of the above conclusions confirm those of Myers (l.c.). *Serrasalmus (P.) piraya* Cuvier appears to be restricted to the Rio São Francisco area. It is known by the vernacular name "Piranha" (Fowler, 1950: 376), a name often also employed for related species. The name "Pitatinga", used in the present annotations, is currently used for the catfish *Brachyplatystoma filamentosum* (Lichtenstein) (Magalhães, 1931: 248; Fowler, 1951: 584).

### Folio 87

Amorepinima.— *Myrichthys ocellatus* (Lichtenstein, 1822)

Handbook, ? : ? (no notes available); Theatrum, 3: 205; Marcgrave, 1648: 242 (fig.); Marcgrave, 1942: [LXXXV (note 726)]; Piso, 1658: 281 (fig.); Piso, 1957: [585 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 253; Lichtenstein, 1961: 92, [205, 291 (note 157)]; Wagener, 1964: nil

Annotations: "I.P.Tom III. p. 205. b. Amorepinima p. 251 [= 281]. HI. [Piso, 1658] ab Mentzelio Serpentibus adnumeratus ab Lichtensteinio piscibus et Muraena ocellata dictus" (considered a snake by Mentzel, by Lichtenstein a fish named *Muraena ocellata*).

This picture, though as usual in reverse, closely resembles the Marcgrave woodcut (copied by Piso), so both must have a common source. The spots are mostly reddish brown to brick-red with a dark margin, while rather yellowish in the Leiden coloured Marcgrave copy, which thereby is more in agreement with Marcgrave's description. In the woodcuts, a snake tongue was added.

However, the fish pictured is not a snake, as presumed by Marcgrave (or Johan-



nes de Laet?), but an eel. Lichtenstein, on the base of the Marcgrave woodcut, the similar Theatrum picture and a specimen, came to the same conclusion and, considering it "eine bisher ganz unbekannt gebliebene Art", validly named it *Muraena ocellata*.

Although a small pectoral fin evidently was overlooked, the resemblance of the picture to an illustration by Randall (1968: 32, fig. 30) leaves no room for doubt: *Muraena ocellata* Lichtenstein, identical with the species currently named *Myrichthys ocellatus* (Kaup, 1856). *Muraena ocellata* being the senior subjective synonym, the species has to be renamed *Myrichthys ocellatus* (Lichtenstein).

This fish occurs in the warm to temperate Atlantic, along the American coast from Bermuda to north-eastern Brazil. I did not find any South American vernacular names.

### Folio 88

Curuatapinima.— *Decapterus punctatus* (Agassiz, 1831)

Handbook, ? : ? (no notes available); Theatrum, 1: 195?; Marcgrave, 1648: 150 (fig.); Marcgrave, 1942: [LIV (note 358)]; Piso, 1658: 51 (not fig.); Piso, 1957: [135 (not fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: 283; Lichtenstein, 1961: 111, [227, 295 (note 179)]; Wagener, 1964: nil

Annotations: "Curuatapinima No. 9. p. 51. [Piso, 1658] altera Autoris species corpore minus crassiore Figura originalis apud nos deest" (other species of the Author with less thick body original Figure is lacking to us).

This figure closely agrees with the modified (and partly improved) Marcgrave woodcut (evidently copied by Rochefort, 1665), so both must have come from a common source. Piso used a quite different woodcut, picturing another carangid species, for his "Curuatá piníma", but he recorded the occurrence of two related species in the area. Unfortunately Piso's woodcut also does not agree with Marcgrave's "Guara Tereba" (see folio 78), so a third Carangid species seems involved or that woodcut, taken from an as yet unknown source, was included erroneously.

The information provided by the present picture and Marcgrave's description and woodcut (with the improved lateral line showing enlarged scutes only along the posterior straight part), agrees best with a species of *Decapterus*, two of which have been recorded from Brazilian waters: *D. punctatus* (Agassiz) and *D. macarellus* (Cuvier). Although Cuvier (1833: 40) considered Marcgrave's species identical with his *macarellus*, it seems preferable to identify it as *Decapterus punctatus*, for two major reasons. First, Fowler (1941: 153) records *macarellus* only for the more northerly situated Fernando de Noronha archipelago, while recording *punctatus* from Bahia and (possibly) Rio de Janeiro. And secondly, Marcgrave describes well the golden yellow lateral band (also found in the woodcut of the Leiden coloured Marcgrave copy), which occurs in *punctatus* (cf. Randall, 1968: 105), but not in *macarellus*.

*Decapterus punctatus* (Agassiz) is found in the warmer Atlantic, along the American coasts from Nova Scotia to south-eastern Brazil. Fowler (l.c.) records the vernacular name "Xixarro".

## Folio 89

Uubaránaçaguaçu.— ?*Inermia vittata* Poey, 1861

Handbook, ? : ? (no notes available); Theatrum, 1: 357; Marcgrave, 1648: not 154 (fig.); Marcgrave, 1942: [not LV (note 357)]; Piso, 1658: not 63 (fig.); Piso, 1957: [not 157 (fig.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822: not 287; Lichtenstein, 1961: not 115, [232, 297 (note 186)]; Wagener, 1964: nil;

Annotations: "Uubaranaçaguaçu [symbol, = est] spes No 41. p. 63." (Piso, 1658).

The claimed similarity to the fish illustration "No. 41" on page 63, by Piso (1658), discussed in the above text to folio 74, is erroneous. Piso's fish, here identified as *Elops saurus* Linnaeus, differs by having only a single dorsal fin, a short anal fin, abdominal ventral fins, and lacks the extremely protractile upper jaw. Presumably, this tentative reference in the annotation to the present picture was based on the similarity of vernacular names, but as stated before (folio 74), an interchange of vernacular names seems apparent in Marcgrave's book. Except the protruded snout, there is a striking resemblance with the "Parati" (folio 76).

Lichtenstein (1822: 287) identifies Marcgrave's "Uubarana" as *Clupea brasiliensis* or *Albula plumieri*, both of Bloch & Schneider and considered identical, and both now relegated to the synonymy of *Albula vulpes* (Linnaeus). But it is evident that this concerns the fish here pictured on folio 74 and identified as *Elops saurus* Linnaeus. An identification of the present picture as either *Albula vulpes* or *Elops saurus* is unlikely considering the characters already listed in the above first paragraph.

The picture does not agree with any of the species hitherto recorded from Brazil, but the elongate shape, the two dorsal fins, the advanced position of the ventral fins, the deeply forked caudal fin, and the remarkably protractile upper jaw all seem to point to a species of the family Emmelichthyidae. Of the two rarely encountered species in the western tropical Atlantic, one has only been found in the Bahamas, but the second, *Inermia vittata* Poey occurs in the Caribbean and may well be found to venture along the South American coast down to north-western Brazil. As stated before, the species is very rare, while our knowledge of the Brazilian coastal fish fauna is still far from complete. The only distinctly aberrant feature is the long anal fin, but at this early stage of ichthyological research the various dimensions of the fins often were not depicted correctly (e.g., see text to folio 77). *Inermia vittata* Poey is known by the vernacular name "Boga" (Jordan, Evermann & Clark, 1930: 340). Magalhães (1931: 252) records the name "Urubarana", which is quite similar, but which appears to be used only for some characids of the genus *Leporinus* and for a silurid, *Bagrus reticulatus* Kner (= *Brachyplatystoma filamentosum* (Lichtenstein)).

## Folio 90

Tamoatá.— ?*Hoplosternum thoracatum* (Valenciennes, 1840)

Handbook, 1: 368; Theatrum, 1: 69; Marcgrave, 1648: 151 (not fig.)?; Marcgrave, 1942: [LV (note 359)]?; Piso, 1658: 71 (not fig.)?; Piso, 1957: [175 (not fig.)?]; Linnaeus, 1758: 307?; Linnaeus, 1766: 506?; Lichtenstein, 1822: 283?; Lichtenstein, 1961: 111, [227, 295 (note 180)]?; Wagener, 1964: 185 (fig. 7), [233, 341]

Annotations: "Tamoatá No. 70. p. 71. [= Piso, 1658] in Iconibus Postianus nunc deest" (lacks in the Post pictures).

This picture, evidently based on the Theatrum original, is comparable with a figure on folio 20 and with the illustrations provided by Marcgrave (copied by Piso) and Wagener, but the differences are sufficient to preclude any common source. It evidently portrays a callichthid fish, but a specific identification poses problems as some crucial characters cannot be verified. Being evidently less slender and having a relatively longer head than the species portrayed in the other pictures mentioned above, which are identified as *Callichthys callichthys* (Linnaeus), it may well represent the only *Hoplosternum* species recorded from the area: *H. thoracatum* (Valenciennes), known locally by the vernacular name "Atipa" (Fowler, 1954: 71). However, the evidence seems hardly conclusive. See also text to folio 20.

A similar fish occurs on the tapestries "Le roi porté" (Anciennes Indes) and "La négresse portée" (Nouvelles Indes), mostly hidden by a striped frogfish.

### Folio 91

Guacucuá.— *Ogcocephalus vespertilio* (Linnaeus, 1758)

Handbook, 1: 300; Theatrum, 1: 19, 21?; Marcgrave, 1648: 143 (fig.); Marcgrave, 1942: [LII (note 333)]; Piso, 1658: nil; Linnaeus, 1758: 237; Linnaeus, 1766: 403; Lichtenstein, 1822: 273; Lichtenstein, 1961: 101, [215, 291 (note 160)]; Wagener, 1964: 187 (fig. 15), [237, 345]

Annotations: "Guacucuá. p. 143. part. 2HB Guacucuja deest apud nos" (lacking to us).

This is evidently the same species, if not actually the same specimen, as pictured in dorsal view of folio 16 and in oblique ventral view on folio 45: *Ogcocephalus vespertilio* (Linnaeus). Further details are given in the texts to these plates.

The same species seems to occur on the tapestry "Le cheval rayé" (both versions).

### Folio 92

Narí narí.— *Aetobatus narinari* (Euphrasen, 1790)

Handbook, 1: 332; Theatrum, 1: 31; Marcgrave, 1648: 175 (fig.); Marcgrave, 1942: [LIX (note 433)]; Piso, 1658: 58 (fig.), 293 (idem fig.); Piso, 1957: [148, 609 (figs.)]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: 187 (fig. 17), [239, 346]

Annotations: "Narí narí forsan altera pars [,] ex latero inferiori nunc apud nos deest" (perhaps the other part, from the lower side is lacking to us).

This picture evidently shows the ventral aspect of the same fish portrayed in dorsal view on folio 50. There is less similarity with the "Narinari" on folio 18, though it represents the same species: *Aetobatus narinari* (Euphrasen). Of the three, only the picture on folio 18 shows a close resemblance to the Marcgrave woodcut, twice copied by Piso. For further details, see text to folios 18 and 50.

## Folio 93

Guebí.— *Sphyraena barracuda* (Walbaum, 1792)

Handbook, ? : ? (no notes available); Theatrum, 1: 73; Marcgrave, 1648: nil; Piso, 1658: 74? (fig. ?); Piso, 1957: [180 (fig.)?]; Linnaeus, 1758: nil; Linnaeus, 1766: nil; Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "Guebí".

This fish, evidently a sphyraenid, appears not to have been recorded by Marcgrave, and a record by Piso is very problematic (see text to folio 72). It seems likely that here again some interchanges of texts (or parts thereof) or of vernacular names have taken place. No further records of the name "Guebí" were found, but Marcgrave mentions the similar "Guebucu", being the sailfish, *Istiophorus platypterus* (Shaw & Nodder), with the Portuguese name "Bicuda". The name "Bicuda" is also employed for the barracuda, *Sphyraena barracuda* (Walbaum) (cf. Fowler, 1941: 148). Finally the barracuda has also been named "Camuri" (Jordan, Evermann & Clark, 1930: 305), although "Camuri" is also used for snook species of the genus *Centropomus*. Piso's "Camuri" species probably are centropomids, but the inclusion of a sphyraenid may not be excluded; he also uses the name "Bicuda" for freshwater (= coastal water?) species, thus probably centropomids. Piso's figure of a "Camuri", as stated already in the comments to folio 72, although rather like a sphyraenid, seems to be indicated as a marine form having a dark lateral line, a feature of *Centropomus parallelus* quite evident on folio 72.

Considering the rather large scales (though vaguely indicated probably c. 80 in a longitudinal series) and the dark blotches on the sides, we may identify the fish here depicted as *Sphyraena barracuda* (Walbaum). A closely agreeing picture was given by Randall (1968: 54, fig. 58). The species is circumtropical (though perhaps lacking in the eastern Pacific), and occurs in the western Atlantic from Massachusetts to Rio de Janeiro. The name "Bicuda" appears the most usual in Brazil.

## Folio 94

Bajacuguara.— *Lagocephalus laevigatus* (Linnaeus, 1766)

Handbook, ? : ? (no notes available); Theatrum, 1: nil; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: nil; Linnaeus, 1766: (411); Lichtenstein, 1822, 1829: nil; Wagener, 1964: nil

Annotations: "Bajacuguara".

The species figured here is not represented in the works of Marcgrave and Piso. It is a well-drawn puffer (Tetraodontidae), lacking any distinct colour markings, with a rather elongate shape, evidently a large number of rays in the dorsal and anal fins, and when less extremely spread a quite emarginate caudal fin, all characters making an identification with *Lagocephalus laevigatus* (Linnaeus) well warranted. This species seems rather common along the Brazilian coast and has been recorded for the western Atlantic from Massachusetts to Argentina. It is known by the Brazilian vernacular name of "Baiacú-guaima", or "Baiacú-ará" (Fowler, 1941: 182).

A similar fish (missing the dorsal fin) may be found on the tapestry "Le cheval rayé", Anciennes Indes (possibly on both versions).

**Birds**  
(by M. Boeseman)

**Folio 95**

41 Blätter *Vögel* aus Tom. II. (41 folios Birds from Vol. II).

**Folio 96**

Anhinga.— *Anhinga anhinga* (Linnaeus, 1766)

Handbook, 2: 133; Theatrum, 2: 11; Marcgrave, 1648: 218 (fig.); Marcgrave, 1942: [LXXVII (note 618)]; Piso, 1658: nil; Linnaeus, 1766: 218; Lichtenstein, 1819: 175; Lichtenstein, 1961: 71, [186, 286 (note 132)]; Schneider, 1928: 83; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 11. Anhinga p. 218. HB"

Although not a very good picture, the present identification, unanimously supported by all previous authors discussing the Theatrum original, leaves little room for doubt. In the Theatrum the species is named "Miguâ", a name also used for a cormorant (see folio 13).

In the Leiden coloured Marcgrave copy, the slightly bluish-white bird with dark brown (almost black) wings and tail, has more rosy legs and feet, moreover a rosy bill, thereby differing from the present picture.

**Folio 97**

Miguajuba.— *Phalacrocorax olivaceus* (Humboldt, 1805)

Handbook, 1: 224; Theatrum, 2: 13; Marcgrave, 1648: nil; Piso, 1658: 83 (fig.); Piso, 1957: [198 (fig.p. 199)]; Lichtenstein, 1819: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "[?] Magague No. 9 [= ninth bird in Piso, 1658] Majague Miguajuba [in two different hands] I.P. Tom II. p. 13".

This drawing evidently pictures the same species as represented swimming on folio 13, but less stylized and with the legs very prominent. The vernacular name "Miguajuba" is not too distant from its modern name "Biguá" (Frisch, 1981: 36). Still Sick (in litt., 1983) provisionally identified the present picture as an immature *Sula leucogaster* (Boddaert, 1783). Comparison with pictures of both species provided by Frisch (l.c.: 37) seems to support the present identification.

Teixeira (MS., 1986: 36, 209) claims *olivaceus* to be a junior synonym of *brasilianus* Gmelin, 1789, hitherto considered a species dubius.

**Folio 98**

(no vernacular name).— *Cairina moschata* (Linnaeus, 1758)

Handbook, 1: 230; Theatrum, 2: 15; Marcgrave, 1648: 213; Marcgrave, 1942: [LXXV (note 603)]; Piso, 1658: 83 (fig.); Piso, 1957: [197 (fig.)]; Linnaeus, 1758: (124); Linnaeus, 1766: (199); Lichtenstein, 1819: 171; Lichtenstein, 1961: 67, [181,282; (note 120)]; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 15. *Anas sylv. nigra*".

To the Handbook original is added the name "Potiriguaçu" (a name also used for *Sarkidiornis melanotos*, see folios 11 and 13), which is missing here. The same applies to the Handbook name *Anas moschata* var. *dom.*", in a different handwriting but evidently not by Lichtenstein, who considered the present black specimen to represent the wild form.

Piso (l.c.) evidently described the present species with the vernacular name "Tpeca-guaçu", adding a picture far more realistic than the present, but surprisingly this was not referred to by either Lichtenstein or Schneider.

### Folio 99

Quinguoanqui.— *Phoenicopterus ruber roseus* Pallas, 1813

Handbooks: nil; Theatrum, 2: 17; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (139); Lichtenstein, 1819: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 17. Quinguoanqui ex Congo" and "Angola".

This picture is quite close to the Theatrum original, but both are of inferior quality and in general faulty, as already stated by Schneider (l.c.) for the Theatrum picture. The words "ex Congo" are not on the Theatrum version.

Schneider identified the original picture as representing *Phoenicopterus antiquorum* Temminck, 1820, a name now considered a junior synonym of the name adopted here and moreover a nomen nudum. This species seems by far the most common in the crucial area.

### Folio 100

Jacamini.— *Calidris canutus* (Linnaeus, 1758)

Handbook, 1: 278; Theatrum, 2: 21 (upper fig.); Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (149); Linnaeus, 1766: (251); Schneider, 1938: 83; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 21. Jacamini" (name twice, in pencil and in ink, in different hands).

The present picture seems not to provide any information convincingly at variance with Schneider's interpretation, which is adopted here. It is at least far better than the mere outline sketch on folio 15, similarly interpreted although far from characteristic. Still Teixeira (MS., 1986) identified the Theatrum original as *Calidris alba* (Pallas, 1764).

Guiracama.— *Oceanites oceanicus* (Kuhl, 1820)

Handbook, 1: 290 (left fig.); Theatrum, 2: 25 (upper fig.); Marcgrave, 1648: nil; Piso, 1658: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: “Guiracama” (twice, in pencil and in ink, in different hands).

In the original Theatrum picture, this bird is considerably darker, the brownish parts almost black, while it is listed in the index with the alternative spelling “Guaricama”.

### Folio 101

Jierebacába.— *Rynchops nigra* Linnaeus, 1758

Handbook, 1: 172; Theatrum, 2: 25 (lower fig.); Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (71); Linnaeus, 1766: (228); Schneider, 1938: 83; Wagener, 1964: nil

Annotations: “I.P. Tom II. p. 25.b. Jierebacába/Jierebaçába” (the names in pencil and in ink, different hands).

This is the “Jiereba” of the caption to a missing picture on folio 11. Since the species was not included in Marcgrave, 1648, it is not surprising that Linnaeus was not aware of these manuscript records. The resemblance with the Theatrum picture is very close.

Jacaniguaija.— *Gelochelidon nilotica* (Gmelin, 1789)

Handbook, 1: 282 (right fig.); Theatrum, 2: 21 (lower fig.); Marcgrave: 1648: nil; Piso, 1658: nil; Schneider, 1938: 83; Wagener, 1964: nil

Annotations: “— p. 21.b. Jacamiguaija/Jacaniguaya” (the names twice, in pencil and in ink, in different handwriting).

Presumably this is the same species as only vaguely sketched on folio 15, bottom right. Schneider’s identification is confirmed by Sick (in litt. (MS)), and accepted here.

### Folio 102

(no vernacular name).— *Procellaria aequinoctialis* Linnaeus, 1758

Handbook, 1: nil?; Theatrum, 2: 27; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: (132); Linnaeus, 1766: (213); Schneider, 1938: 84; Wagener, 1964: nil

Annotations: “I.P. Tom II. p. 27. gantz schwartz/ganz schwartz [different hands] avis [illegible, possibly cineraceus = dark grey] longissi ...” (wholly black).

This incomplete picture moreover suffers from the loss of at least part of its added Latin notes (short remainder behind lower tail margin) and a Dutch text fortunately quoted by Schneider: “Zyn flogels sin 2 foet 2 duym lanch” (Its wings have a

length of 2 feet 2 inches). If true, this would mean that here was written information in three languages on an unfinished, mediocre (but characteristic) sketch.

### Folio 103

Matuitui.— *Charadrius ?semipalmatus* Bonaparte, 1825

Handbook, 1: 282 (first fig.); Theatrum, 2: 29 (upper fig.); Marcgrave, 1648: 199 (fig.); Marcgrave, 1942: [LXVIII (note 535)]; Piso, 1658: not 95 (fig.); Piso, 1957: [not 224 (fig.)]; Linnaeus, 1766: 253 (partly?); Lichtenstein, 1819: 162?; Lichtenstein, 1961: 58, [170, 271 note 70]?; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 29. Matuitui [symbol, = non] ad p. 95 No. 38 sed ad M [= Matuitui] refertur q[uod] describitur p 199 HB cujus species est" (Matuitui not the same as on p. 95 [cf. Piso, 1658, bird picture] no. 38 but as described on pag. 199 in Marcgrave, 1648, which species it is).

This picture, apparently showing the bird with the body mostly in dorsal view, is far from convincing and can only tentatively be identified by elimination of the other possibilities remaining after we accept the allocation by Schneider and by Sick (in litt. (MS)) to the genus *Charadrius*. The Marcgrave woodcut is even worse, but seems to show some affinity with the Handbook picture, assuming the scanty line drawing on folio 15 (bottom) to be a reasonably close copy. In our coloured Marcgrave, the beak is coloured stone-red, in contradistinction to the stated black in the accompanying text. According to my notes, the Handbook picture slightly better agrees with the next species *Charadrius collaris*, but shows yellowish legs (rosy in present picture).

Here it may be noted that Teixeira (MS., 1986) also identified the Theatrum original of this species as *Charadrius semipalmatus*, referring a second, similar species on the same Theatrum page (29, lower fig.), missing in Leningrad, to *Charadrius collaris* Vieillot. On the other hand, he identified the Theatrum model for the next bird (present folio) as *semipalmatus*.

Matuitui.— *Charadrius collaris* Vieillot, 1818

Handbook, 1: 282 (first fig.); Theatrum, 2: 31; Marcgrave, 1648: 199 (fig.); Marcgrave, 1942: [LXVIII (note 535)]; Piso, 1658, nil; Linnaeus, 1766: 253 (partly?); Lichtenstein, 1819: 162?; Lichtenstein, 1961: 58, [170, 271; (note 70)]; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: ".I.P. Tom I.I p. 31. Matuitui p. 199. HB"

Although far better than the Marcgrave woodcut, this picture (as also the previous) is not convincing, but the colour markings seem to point to *collaris*. The same applies to the Handbook picture, actually named *Charadrius collaris* in unidentified hand. Still, Teixeira (Ms., 1986) refers the Theatrum original to *Charadrius semipalmatus* Bonaparte. Linnaeus (1766) seems to have based his *Charadrius hiaticula* (of which the above *semipalmatus* Bonaparte has been considered a synonym or subspecies) partly on Marcgrave's record. However, neglecting the wholly inadequate woodcut, Marcgrave's description rather seems to point to *collaris*, thus at variance with the opinions of not only Linnaeus but also of Schneider. Most likely Marcgrave (and sub-



sequently Linnaeus) used mixed information, while the occurrence here of two separate pictures may point to an unfortunate interference by editor De Laet.

See also final paragraph of comments to previous picture.

#### Folio 104

Mitú.— *Anhima cornuta* (Linnaeus, 1766)

Handbook, 1: 170; Theatrum, 2: 33; Marcgrave, 1648: 215 (fig.); Marcgrave, 1942: [LXXVI (note 610)]; Piso, 1658: 91 (fig.); Piso, 1957: [214 (fig.)]; Linnaeus, 1766: 232; Lichtenstein, 1819: 172; Lichtenstein, 1961: 68, [182]; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 33. Mitú", "Mitu" (pencil), "Anhima No 25 P 91" (pencil, reference to Piso, 1658, 25th bird picture), "est ne[?] Monoceros Labat. Nouvelle Relation de l'Afrique Occidentale" (surely not *Monoceros* Labat).

The picture convincingly shows all striking characteristics of *Anhima*, with the colour markings rather accurate and far better than in the Leiden coloured Marcgrave copy (which shows a series of short white stripes along whole length of neck instead of a band around anterior body). The species also occurs on folio 11 and is discussed there appropriately.

The vernacular name "Anhima" (or "Anhuma") is still used for this species, but "Mitu" (or "Mutu") applies to *Mitu mitu* (Linnaeus, 1766), a species not pictured in the present series or in the Theatrum (although the index refers to p. 287, unfortunately blank).

#### Folios 105 & 106

Çariáma.— *Cariama cristata* (Linnaeus, 1766)

Handbooks: nil?; Theatrum, 2: 35,37; Marcgrave, 1648: 203 (fig.); Marcgrave, 1942: [LXIX (note 542)]; Piso, 1658: 81 (fig.); Piso, 1957: [194 (fig.)]; Linnaeus, 1766: 232; Lichtenstein, 1819: 164; Lichtenstein, 1961: 60, [172, 273 (note 75)]; Schneider, 1938: 84; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 35. Çariáma No. 5. p. 81." (reference to Piso's picture of Çariamá) and "I.P. Tom II p. 37. Çarimo [in pencil] Çariama", "....ad No. 5" (at top, evidently again reference to Piso's figure).

The two pictures show a remarkable difference in quality, folio 105 picturing a smoothly stylized juvenile (possibly after a primitive sketch if both are by the same artist), folio 106 a far better realistic portrait of a (more) adult specimen, evidently taken from the life and quite likely in Johan Maurits' Zoo. Schneider (l.c.) considers the Theatrum p. 35 bird, here copied on folio 105 and representing a type of this species, to be the more adult, that on p. 37 and folio 106 as the juvenile. In fact this seems just the other way round, as confirmed by Sick (in litt. (MS)).

Both pictures are close copies of the Theatrum paintings, the only noticeable difference I found being a more glimmering goldish-yellow head, breast and belly of the (sub)adult bird.

**Folio 107**

Caripiratiatinga.— *Fregata magnificens* Mathews, 1914

Handbook, 1: nil; Theatrum, 2: 43; Marcgrave, 1648: nil; Piso, 1658: nil; Lichtenstein, 1819: nil; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 43. Caripiratiatinga" (in pencil and in ink, the first with accent on the second a).

According to Schneider (l.c.) and Sick (in litt. (MS)) the picture represents an immature specimen, differing from the Theatrum original by the less blackish body and wings and a less bluish beak. The same species appears to occur on one of the Hofflössnitz paintings.

**Folio 108**

Jaguaçatiguacu.— *Chloroceryle amazona* (Latham, 1790)

Handbook, 1: 162 (right fig.), 268?; Theatrum, 2: 47 (upper fig.); Marcgrave, 1648: 194 (fig.); Marcgrave, 1942: [LXVII (note 513)]; Piso, 1658: nil; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 47. a. Jaguaçatiguacu p. 194. HB" (in pencil), "Jaguaçatiguacu" (in ink).

Although the thick-set shape strikingly differs from the slender kingfishers represented on folios 11 and 15, referred to the same species, this apparently may be attributed to its representing an immature stage. Both Lichtenstein and Schneider recorded the species from Handbook, 1: 268, but this I apparently overlooked and lacks in the notes made in Cracow. The reference is confirmed on folio 15.

**Folio 109**

Jacamaçiri.— *Galbula rufoviridis* Cabanis, 1851

Handbook, 1: 290 (right fig.); Theatrum, 2: 49; Marcgrave, 1648: 202 (fig.); Marcgrave, 1942: [LXIX (note 541)]; Piso, 1658: 96 (fig.); Piso, 1957: [224 (fig.)]; Linnaeus, 1766: 182 (error); Lichtenstein, 1819: 164; Lichtenstein, 1961: 60, [172,272; (note 74)]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 49. Jacamaçiri" (twice, in pencil and in ink) "No. 37. p. 96." (reference to Piso, 1658) "p. 202. HB" (reference to Marcgrave, 1648).

The picture is close to the Handbook original, which according to my notes has the lower parts more salmon coloured, other parts olive green with yellowish spots.

Marcgrave's species was erroneously interpreted by Linnaeus as belonging to his *Alcedo galbula*, but is now unanimously identified as *rufoviridis* Cabanis, either as a separate species or as a subspecies of *ruficauda* Cuvier, 1817.

Guarirama.— *Chloroceryle amazona* (Latham, 1790)

Handbook, 1: 162 (right fig.), 268?; Theatrum, 2: 47 (lower fig.); Marcgrave, 1648: 194 (fig.); Piso, 1658: nil; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: “Guarirama” (twice, in pencil and in ink) “Jaguacatiguacú” (idem) “p. 194. HB” (reference to Marcgrave, 1648) “autem coloris ferruginei” (but coloured ferruginous).

This bird appears to be conspecific with that on folio 108 and according to Schneider represents a female, as confirmed by the missing castaneous band.

### Folio 110

Jacana.— *Porhyrula martinica* (Linnaeus, 1766)

Handbook, 1: 270; Theatrum, 2: 51; Marcgrave, 1648: 190 (not fig.); Marcgrave, 1942: [LXV (notes 491, 492)]; Piso, 1658: 90 (partly?, not fig.); Piso, 1957: [213 (partly?, not fig.)]; Linnaeus, 1766: (259); Lichtenstein, 1819: 157; Lichtenstein, 1961: 53, [164, 267 (note 51)]; Schneider, 1938: 85; Wagener, 1964: 192 (fig. 35), [302, 354]

Annotations: “I.P. Tom II. p. 51. Jacana” (twice, in pencil and in ink) “No. 23. p. 90. figure ...” (reference to Piso, where different figure).

While Lichtenstein already referred the Theatrum original to this species, later authors identified it with *Jacana jacana* (Linnaeus) or with *Gallinula chloropus* (Linnaeus). However, Linnaeus correctly refers for *J. jacana* only to Marcgrave p. 191, while the present species occurs on p. 190. The shape and coloration, with the brownish colour of a subadult specimen, support the present identification, but Teixeira refers the Theatrum original to *chloropus*.

### Folio 111

Aguapeacoca.— *Jacana jacana* (Linnaeus, 1766)

Handbook, 1: 266; Theatrum, 2: 53; Marcgrave, 1648: 190 (fig. only), 191; Marcgrave, 1948: [LXV (notes 491, 492)]; Piso, 1658: 90 (partly?, fig.); Piso, 1957: [213 (partly?, fig.)]; Linnaeus, 1766: 259; Lichtenstein, 1819: 157; Lichtenstein, 1961: 53, [164, 267 (note 51)]; Schneider, 1938: 85; Wagener, 1964: not 192, [247, 354] or fig. 35

Annotations: “I.P. Tom II. p. 53. Aguapeacoca” (twice, in pencil with cedilla below first c, and in ink), “Haec fit parum c[um] icone et descript Jacana No 23” (this hardly agreeing with picture and description Jacana No. 23, in pencil, referring to Piso, 1658).

The identification of the species here represented poses no problems, but the usage of vernacular and scientific names for this and the previous species (folio 110) seems confusing. The picture is in close agreement with those in the Handbook and on folio 15 in the present collection and although reversed, with the illustrations provided by Marcgrave and by Piso. Therefore, the opposite remark in pencil is puzzling.

**Folio 112**

(no vernacular name).— *Porphyryla martinica* (Linnaeus, 1766)

Handbook, 1: 270; Theatrum, 2: 57; Marcgrave, 1648: 190 (not fig.); Piso, 1658: 90 (partly?, not fig.); Piso, 1957: [213 (partly?, not fig.)]; Linnaeus, 1766: (259); Schneider, 1938: 85; Wagener, 1964: 192 (fig. 35), [302,354]

Annotations: "I.P. Tom II. p. 57."

The Theatrum original is far more bluish, especially on head and lower parts, than the present picture, and is generally (Schneider, Sick, in litt.) understood to represent a juvenile of the same species as pictured on folio 110.

**Folio 113**

Guarauna.— *Aramus guarauna* (Linnaeus, 1766)

Handbook, 1: nil; Theatrum, 2: 61 (upper fig.); Marcgrave, 1648: 204 (fig.); Marcgrave, 1942: [LXX (note 546)]; Piso, 1658: 91 (fig.); Piso, 1957: [213 (fig.)]; Linnaeus, 1766: 241, 242 (partly?); Lichtenstein, 1819: 165; Lichtenstein, 1961: 61, [174, 274 (note 78)]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 61. Guarauna No. 24. p. 91." (reference to Piso, 1658) and "p. 204. HB" (reference to Marcgrave, 1648).

Although some authors expressed various opinions (Lichtenstein, Schneider), there can be little doubt about the present identification, recently discussed by Pinto (in Marcgrave, 1942 and in Lichtenstein, 1961) and confirmed by Sick (in litt. (MS)). Also the agreement with a picture in Frisch (1981: 85) and that author's record of the rather similar vernacular name "Carau" are confirmative. See also comments to folio 121.

While here and in Theatrum the main colour is dark brownish, with white spots on head and throat and a yellow beak with darker tip, the bird in our coloured Marcgrave copy is rather dark bluish grey.

**Folio 114**

Jabiruguaçu.— *Mycteria americana* Linnaeus, 1758

Handbook, 1: nil; Theatrum, 2: 61 (lower fig.); Marcgrave, 1648: 200 (fig.); Marcgrave, 1942: [LXIX (note 537)]; Piso, 1658: 87 (not fig.); Piso, 1957: [206 (not fig.)]; Linnaeus, 1758: 140; Lichtenstein, 1819: 163; Lichtenstein, 1961: 59, [170, 271 (note 71)]; Schneider, 1938: 85; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 61. b. Jabiruguaçu No. 17. p. 87." (reference to Piso), "sed Icon [symbol, = non] exacte respondet descripti" (but picture does not exactly comply with description).

The specimen here portrayed is coloured lighter than in our Marcgrave copy, where on the other hand the dark posterior parts are almost missing. It copies a type of the present species.

The interchanged vernacular names of "Jabiru" and "Jabiru Guaçu" in Marcgrave, as already clearly exposed by Lichtenstein, is confirmed here and in the annotation to its *Theatrum* original. Unfortunately, in the Leningrad collection (as in *Theatrum* 2) a picture of a "Jabiru" (*Jabiru mycteria* (Lichtenstein)) is missing.

Maguari.— *Euxenura maguari* (Gmelin, 1789)

Handbook, 1: nil; *Theatrum*, 2: 93; Marcgrave, 1648: 204; Marcgrave, 1942: [LXX (note 545)]; Piso, 1658: nil; Lichtenstein, 1819: 165; Lichtenstein, 1961: 61, [173, 273 (note 77)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "Maguari p. 204. HB" (= Marcgrave, 1648), "Storch" (stork), "p. 93" (*Theatrum*).

The fact that Marcgrave, whose description was the original source for Gmelin, did not provide a picture, emphasizes the importance of the *Theatrum* original and the present copy. It is remarkable that at least the Leningrad version differs from Marcgrave's description of bill and head by having the bill and blotches around eye and on lower head, like the feet, brightly red. However, this seems no reason to doubt the generally accepted interpretation of the species.

'Wasserkäfer'

This beetle has been identified as a Dytiscid, spec. incert., but considering the glints suggesting a convex shape, the palps and the totally black colour more likely represents a Hydrophilid beetle, cf. information provided by Dr P.H. Doesburg and Mr J. Krikken, Curators of Entomology in the Leiden Museum.

### Folio 115

Çocoi.— *Ardea cocoi* Linnaeus, 1766

Handbook, 1: 128; 2: 87b (cf. Schneider); *Theatrum*, 2: 65, 69?; Marcgrave, 1648: 209 (fig. p. 210); Marcgrave, 1942: [LXXIII (note 583)]; Piso, 1658: 89 (fig.); Piso, 1957: [210 (fig.)]; Linnaeus, 1766: 237; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [178, 279 (note 100)]; Schneider, 1938: 85, 86?; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 65. Çocoi No. 21. p. 89." (reference to Piso).

Although not without considerable exaggerations, this picture convincingly represents the species and seems never to have posed serious problems. Moreover, the specimen represented must picture Linnaeus' type, the woodcut copy in Marcgrave, 1648, being the iconotype of *Ardea cocoi* Linnaeus.

Schneider (1938) erroneously refers to *Theatrum*, 2: 67 (= 69?).

### Folio 116

Cocopinima.— *Butorides striatus* Linnaeus, 1766

Handbook, 1: 232; 2: 87 (2) (cf. Schneider); Theatrum, 2: 67; Marcgrave, 1648: 210 (fig.); Marcgrave, 1942: [LXXIII (note 586)]; Piso, 1658: 89 (fig.); Piso, 1957: [210 (fig.)]; Linnaeus, 1766: [238]; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [179, 279 (note 103)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "Cocopinina [ink] Çocopinima [pencil] ad Soco p. 199. HB [= Marcgrave 1648, p. 199, traced in ink]". Further annotations in pencil illegible.

While evidently picturing a heron, the present drawing provides few clues for a specific identification. The resemblance with Marcgrave's woodcut also is not convincing, while the Leiden coloured copy shows a variably brownish or greyish bird with a beige bill and grey legs, differing both from the present picture and from Marcgrave's description. Still, the present identification has been generally accepted.

In the Handbook picture, the name *Ardea scapularis* is added, presumably by Lichtenstein who took this name from Illiger's manuscript (1823).

### Folio 117

Guiratinga.— *Casmerodius albus agretta* (Gmelin, 1789)

Handbook, 1: 222; Theatrum, 2: 81; Marcgrave, 1648: 210; Marcgrave, 1942: [LXXIII (note 585)]; Piso, 1658: nil; Linnaeus, 1758: [145]; Linnaeus, 1766: [239]; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [178, 279 (note 102)]; Schneider, 1938: 86; Wagener, 1964: 194 (fig. 41), [194, 249]

Annotations: "I.P. Tom II. p. 81. Guiratinga [twice, in pencil and in ink] p. 210. HB [= Marcgrave, 1648]".

In this rather primitive drawing, the yellow colour of the bill I observed in the Theatrum original, is omitted. There appear to be no differences of opinion with regard to the present identification.

### Folio 118

Ajaja.— *Ajaja ajaja* (Linnaeus, 1758)

Handbook, 1: 210; Theatrum, 2: 83; Marcgrave, 1648: 204; Marcgrave, 1942: [LXX (note 547)]; Piso, 1658: nil; Linnaeus, 1758: 140; Lichtenstein, 1819: 166; Lichtenstein, 1961: 62, [174, 274 (note 79)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 83. Ajaja p. 204. HB" (Marcgrave, 1648).

This picture, although in details slightly at variance with the Handbook or Theatrum originals (dark rosy parts less intense, bill and head rather yellowish or beige, legs brown), apparently does not pose any identification problems, and copies one of Linnaeus' types.

Guacara.— *Egretta thula* (Molina, 1782)

Handbook, 1: nil; Theatrum, 2: 79; Marcgrave, 1648: 210?; Marcgrave, 1942: [LXXIII (note 585)]; Piso, 1658: nil; Lichtenstein, 1819: 169; Lichtenstein, 1961: 65, [178, 279 (note 102)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "p. 79. Guacara".

This picture convincingly shows all major characteristics of the present species, but the accompanying Marcgrave text seems based on mixed information leading Pinto (1942) astray in his comment to Marcgrave's bird. The erroneous record of a yellow beak and a misinterpretation of the Latin words "exterius" and "interius" as exterior and interior (instead of distal and proximal) seem to have been decisive for his identification as *Casmerodius albus egretta* (Gmelin), a species missing the nuchal "elegantissimis plumalis albis" recorded by Marcgrave.

### Folio 119

Guara.— *Eudocimus ruber* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 2: 85; Marcgrave, 1648: 203 (fig.); Marcgrave, 1942: [LXIX (note 543)]; Piso, 1658: nil; Linnaeus, 1758: 145; Lichtenstein, 1819: 165; Lichtenstein, 1961: 61, [173]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 85. Guara p. 203. HB [= Marcgrave, 1648]".

No problems seem involved in the application of the proper name to this Marcgrave species. The Leningrad copy has some white on throat and wings which is more yellowish in the Theatrum original.

According to Frisch (1981), the vernacular name "Guara" is still used for this species.

### Folio 120

Magagui.— *Numenius phaeopus* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 2: 95; Marcgrave, 1648: nil; Piso, 1658: nil; Linnaeus, 1758: [146]; Lichtenstein, 1819: nil; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 95. Magagui".

This beige-brown bird with greyish legs and dark brown beak differs from the Theatrum original which shows a much darker greyish-green neck and brown body. Unfortunately, the Theatrum picture was never used by Marcgrave, Piso or subsequent authors, only Schneider providing the identification *Numenius phaeopus hudsonicus* Lath. Although Sick (1982, in litt.) provisionally considers it an immature *Eudocimus ruber* (Linnaeus), the rather distinctive colour pattern (especially of the head) seems to confirm Schneider's opinion with regard to the species.

### Folio 121

Macoára.— ?*Plegadis chihi* (Vieillot, 1817): [

Handbook, 1: nil; Theatrum, 2: 97; Marcgrave, 1648: not 204 or fig.; Marcgrave, 1942: LXX (note 546)]; Piso, 1658: not 91 or fig.; Piso, 1957: [not 214 or fig.]; Linnaeus, 1766: not or partly 241, 242?; Lichten-

stein, 1819: 165; Lichtenstein, 1961: 61, [174, 274 (note 78)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 97. Macoara Macoagua".

The present identification is given in partial accordance with Schneider, but with some hesitation since the allocation to *Plegadis* seems at variance with the reddish markings on breast and belly shown in the picture. It may be added that both Sick (in litt. (MS)) and Teixeira (MS, 1986) prudently restricted themselves to the indications "Threskiornithidae?" and "incertae sedis" respectively.

There has been considerable controversy regarding the interpretation of Linnaeus' *Scolopax guarauna*, presumed to have been based on heterogeneous information, but the specific name *guarauna* now appears to be generally accepted as pertaining to the genus *Aramus* (see comments to folio 113 and Teixeira, Ms., 1986: 187).

### Folio 122

Guainumbiguaçu.— *Troglodytes musculus* Naumann, 1823

Handbook, 1: nil; Theatrum, 2: 105; Marcgrave, 1648: 197; Marcgrave, 1942: [LXVIII (note 528)]; Piso, 1658: 318 (not fig.?); Piso, 1957: [657 (not fig.?)]; Linnaeus, 1766: 192 (composite); Lichtenstein, 1819: 161; Lichtenstein, 1961: 57, [169, 270-1 (note 65)]; Schneider, 1938: 87; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 105. Guainumbiguaçu [same in pencil covered by 'Tab XXX'] p. 318 [ref. to Piso, 1658] et 196 HB 8vo spes [= eighth species on p. '196' (= 197) in Marcgrave, 1648]". Further notes in pencil illegible.

It is not clear who added the reference to Marcgrave's eighth species, which Linnaeus (1766) included among his references for his *Trochilus mosquitus*, an identification also adopted by Lichtenstein, who evidently overlooked the Theatrum picture. Also Pinto (in Marcgrave, 1942) was led astray and the present identification was since confirmed by Sick (in litt. (MS)) and by Teixeira (MS, 1986).

There is still some controversy about the status of *musculus*, considered by some authors to be a southern subspecies of *T. aedon* Vieillot, 1808.

Guainumbi.— *Eupetomena macroura* (Gmelin, 1788)

Handbook, 1: 190; Theatrum, 2: 101 (upper fig.); Marcgrave, 1648: 197; Marcgrave, 1942: [LXVIII (note 523)]; Piso, 1658: 318 (not figs. ?); Piso, 1957: [657 (not figs.?)]; Linnaeus, 1766: 191 (composite); Lichtenstein, 1819: 161; Lichtenstein, 1961: 57, [168, 270 (note 65)]; Schneider, 1938: 86; Wagener, 1964: nil

Annotations: "p. 101. Guainumbi 3 sps. p. 196. HB [= third species of Marcgrave, 1648]".

Although originally included by Linnaeus in his *Trochilus mango* (= *Anthracothorax mango*), this was corrected by all subsequent authors I consulted, who adopted the present interpretation.



**Folio 123**

Tyepiranga.— *Ramphocelus bresilius* (Linnaeus, 1766)

Handbook, 1: 208 (left fig.); Theatrum, 2: 125 (upper fig.); Marcgrave, 1648: 192 (fig.); Marcgrave, 1942: [LXV (note 496)]; Piso, 1658: 94 (fig.); Piso, 1957: [222 (fig.)]; Linnaeus, 1766: 314; Lichtenstein, 1819: 158; Lichtenstein, 1961: 54, [165, 268 (note 55)]; Schneider, 1938: 87; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 125. Tyepiranga p. 192. HB [= Marcgrave, 1648]". Below picture: "Tueguaçuparoara forte alia spes [symbol, = non] descripta ad p. 214 HB (closely related species).

The interpretation of this characteristic picture leaves no room for doubt, but Lichtenstein doubted the correct placement of Marcgrave's woodcut which he allocated to Marcgrave's second next species, "Jacapu" (*Tanagra jacapa* Linnaeus). Unfortunately, the illustration does not provide any decisive information, but in the Leiden coloured Marcgrave copy the bird is correctly red with black tail, partly black wings, though a black head!

Schneider notes that this species is pictured in Handbook 1: 208 as "Fig. 2", but judging by my notes the "Tiieguaçu piranga" is at left, a "Teítei" (referred by Linnaeus, 1766: 314, to his *Tanagra violacea*) being the right hand species claimed missing by Schneider.

Tangara.— *Tangara fastuosa* (Lesson, 1830)

Handbook, 1: not 208?; Theatrum, 2: 123 (lower fig.); Marcgrave, 1658: 214; Marcgrave, 1942: [LXXXVI (note 608)]; Piso, 1658: nil; Lichtenstein, 1819: 172; Lichtenstein, 1961: 68, [182, 284 (note 125)]; Schneider, 1938: 87; Wagener: nil

Annotations: "p. 123 b. Tangara 1a spec. p. 214. HB [= Marcgrave, 1648]".

This quite charming picture is remarkably accurate and the present interpretation appears nowadays to be generally accepted. Lichtenstein, when trying to refer the Theatrum original to one of the species then known (*T. tatao* Linnaeus), missed the opportunity to describe it as a new species.

As stated above (previous species), Schneider's reference for this species to Handbook, 1: 208, "Fig. 1" seems erroneous.

**Folio 124**

Guiratanheuna.— *Icterus icterus* (Linnaeus, 1766)

Handbook, 1: 236 (left fig.); Theatrum, 2: 141 (lower fig.); Marcgrave, 1648: 192; Marcgrave, 1942: [LXVI (note 502)]; Piso, 1658: nil; Linnaeus, 1766: 161; Lichtenstein, 1819: 159; Lichtenstein, 1961: 55, [167, 269 (note 59)]; Schneider, 1938: 88; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 141. b. Guiratanheuna Guiratangeuma [both in ink and in pencil]".

The picture clearly illustrates this species and, with the distinct dark saddle cross-

sing the back (also described by Marcgrave), evidently the subspecies *I. icterus jamacaii* (Gmelin, 1788). The species is well illustrated by Frisch (1981, p. 239), erroneously as *I. icterus croconotus* (Wagler), the names of both subspecies having been interchanged. In the Leiden coloured copy of Marcgrave, the white spot on the wings is replaced by a dozen oblique series of small white stripes covering most of the wing, the legs being blue, further colours and markings correct.

Guirã áymuca.— *Momotus momota* (Linnaeus, 1766)

Handbook, 1: 258; Theatrum, 2: 189; Marcgrave, 1648: 193 (fig.); Marcgrave, 1942: [LXVI (note 510)]; Piso, 1658: 93 (fig.); Piso, 1957: [220 (fig.)]; Linnaeus, 1766: 152; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [167]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: "p. 189. Guirã áymuca [ink] Guira aymucá [pencil] Guiraguainumbi [twice in ink] No. 3. p. 93 [third picture on p. 93 in Piso, 1658] M. p. 183 [= Marcgrave p. 183, error for 193]".

Although in the present picture the colours are far from accurate, especially the dark markings on head and breast are convincing. It is remarkable that in the Leiden coloured copy of Marcgrave, the colours are far better but the blue head and the breast lack these dark markings.

### Folio 125

Guirapitinga.— *Tachyphonus rufus* (Boddaert, 1783)

Handbook, 1: 244 (right fig.); Theatrum, 2: 157 (upper fig.); Marcgrave, 1648: 212? (not fig.); Marcgrave, 1942: [LXXIV (note 593)]?; Piso, 1658: nil; Lichtenstein, 1819: 170; Lichtenstein, 1961: 66, [179, 281 (note 108)]; Schneider, 1938: 89; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 157. Guirapitinga [in pencil and in ink]".

If perhaps not wholly convincing, the present identification as a female (or juvenile) of *Tachyphonus rufus* appears to be accepted by most recent authors. The woodcut picture of Marcgrave's "Tiieguacu" (apparently a synonym of "Guirapitinga") poses questions since it was used by Piso to illustrate a dove.

Guirapongobi.— ? *Saltator maximus* (Müller, 1776)

Handbook, 1: 240 (right fig.); Theatrum, 2: 185 (lower fig.); Marcgrave, 1648: 201-2? (not fig.); Marcgrave, 1942: [LXIX (note 539)]?; Piso, 1658: 93? (not fig.); Piso, 1957: [219? (not fig.)]; Lichtenstein, 1819: 163?; Lichtenstein, 1961: 59, [171, 272 (note 72)]?; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: "Guirapongobi".

This picture as well as the Handbook original have in pencil the addition "*Ampelis variegata* juv. female", suggesting an identification as either *Procnias averano* (Hermann) or *P. nudicollis* (Vieillot), both female and/or juvenile, but most recent authors appear to have agreed on the present interpretation. Therefore, some questionable references given above (especially Pinto's Marcgrave and Lichtenstein com-

ments) evidently rather apply to folio 128.

The present picture is quite different in colours from the Theatrum original and perhaps not finished. See also next folio, lower figure.

### Folio 126

Sabia.— *Turdus rufiventris* Vieillot, 1818

Handbook, 1: nil; Theatrum, 2: 173; Marcgrave, 1648: nil; Piso, 1658: nil; Schneider, 1938: 90; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 173. Sabia".

The present identification apparently poses no problems and has been generally accepted. Unfortunately the species was omitted in Marcgrave and, consequently, was missed by Linnaeus. The vernacular name also applies to several related species.

According to notes made when comparing the Cracow original, the upper parts as shown here, including head and tail, should be considerably darker, almost black, while the original also shows a distinct light-yellowish ring around the eye. A good picture is given by Frisch (1981: 233).

(no vernacular name).— *Saltator maximus* (Müller, 1776)

Handbook, 1: 240 (right fig.); Theatrum, 2: 169 (lower fig.), 185 (id.); Marcgrave, 1648: nil; Piso, 1658: nil; Schneider, 1938: 89; Wagener, 1964: nil

Annotations: "p. 169".

Judging by the original picture (Theatrum, 2: 169) the present reddish brown bird should be more olivaceous. It has already been identified by previous authors as *Saltator maximus*, presumably juvenile.

The references to the Handbook picture and the second Theatrum picture are added on the authority of Teixeira (MS, 1986: 176). Both bear the same or similar vernacular names "Guirapunga", "Guirapongobi", but the first actually concerns *Procnias averano* (Hermann, 1783), see folios 128, 129.

### Folio 127

Tiiguaçuparoara.— *Paroaria dominicana* (Linnaeus, 1758)

Handbook, 1: nil; Theatrum, 2: 177 (2 figs.); Marcgrave, 1648: 214 (fig.); Marcgrave, 1942: [LXXVI (note 607)]; Piso, 1658: nil; Linnaeus, 1758: [172]; Linnaeus, 1766: 301; Lichtenstein, 1819: 172; Lichtenstein, 1961: 68, [182, 283 (note 124)]; Schneider, 1938: 90; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 17. Çabiaguaçu Tiiguaçuparoare foemina [female] p. 214 HB [= Marcgrave, 1648]"; "Tijeguaçuporoara mas [male] p. 214. HB".

This species has been recorded by Marcgrave (1648: 211) as "Guiratirica", and as such only was at first referred to by Linnaeus (1758); in his 12th edition (1766)

Linnaeus added a reference to Marcgrave's "Tiieguaçuparoara". Judging by recent literature, the present identification is generally accepted.

In the Leiden coloured Marcgrave copy, the colours and pattern quite agree with the present picture of the male, only the rather intense red on head, throat and breast being more rosy. The agreement with the Theatrum originals is close, but there the juvenile (erroneously indicated as feminine) is placed below.

### Folios 128 & 129

Guiraponga.— *Procnias averano* (Hermann, 1783)

Handbook, 1: 184, 228; Theatrum, 2: 183, 185 (upper fig.); Marcgrave, 1648: 201 (figs.); Marcgrave, 1942: [LXIX (note 539)]; Piso, 1658: 93 (figs.); Piso, 1957: [218 (figs.)]; Lichtenstein, 1819: 162; Lichtenstein, 1961: 59, [171, 272 (note 72)]; Schneider, 1938: 92; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 183. Guiraponga No. 28 [28th bird picture in Piso, 1658] p. 201 HB [= Marcgrave, 1648!] descriptus melius [well described] in HB" and "I.P. Tom II, p. 185 Guiraponga foemina [female] p. 202 HB [Marcgrave, 1648] No 28 p. 93 [Piso, 1658]"

Although the Theatrum original at first seems to have been problematical to Lichtenstein, all recent authors seem to accept the present identification. It may be noted that the originals are on the whole more olivaceous, or greenish brown to almost black on the wings. The first picture evidently represents an adult male, but the second either a female or a juvenile male (Sick, in litt.; Teixeira, MS, 1986: 152, 286). The colours shown in our coloured Marcgrave copy roughly confirm the present identification.

### Folio 130

Jacurutu.— *Bubo virginianus* (Gmelin, 1788)

Handbook, 1: 256; Theatrum, 2: 199; Marcgrave, 1648: 199 (fig.); Marcgrave, 1942: [LXVIII (note 532)]; Piso, 1658: nil; Lichtenstein, 1819: 162; Lichtenstein, 1961: 58, [169, 271 (note 68)]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 199. Jacurutu Coruca .p. 199. HB [= Marcgrave, 1648]"

Except perhaps on subspecific level, almost all consulted authors concur with the present identification. This picture, or rather the Theatrum original, was not used for the Marcgrave illustration, which closely agrees with the Handbook version (see folio 14).

According to Frisch (1981: 120), the current vernacular name is "Mocho", while "Coruja".— close to the alternative name given in the annotations.— should apply only to the quite different *Otus choliba* (Vieillot).

Caburé.— *Glaucidium brasilianum* (Gmelin, 1788)

Handbook, 1: nil; Theatrum, 2: 193; Marcgrave, 1648: 212; Marcgrave, 1942: [LXXV (note 599)]; Piso, 1658: nil; Lichtenstein, 1819: 171; Lichtenstein, 1961: 67, [180, 282 (note 117)]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: “— p. 193. Caburé p. 212. HB [= Marcgrave, 1648]”.

This picture appears to be reasonably close to the truth, since its original version never caused any allocation problems. Also the given vernacular name, “Caburé”, apparently still applies to this species (Frisch, 1981: 118).

### Folio 131

Urutaurána.— *Spizaetus ornatus* (Daudin, 1801)

Handbook, 1: nil; Theatrum, 2: 201; Marcgrave, 1648: 203 (fig. p. 204); Marcgrave, 1942: [LXIX (note 544)]; Piso, 1658: nil; Linnaeus, 1766: 121 (error); Lichtenstein, 1819: 165; Lichtenstein, 1961: 61, [173, 273 (note 76)]; Schneider, 1938: 93; Wagener, 1964: nil

Annotations: “I.P. Tom II. p. 201. Urutaurána p. 203. HB [= Marcgrave, 1648]”.

The original interpretation of Marcgrave’s “Urutaurána” by Linnaeus was already corrected by Lichtenstein, who referred it to the present species. This picture, but still more the impressive Theatrum original, supports this uncontested allocation.

The Marcgrave woodcut strongly differs from the present picture and, the species apparently not being figured in the Handbooks (not found in Handbook 1, the second volume not verified but never previously referred to in this context), its source remains a problem.

### Folio 132

Acué, Ipecú.— *Dryocopus lineatus* (Linnaeus, 1766)

Handbook, 1: 188?; 2: 103?; Theatrum, 2: 217; Marcgrave, 1648: 207 (fig.)?; Marcgrave, 1942: [LXXII (note 576)]; Piso, 1658: nil; Linnaeus, 1758: 113 (partly); Linnaeus, 1766: 173; Lichtenstein, 1819: 168; Lichtenstein, 1961: 64, [177, 278 (note 95)]; Schneider, 1938: 94; Wagener, 1964: nil

Annotations: “I.P. Tom II. p. 217. Acué Ipecú p. 207 [ref. to Marcgrave, 1648]”.

Considering the various interpretations of Marcgrave’s source material (Handbook picture cf. Lichtenstein = *Picus comatus* (Illiger) Wied, 1832 = *Phloeocastes melanoleucos* (Gmelin, 1788); the Theatrum original of the present = *Dryocopus lineatus*; and the next Theatrum picture (2: 219), now missing, cf. Schneider = *P. melanoleucos* (Gmelin)), the identification of Marcgrave’s species poses problems. Linnaeus first (1758) identified it as *Picus pileatus*, subsequently (1766) as *Picus principalis*, a name evidently referring to Johan Maurits, governor of Dutch Brazil. However, recent authors seem to identify at least Marcgrave’s woodcut as *P. melanoleucos*, thus not identical with the species represented here.

The present picture convincingly shows the colours and pattern (especially the white line below the eye) characteristic for *Dryocopus lineatus*.

### Folio 133

Ibiiu.— *Chordeiles acutipennis* (Hermann, 1783)

Handbook, 1: 260; Theatrum, 2: 221; Marcgrave, 1648: not 195 (middle and lower fig.); Marcgrave, 1942: [LXXVII (note 516)]; Piso, 1658: nil; Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [168, 269 (note 64)]1; Schneider, 1938: 95; Wagener, 1964: not 194 (fig. 42), [250, 356]

Annotations: "I.P. Tom II. p. 22. Ibiiu p. 195. HB [= Marcgrave, 1648]"

This picture seems close to the small Marcgrave woodcut (1648: 195, middle fig.), and to the more sketchy copy of the Handbook picture on folio 14. The intricacies of the various related nightjars figured or described in Handbooks, Theatrum and by Marcgrave, listed and discussed by Lichtenstein and by Schneider, have recently again been studied by Teixeira (MS, 1986).

### Folio 134

Inambi.— *Rhynchotus rufescens* (Temminck, 1815)

Handbook, 1: 234; Theatrum, 2: 281; Marcgrave, 1648: 192; Marcgrave, 1942: [LXV (note 499)]; Piso, 1658: 81 (fig.); Piso, 1957: [194 (fig.)]; Lichtenstein, 1819: 159; Lichtenstein, 1961: 55, [166, 269 (note 58)]; Schneider, 1938: 98; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 281. Inambi ... Jambu [pencil] p. 192. HB (= Marcgrave, 1648]"

The present picture clearly shows the transverse bands on body and wings and especially the very characteristic colour markings on the head, ruling out all other previously suggested identifications, even though the vernacular "Inambi" (or "Inambu, Jambu, Nambu") points to a *Crypturellus* species (Frisch, 1981: 34). Remarkable is the lacking tail, also in the otherwise different illustration of Piso (which may represent a different species, cf. Teixeira, MS, 1986).

Picuipinima.— *Columbina passerina* (Linnaeus, 1758)

Handbook, 1: 196 (left fig.); Theatrum, 2: 273 (upper fig.); Marcgrave, 1648: 204?; Marcgrave, 1942: [LXX (note 548)]?; Piso, 1658: 86 (fig.); Piso, 1957: [205 (fig.)]; Linnaeus, 1758: 165; Linnaeus, 1766: 285; Lichtenstein, 1819: 166?; Lichtenstein, 1961: 62, [174, 274 (note 80)]?; Schneider, 1938: 98; Wagener, 1964: 193 (fig. 37), [302, 354]?

Annotations: "— p. 273. Picuipinima p. 204. HB [= Marcgrave, 1648]"

There have been several interpretations of the present picture (or its Theatrum original), but recent authors (Schneider, Teixeira, MS) support the identification given here, often referring Marcgrave's text to *Scardafella squammata* (Lenon, 1831). The resemblance with the last picture on folio 14 seems convincing.

**Folio 135**

Tingaçu.— *Piaya cayana* (Linnaeus, 1766)

Handbook, 1: nil; Theatrum, 2: 285 (upper fig.); Marcgrave, 1648: 216 (fig.); Marcgrave, 1942: [LXXVII (note 612)]; Piso, 1658: nil; Linnaeus, 1766: 171-2; Lichtenstein, 1819: 173; Lichtenstein, 1961: 69, [183, 285 (note 128)]; Schneider, 1938: 98; Wagener, 1964: nil.

Annotations: "I.P. Tom II. p. 285.a. Tingaçu Atingaçucamuca p. 216. HB [= Marcgrave, 1648]".

The present attribution seems to pose no problems. In the Leiden coloured copy of Marcgrave (1648), the woodcut of this species.— evidently made after the Theatrum model for the present picture.— shows the bird to have a green beak and a red eye, being further mostly reddish liver-brown with light bluish throat and belly. According to my notes, the Theatrum picture is considerably darker brownish, with yellowish spots in contradistinction to the white ones here.

**Folio 136**

Mituporanga.— *Crax fasciolata* Spix, 1825

Handbook, 1: nil; Theatrum, 2: 289; Marcgrave, 1648: 195 (fig.); Marcgrave, 1942: [LXVI (note 515)]; Piso, 1658: 80 (fig.); Piso, 1957: [192 (fig.)]; Linnaeus, 1766: 269 (error); Lichtenstein, 1819: 160; Lichtenstein, 1961: 56, [168]; Schneider, 1938: 99; Wagener, 1964: nil

Annotations: "I.P. Tom II. p. 289. Mituporanga p. 195. HB [= Marcgrave, 1648] N2 p. 80 [= Piso, 1658, second bird picture] Mutuporanga".

This unfinished copy was made after a Theatrum original with a wholly black body, tail and head, excepting the yellow to orange proximal beak and lores.

**Crustaceans and further Invertebrates**  
(by L.B. Holthuis & M. Boeseman)

**Folio 137**

15 Blätter *Krebse, Insecten, Sepien und Seesterne* aus Tom. I. (15 folios Crustaceans, Insects, Cephalopods and Echinoderms from Vol. I).

**Folio 138**

Pindà.— *Plagiobrissus grandis* (Gmelin, 1791)

Handbook, 1: ? (no notes available); Theatrum, 1: 1; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom I. p. 1. Pindà".

According to Dr Chantal de Ridder of the Marine Biological Laboratory in Brussels, this drawing probably should be interpreted as representing the above species. The picture apparently never has been published or referred to by Marcgrave or subsequent authors.

### Folio 139

Jacitataguaçu.— *Luidia senegalensis* (Lamarck, 1816)

Handbook, 1: ? (no notes available); Theatrum, 1: 5; Marcgrave, 1648: 189 (fig.); Marcgrave, 1942: [LXIV (note 484)]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 5. Jacitataguaçu".

The present identification, already provided by Sawaya in his comments on Marcgrave (1942), was kindly confirmed by Dr M. Jangoux of the Marine Biological Laboratory, Free University of Brussels.

### Folio 140

Jacitatáguacu.— *Astropecten marginatus* Gray, 1840

Handbook, 1: ? (no notes available); Theatrum, 1: 7; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom I. p. 7. Jacitatáguacu".

The species pictured here apparently does not occur in Marcgrave (1648) and the figure is not referred to in any subsequent publication covering the subject. The present tentative identification was provided by Dr. M. Jangoux of the Marine Biological Laboratory in Brussels.

Pinôguaçu.— *Oreaster reticulatus* (Linnaeus, 1758)

Handbook, 1: ? (no notes available); Theatrum, 1: 9?; Marcgrave, 1648: 189?; Marcgrave, 1942: [LXIV (note 184.—outra "Estrêla")?]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "Pinôguaçu"? (Indistinct, some vague handwriting below the picture illegible. Vernacular name not found in Theatrum I index).

Dr M. Jangoux of the Marine Biological Laboratory in Brussels identifies this picture tentatively as Linnaeus' *Asterias reticulatus*. Although Marcgrave does not figure among Linnaeus' original references, a short record of a second "Stella Marina" by Marcgrave has been referred to the present species by Sawaya in his comments on Marcgrave (1942).



**Folio 141**

Cayacánga.— ?*Octopus vulgaris* Cuvier, 1797

Handbook, 1: ? (not in notes); Theatrum, 1: 11; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Wagener, 1964: nil; Roper, Sweeney & Nauen, 1984: 211 (figs.)

Annotations: "I.P. Tom I. p. 11. a. Cayacánga".

The present identification can only be given tentatively considering the quality of the picture and the paucity of information concerning Brazilian octopods. A similar specimen is figured in Handbook 1, on p. 350, but differently named: "Pirâicoca".

**Folio 142**

Pirajeóca.— ?*Loligo (Doryteuthis) plei* Blainville, 1823

Handbook, 1: ? (no notes available); Theatrum, 1: 11; Marcgrave, 1648, 1942: nil; Piso, 1658: nil; Wager, 1964: 188 (fig. 21), [240, 347]?; Roper, Sweeney & Nauen, 1984: 98 (figs.)

Annotations: "I.P. Tom I. p. 11. b. Pirajeóca".

According to Dr E. Gittenberger, the picture hardly allows a specific identification and the present allocation is only tentative. At most, there is some similarity with Wagener's figure, but the more elongate shape and different fin shape seems to preclude conspecificity.

**Folio 143**

Tamaru guacú.— *Lysiosquilla scabricauda* (Lamarck, 1818)

Handbook, 1: 324; Theatrum, 1: 311; Marcgrave, 1648: 186 (fig. p.187); Marcgrave, 1942: [LXIII (note 472)]; Piso, 1658: nil; Linnaeus, 1758: 633 (composite); Linnaeus, 1767: 1054 (composite).

Annotations: "I.P. Tom 1. p. 311. Tamaru guacú p. 187. HB [= Marcgrave, 1648]".

An extensive comment on this species and the present picture is published separately, in a discussion of the Marcgrave crustaceans.

**Folio 144**

Poticucuma.— *Panulirus echinatus* S.I. Smith, 1869

Handbook, 1: 384; Theatrum, 1: 313, 315, 319; Marcgrave, 1648: 185 (fig. p.186); Marcgrave, 1942: [LXIII (note 470)]; Piso, 1658: 77 (fig.); Piso, 1957 [187 (fig.)]; Linnaeus, 1767: 1053 (composite); Wagener, 1964: nil

Annotations: "I.P. Tom. 1. p. 319. Poticucuma [Poticucunia?]"

This species and the present picture are dealt with in a separate paper on Marcgrave's crustaceans.

### Folio 145

Potipêma.— *Macrobrachium carcinus* (Linnaeus, 1758)

Handbook, ? : ? (not in notes); Theatrum, 1: 323; Marcgrave, 1648: 187; Marcgrave, 1942: [LXIII (note 477)]; Piso, 1658: nil; Linnaeus, 1758: 631; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 323. Potipêma".

This species is discussed, with comments on the present figure, in a separate paper on the Marcgrave crustaceans.

Potiguaçu.— *Macrobrachium acanthurus* (Wiegmann, 1836)

Handbook, ? : ? (not in notes); Theatrum, 1: 329; Marcgrave, 1648: 188; Marcgrave, 1942: [LXIII (note 479)]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "Potiguaçu.— p. 329. a".

This species and the present picture are treated in a separate paper on the Marcgrave crustaceans.

Potiatinga.— *Palaemon pandaliformis* (Stimpson, 1871)

Handbook, ? : ? (not in notes); Theatrum, 1: 329; Marcgrave, 1648: 188; Marcgrave, 1942: [LXIII (note 479)]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "p. 329. b. Potiatinga".

Is dealt with in a separate paper on the Marcgrave crustaceans.

### Folio 146

Ciriayeima, Potiquiquixe.— *Parribacus antarcticus* (Lund, 1793)

Handbook, 1: 316; Theatrum, 1: 335; Marcgrave, 1648: 186 (fig.); Marcgrave, 1942: [LXIII (note 471)]; Piso, 1658: nil; Linnaeus, 1758: 633 (composite); Linnaeus, 1767: 1053 (composite); Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 335. a. Ciriayeima Potiquiquixe, p. 186 HB" (= Marcgrave, 1648), and "p. 335. b" (Theatrum).

This species, with the above figures, is treated in a separate paper on the Marcgrave crustaceans.

### Folio 147

Guajá.— *Carpilius corallinus* (Herbst, 1783)

Handbook, 1: 338; Theatrum, 1: 337, 357; Marcgrave, 1648: 185 (fig.); Marcgrave, 1942: [LXII (note 465)]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 337. Guajá".

This species and the present figure are discussed in a separate paper on the Marcgrave crustaceans.

Guaje.— *Calappa ocellata* Holthuis, 1958

Handbook 1: 326; Theatrum, 1: 339; Marcgrave, 1648: 182 (fig.); Marcgrave, 1942: [LXI (note 453)]; Piso, 1658: nil; Wagener, 1964: 190 (fig. 26), [243, 350]

Annotations: "— p. 339. Guaja et Guaipinima i/e minor Guaja, [symbols, = quod est?] al. spec." (? the annotations are difficult to decipher, and the sense of "i/e" and "quod est alia [or altera] species" remain doubtful).

This species and the present picture are treated in a separate paper on the Marcgrave crustaceans.

### Folio 148

Guajume.— *Cardisoma guanhumí* (Latreille, 1825)

Handbook, 1: 320; Theatrum, 1: 355, 359; Marcgrave, 1648: 185 (fig.); Marcgrave, 1942: [LXII (note 466)]; Piso, 1658: 77 (fig.); Piso, 1957: [186 (fig.)]; Wagener, 1964: 189 (fig. 25), [242, 349]

Annotations: "I.P. Tom 1. p. 355. Guajume [symbol, = est] spec Guanhumy No. 84. p. 77" (= Piso, 1658).

This species and the pictures referred to are discussed separately in a paper on Marcgrave crustaceans.

### Folio 149

Ciriobi.— *Callinectes sapidus* Rathbun, 1896

Handbook, ? : ? (not in notes); Theatrum, 1: 353; Marcgrave, 1648: 184; Marcgrave, 1942: [LXII (note 460)]; Piso, 1658: 76; Piso, 1957: 183; Wagener, 1964: nil

Annotations: "Ciriobi ad. No. 80 p. 76. [Piso, 1658] enig species" (dubious? species) and "deest apud nos" (in pencil = lacking to us).

Comments on this species and the present picture are published separately in a paper on the Marcgrave crustaceans.

Guajume.— *Carpilius corallinus* (Herbst, 1783)

Handbook, 1: 338; Theatrum, 1: 337, 357 (left fig.); Marcgrave, 1648: 182 (fig.); Marcgrave, 1942: [LXII (note 465)]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom 1. p. 357. guajume".

A discussion of the present picture and species is given in a separate paper on the Marcgrave crustaceans.

### Folio 150

Arumatia.— *Cladomorphus phyllinus* Gray, 1835

Handbook, ? : nil? (not in notes); Theatrum, 3: 241; Marcgrave, 1648: 251 (figs. ?); Marcgrave, 1942: [LXXXIX (note 754)]; Piso, 1658: 286 (fig. ?); Piso, 1957: [594 (fig. 3?)]; Wagener, 1964: 208 (fig. 85), [316, 366]

Annotations: "I.P. Tom III. p. 241. Arumatia p. 286.HI [= Piso, 1658] Caaíára".

In his comments to the insect part of the 1942 Portuguese edition of Marcgrave, Fr. Lane already referred the second Marcgrave species to *Phibalosoma*, a subjective synonym of *Cladomorphus*, while the present drawing (although slightly differing in attitude) appears to present the same species. In pictures like this, the definite specific identity can not be established, but *C. phyllinus* is by far the most common species in the region here considered.

The picture represents a wholly beige-brown specimen, without any obvious markings. The name "Caaíára" is used by Marcgrave (1648: 246) for a mantid species, while it is added to a figure of the present species in Theatrum, 3.

### Folio 151

(no vernacular name).— *Acrocinus longimanus* (Linnaeus, 1758)

Handbook, ? : ? (not in notes); Theatrum, 3: 245 (second picture); Marcgrave, 1648: nil; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "I.P. Tom III. p. 245. b".

This well done and characteristic picture of the "Harlequin beetle" unfortunately lacks a vernacular name, which would have facilitated the search for records in the literature provided above and especially in the Handbook.

Tambeiva.— ?*Desmonota (Pilidionota) variolosa* (Weber, 1801)

Handbook, ? : ? (not in notes); Theatrum, 3: 251; Marcgrave, 1648: 255; Marcgrave 1942: [LXXXIX (note '777')]; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "p. 251. a. spes. Tambeiva p. 255. HB [= Marcgrave, 1648]".

The present identification was suggested by Lane, in his comments to the Portuguese Marcgrave edition (1942), for Marcgrave's "Tambeiva". However, the woodcut picture appears to differ in several aspects from the present, unsatisfactory drawing.

Enema.— *Titanus giganteus* (Linnaeus, 1771)

Handbook, 1: not 406?; Theatrum, 3: 251; Marcgrave, 1648: ?; Piso, 1658: nil; Wagener, 1964: nil

Annotations: "p. 251. c. Enema".

A good picture, apparently posing no problems, but the added vernacular name "Enema", being also used by Marcgrave (1648: 246) for *Megasoma gyas* (Herbst), caused problems with the interpretation of various "Enema" records in Handbook (page 406) and Theatrum (pages 251 and 253), enhanced by too incomplete notes made in Cracow.

Nhanduguaçu.— *Avicularia* species

Handbook, 1: 402; Theatrum, 3: 237; Marcgrave, 1648: 248 (fig.); Marcgrave, 1942: [LXXXVIII (note '738')]; Piso, 1658: 284 (fig.); Piso, 1957: [590 (fig.)]; Wagener, 1964: 210 (fig. 89), [264, 368]

Annotations: "I.P. Tom III. p. 237. Nhanduguaçu p. 284 HI [= Piso, 1658] sed dator [= datus or datur] 10 pedes" (is given 10 legs).

A nice picture differing in several aspects from those referred to above. A further comment on these spiders is given for a lacking picture on folio 22.

## Folio 152

Guaricurú.— *Atya scabra* (Leach, 1815)

Handbook, ? : ? (not in notes); Theatrum, 1: 331; Marcgrave, 1648: 187 (fig.); Marcgrave, 1942: [LXIII (note 475)]; Piso, 1658: 78 (fig.); Piso, 1957: [188 (fig.)]; Wagener, 1964: nil

Annotations: "Poti. No. 86. p. 78. [= Piso, 1658] Guaricurú".

This species and picture are dealt with in a separate paper on the Marcgrave crustaceans.

Potiquiquiyya.— *Panulirus echinatus* S.I. Smith, 1869

Handbook, 1: 384; Theatrum, 1: 313, 315, 319; Marcgrave, 1648: 185 (fig. p. 186); Marcgrave, 1942: [LXIII (note 470)]; Piso, 1658: 77 (fig.) (partly); Piso, 1957: [187 (fig.) (partly)]; Linnaeus, 1767: 1053; Wagener, 1964: nil

Annotations: "Potiquiquiyya No. 85. p. 77. [= Piso, 1658] Potiatinga".

Comments on this species and the present figure are given in a separate paper on the Marcgrave crustaceans.

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(by M. Boeseman)

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Plate 1. Left, folio 2, top to bottom: Capijbara (*Hydrochaeris hydrochaeris* (Linnaeus)); Coandi (*Coendou prehensilis* (Linnaeus)); no name (*Potamochoerus porcus* (Linnaeus)). Right, folio 3, top to bottom: Tayacuatié (*Tayassu tajacu* (Linnaeus)); no name (*Genetta genetta* (Linnaeus)); no name (*Cavia porcellus* (Linnaeus)).



Plate 2. Left, folio 7, top to bottom: no name (*Papio spec.*); jaguarette (*Panthera onca* (Linnaeus)); Tamandui (*Tamandua tetradactyla* (Linnaeus)); Macajuba (*Cebus apella* (Linnaeus)). Right, folio 9, top to bottom: no name (*Ovis aries* Linnaeus); jaguara (*Canis familiaris* Linnaeus); Paca (*Agouti paca* (Linnaeus)); Coatimonde (*Nasua nasua* (Linnaeus)); Tatete (*Dasyurus novemcinctus* (Linnaeus)).





Plate 3. Left, folio 10, top to bottom: Maracaja (? *Leopardus wiedii* (Schinz)); Tatuapara (*Tolypeutes trinctus* (Linnaeus)); no name (*Capra hircus* Linnaeus); Taibi (*Didelphis marsupialis* Linnaeus). Right, folio 12, top to bottom and left to right: Eixua (*Gampsonyx swainsoni* (Vigors)); no name (*Columbina passerina* (Linnaeus)); Ajurucuru (*Amazona aestiva* (Linnaeus)); Içoco (*Tigrisoma lineatum* Boddaert); Curicaca (*Theristicus caudatus* (Boddaert)); Curucua (*Trogon collaris* Vieillot); no name (*Numida meleagris* (Linnaeus)); Tieguaçapiranga (*Ramphocelus bresilius* (Linnaeus)); Teitei (*Euphonia violacea* (Linnaeus)); Aiaja (*Aiaia aiaja* (Linnaeus)).



Plate 4. Left, folio 14, top to bottom and left to right: Içóca (*Ardæa cocoi* (Linnaeus)); Anú (*Crotophaga ani* Linnaeus); Guirácocó (*Thamnophtilus palliatus* (Lichtenstein)); Pitangua guaçú (*Megarhynchus pytagua* (Linnaeus)); Urubu (*Cathartes aura* (Linnaeus)); Jacurutu (*Bubo virginianus* (Gmelin)); Ojeruba (*Momotus momota* (Linnaeus)); Ibitau (? *Hydrophala brasiliara* (Gmelin)); Mairica (*Fluvicola nerigeta* (Linnaeus)); Cabia (? *Thraupis palmarum* (Wied.)); Right, folio 15, left to right and top to bottom: Tujaputeitiba (*Aratinga aurea* (Gmelin)); Tuitirica (*Brotogetis tirica* (Gmelin)); Agnapeuçóra (*Jacana jacana* (Linnaeus)); Jaguaçati (*Chloroceryle amazona* (Latham)); Jacana (*Porphyrula martinica* (Linnaeus)); Aracara (*Ara chloroptera* Gray); Caminde (*Ara araraura* (Linnaeus)); Guivarna (*Sericsosypha loricata* (Lichtenstein)); no name (? *Sporophila bouvreuil* (Müller)); no name (? *Catidris canutus* (Linnaeus)); Tuimiri (*Agapornis pullaria* (Linnaeus)); no name (*Charadrius semipalmatus* Bonaparte); no name (*Celochelidon nitotica* (Gmelin)).



Plate 5. Left, folio 16, left to right and top to bottom: Guacucua (*Ogcocephalus vespertilio* (Linnaeus)); Jurara (*Phrynops nasutus* (Schweigger)); Guambayacuati (*Diodon hystrix* Linnaeus); Pira ixanga (*Epinephelus guttatus* (Linnaeus)); Paru (*Pomacanthus paru* (Bloch)); Uribaco (*Anisotremus virginicus* (Linnaeus)); Acarauna (*Acanthurus bahianus* Castelnau). Right, folio 18, top to bottom: Narinari (*Aetobatus narinari* (Euphrasen)); Cunapu (*Epinephelus itajara* (Lichtenstein)); Guaja (*Mithrax hispidus* (Herbst)).



Plate 6. Left, folio 19, top to bottom and left to right: *Aipimixira* (*Bodianus rufus* (Linnaeus)); *Piraquiba* (*Echeneis naucrates* (Linnaeus)); *Aratu* (*Goniopsis cruentata* (Latreille)); *Pirajcoea* (? *Remora remora* (Linnaeus)); *Ciri* (*Cronius ruber* (Lamarck)); *Jaboti* (*Fistularia tabacaria* Linnaeus). Right, folio 22, top to bottom and left to right: *Guacari* (*Pterygoplichthys etentaculus* (Spix)); *Purague* (*Rhinobatos percellens* (Spix)); *Jaboti* (*Testudo geometrica* Linnaeus); *Nhandiguaçu* (*Avicularia* spec.); *Nhandu* (? *Microthema* spec.); *Enema* (*Megasoma gyas* (Herbst)); *Nhandii* (*Heteropoda venatoria* (Linnaeus)); *Ibirapoacoa* (? *Sphingidae*, spec. incert.).



Plate 7. Left, folio 8, top to bottom: no name (*Cercopithecus nictitans* (Linnaeus)); no name (*Erythrochelus patas* (Schreber)); Aguti (*Dasyprocta leporinus* (Linnaeus)); Tamanduaçu (*Myrmecophaga tridactyla* (Linnaeus)). Right, folio 11, top to bottom and left to right: Tangara miri (*Pipra rubrocapilla* Temminck); Cabiaguaçu (*Domacobius atricapillus* (Linnaeus)); Jaguaçati goaçu (*Chloroceryle amazona* (Latham)); no name (?); Cuiçuca (*Hydropsalis brasiliaria* (Smelin)); Caiicupecuaya (*Tangara cayana* (Linnaeus)); Caiicuriba (*Cyanerpes cyaneus* (Linnaeus)); Guiraroba (? *Hemithraupis guirra* (Linnaeus)); no name (? *Hemithraupis ruficapilla* (Vieillot)); Anhima (*Anhima cornuta* (Linnaeus)); Iiereba (*Rynchops nigra* (Linnaeus)); Jabiru (*Jabiru mycteria* (Lichtenstein)); Jabiruçu (*Sarkidiornis melanotos* (Pennant)).



Plate 8. Left, folio 21, top to bottom and left to right: Guambayacuape (*Lactophrys trigonus* (Linnaeus)); Guapua (*Antennarius multiocellatus* (Valenciennes)); Pira aca (? *Monacanthus varius* Ranzani); Guambajacuati (? *Chilomycterus atinga* (Linnaeus)); Potiquya (*Panulirus echinatus* Smith); no name (*Nomen Gronovii* (Cmelin)); Jemixira (*Halichoeres radiatus* (Linnaeus)); Miviipira (*Dactylopterus volitans* (Linnaeus)). Right, folio 17, top to bottom and left to right: Renapiya (*Lepus hillii* (Leach) and *Conchoderma virgatum* (Spengler)); Potiquiya (? *Parribacrus antarcticus* (Lund)); Panapana (*Sphyrna lewini* (Griffith & Smith)); Guanhumi (*Cardisoma guanhumi* Latreille); Jactata (?).



Plate 9. Top left, folio 27(25). *Aperã* (*Cavia aperã* Erxleben); top right, folio 29(27). *Aguara* (*Cerdocyon thous* (Linnaeus)); bottom left, folio 30(28). *Aguaraguacu* (*Procyon cancrivorus* (Cuvier) & *Aguaja* (*Caluromys philander* (Linnaeus)); bottom right, folio 32(30). *Tamaduai* (*Tamandua tetradactyla* (Linnaeus)).



Plate 10. Top left, folio 33(31), Tapirete (*Tapirus terrestris* (Linnaeus)); top right, folio 36, Tamanduapitinga (*Cyclopes didactylus* (Linnaeus)); bottom left, folio 38, Senembi (*Iguana iguana iguana* (Linnaeus)); bottom right, folio 40, Jiboya (*Boa constrictor constrictor* (Linnaeus)).



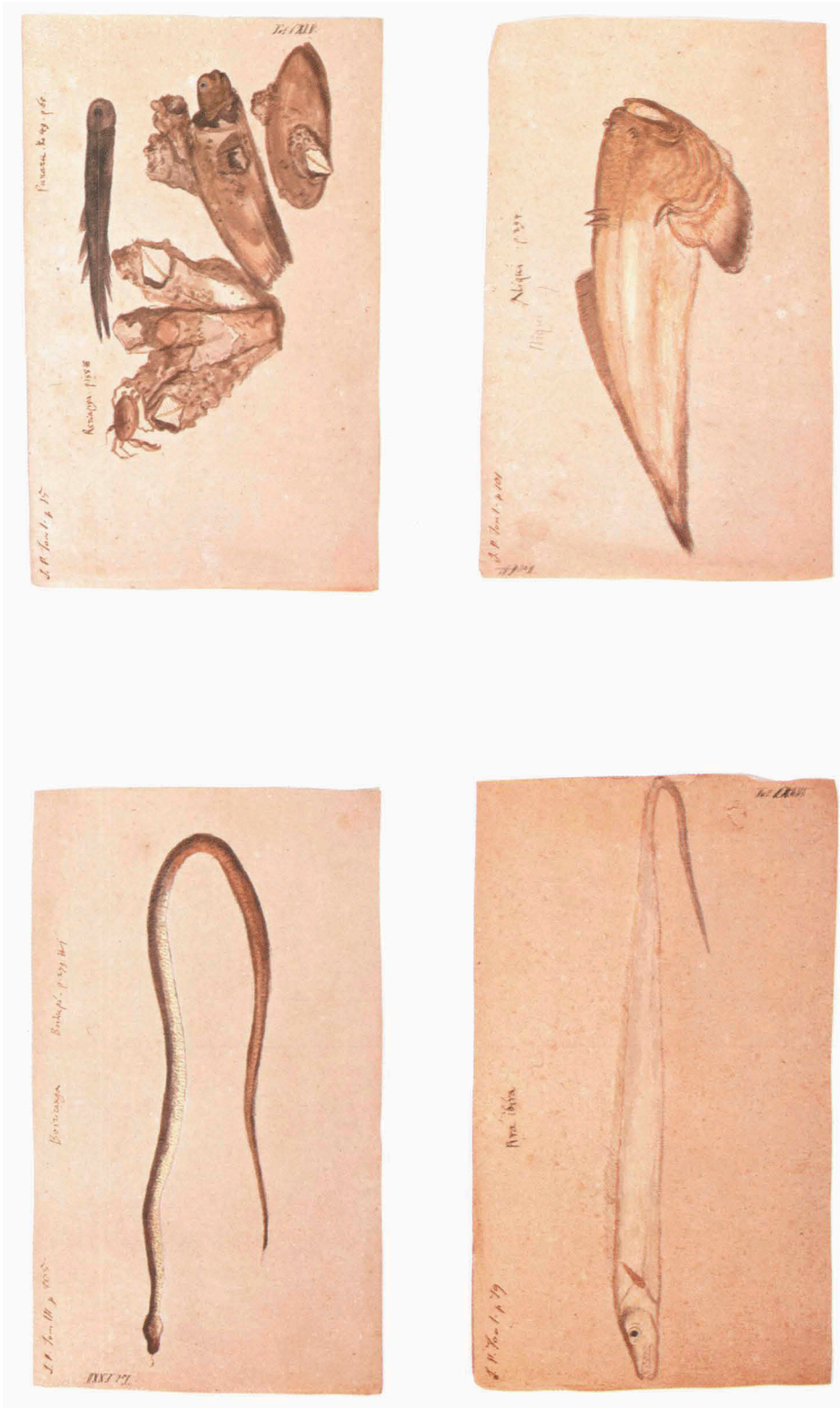


Plate 11. Top left, folio 41, Boiricanga (*Chironius ? carinatus* (Linnaeus)); top right, folio 43, Punaru (*Ophioblennius atlanticus* (Valenciennes) & ? *Blennius pilicornis* Cuvier), Reriapiya (*Balanus tintinnabulum* (Linnaeus)); bottom left, folio 61, Pira ibira (*Trichiurus lepturus* (Linnaeus)); bottom right, folio 64, Niqui (*Thalassophryne nattereri* Steindachner).



Plate 12. Top left, folio 68, Paru (*Holacanthus tricolor* (Bloch)); top right, folio 69, Guaperua (*Balistes vetula* (Linnaeus)); bottom left, folio 70, Guaperua (*Chaetodipterus faber* (Broussonet) & Guaperua (*Pomacanthus arcuatus* (Linnaeus)); bottom right, folio 81, Jetigmicira (*Halichoeres radiatus* (Linnaeus)).



Plate 13. Top left, folio 91, Guacucua (*Ogcocephalus vesperilio* (Linnaeus)); top right, folio 139, Jacitateguaçu (*Luigia senegalensis* (Lamarck)); bottom left, folio 149, Ciriobi (*Callinectes sapidus* Rathbun) & Guajume (*Carpilius corallinus* (Herbst)); bottom right, folio 151, left to right, no name (*Acrocinus longimanus* (Linnaeus)), Tambeiva (? *Desmonota* (*Pilidionota*) *variolosa* (Weber)), Enema (*Titanus giganteus* (Linnaeus)), Nhanduguaçu (*Avicularia* spec.).



Plate 14. Top left, folio 35, "*Ovis chilensis*" (*Lama pacos* (Linnaeus)); top right, folio 99, Quinguoanquii (*Phoenicopterus ruber roseus* Pallas); bottom left, folio 101, Jierebacába (*Rynchops nigra* Linnaeus) & Jacaniguaija (*Gelochelidon nilotica* (Gmelin)); bottom right, folio 104, Mitú (*Anhima cornuta* (Linnaeus)).



Plate 15. Top left, folio 109, Jacamaçiri (*Galbula rufoviridis* Cabanis) & Guarirama (*Chloroceryle amazona* (Latham)); top right, folio 111, Aguapeacoca (*Jacana jacana* (Linnaeus)); bottom left, folio 123, Tyepiranga (*Rhamphocelus bresilius* (Linnaeus)) & Tanagara (*Tangara fastuosa* (Lesson)); bottom right, folio 131, Urutaurana (*Spiztaetus ornatus* (Daudin)).



Plate 16. Top left, folio 25(23), Taibi (*Didelphis marsupialis* Linnaeus); top right, folio 96, Anhinga (*Anhinga anhinga* (Linnaeus)); bottom left, folio 67, Pirabebe (*Exocoetus obtusirostris* Gunther); bottom right, folio 145, Potipêma (*Macrobrachium carcinus* (Linnaeus)), Potiguaçu (*Macrobrachium acanthurus* (Wiegmann)) & Potiatinga (*Palaemon pandaliformis* (Stimpson)).

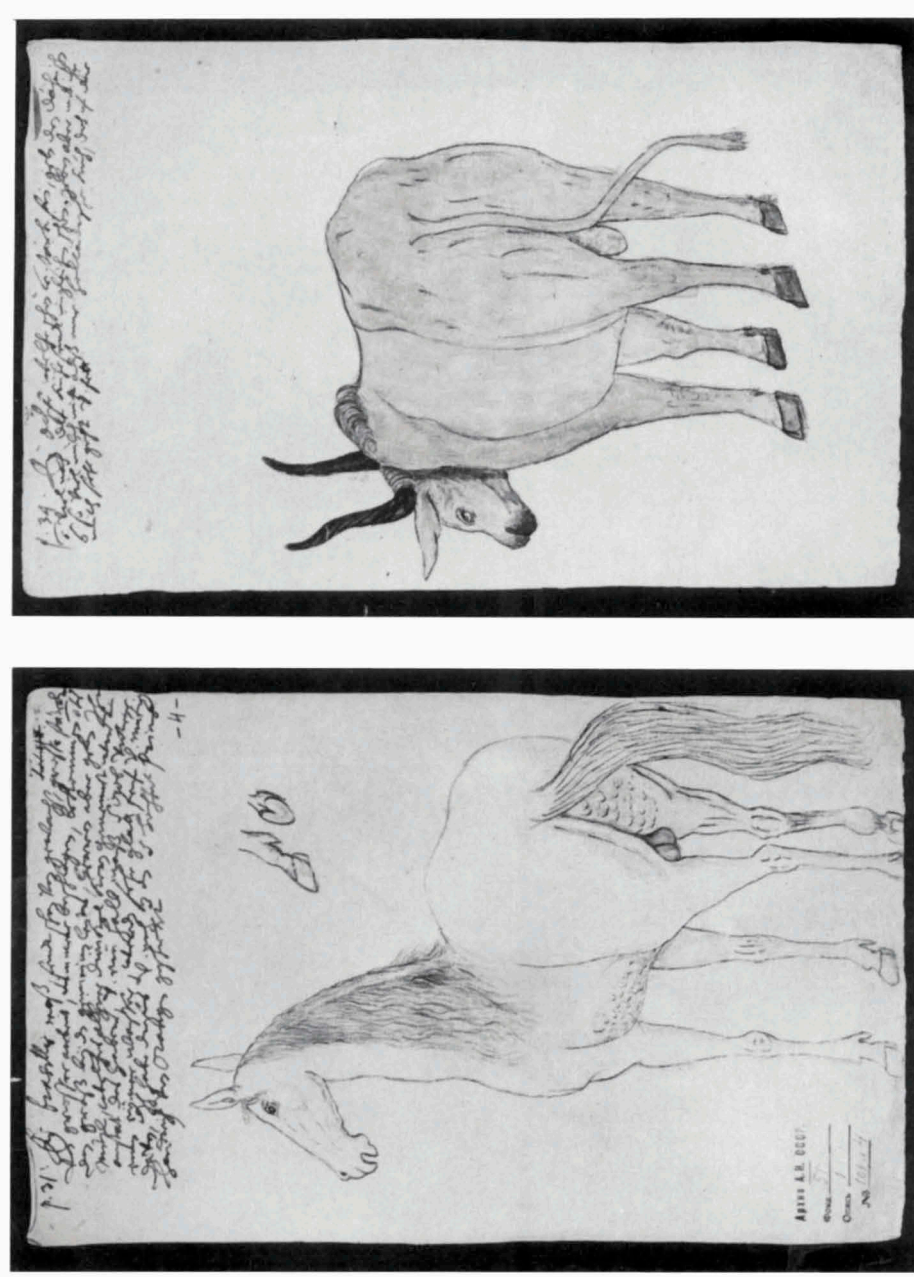


Plate 17. Left, folio 4, no name (*Equus caballus* Linnaeus); right, folio 4 (verso), no name (*Bos indicus* Linnaeus).

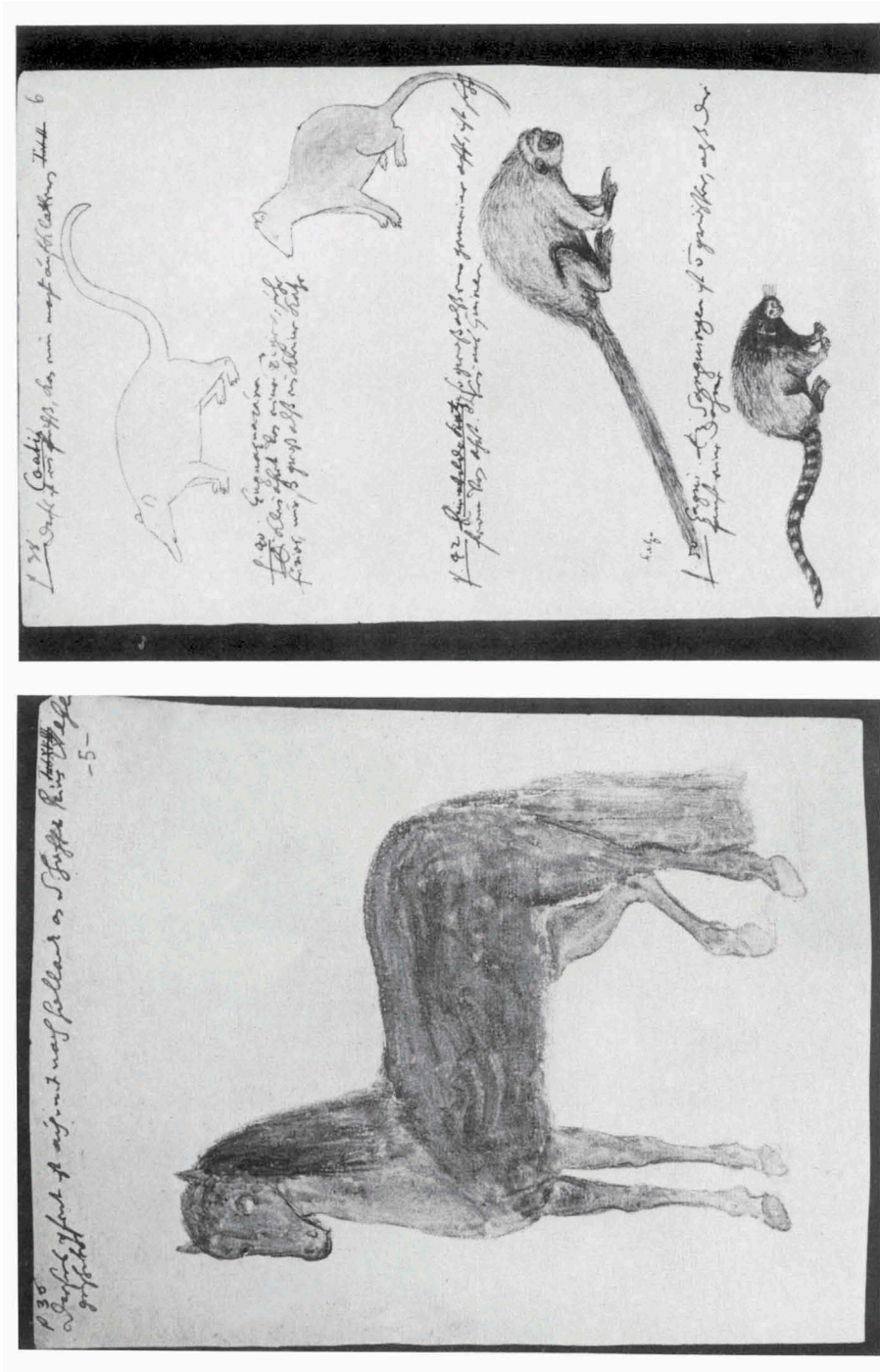


Plate 18. Left, folio 5, no name (*Equus caballus* Linnaeus); right, folio 6, Coati (*Nasua nasua* Linnaeus); Cuguaçarána (*Puma concolor* Linnaeus); no name (?); no name (?); Cagui (*Callithrix jacchus* Linnaeus).



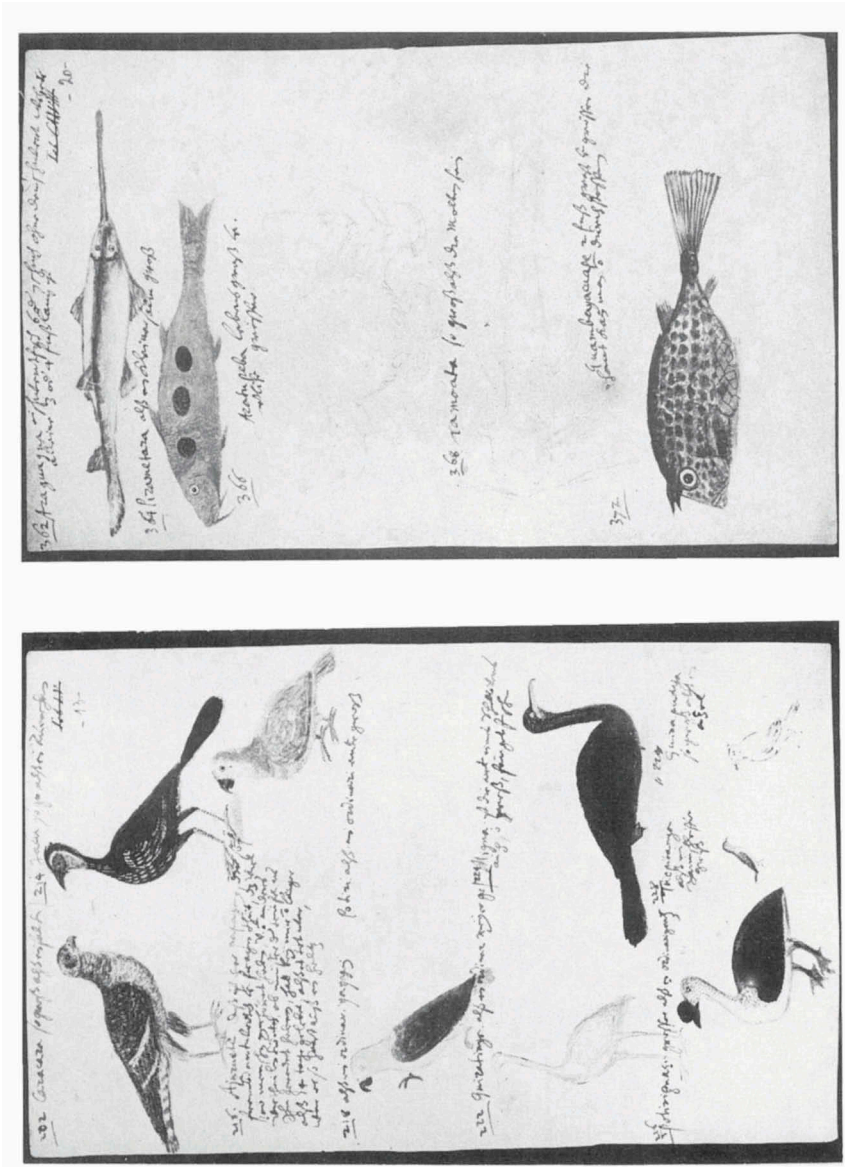


Plate 19. Left, folio 13, left to right and top to bottom: Caracara (*Circus buffoni* (Gmelin)); Jacu (*Penelope superciliosus* Temminck); Ajuete (*Amazonia aestiva* (Linnaeus)); no name (*Psittacus erythacus* Linnaeus); Potiri (*Dendroceryx autumnalis* (Linnaeus)); Migua (*Phalacrocorax brasiliensis*) (Gmelin); Potiriguacu (*Sarkidiornis melanotos* (Pennant)); Tineptianga (*Troglodytes aedon* Vieillot); Guirapunga (*Procnias averano* (Hermann)). Right, folio 20, top to bottom: Araguaia (*Pristis pectinata* Latham); Pirametera (*Pseudupeneus maculatus* (Bloch)); Aratu peba (*Plagusia depressa* (Fabricius)); Tamoata (*Callichthys callichthys* (Linnaeus)); Guambayacuape (*Acanthostracion quadricornis* (Linnaeus)).



Plate 20. Top left, folio 26(24), Acuti (*Dasyproctus leporinus* (Linnaeus)); top right, folio 28(26), Eirára (*Calictis vittata* (Schreber)); bottom left, folio 31(29), Tamandua guacua (*Myrmecophaga tridactyla* Linnaeus); bottom right, folio 39, Ameiva (*Tropidurus torquatus torquatus* (Wied)).

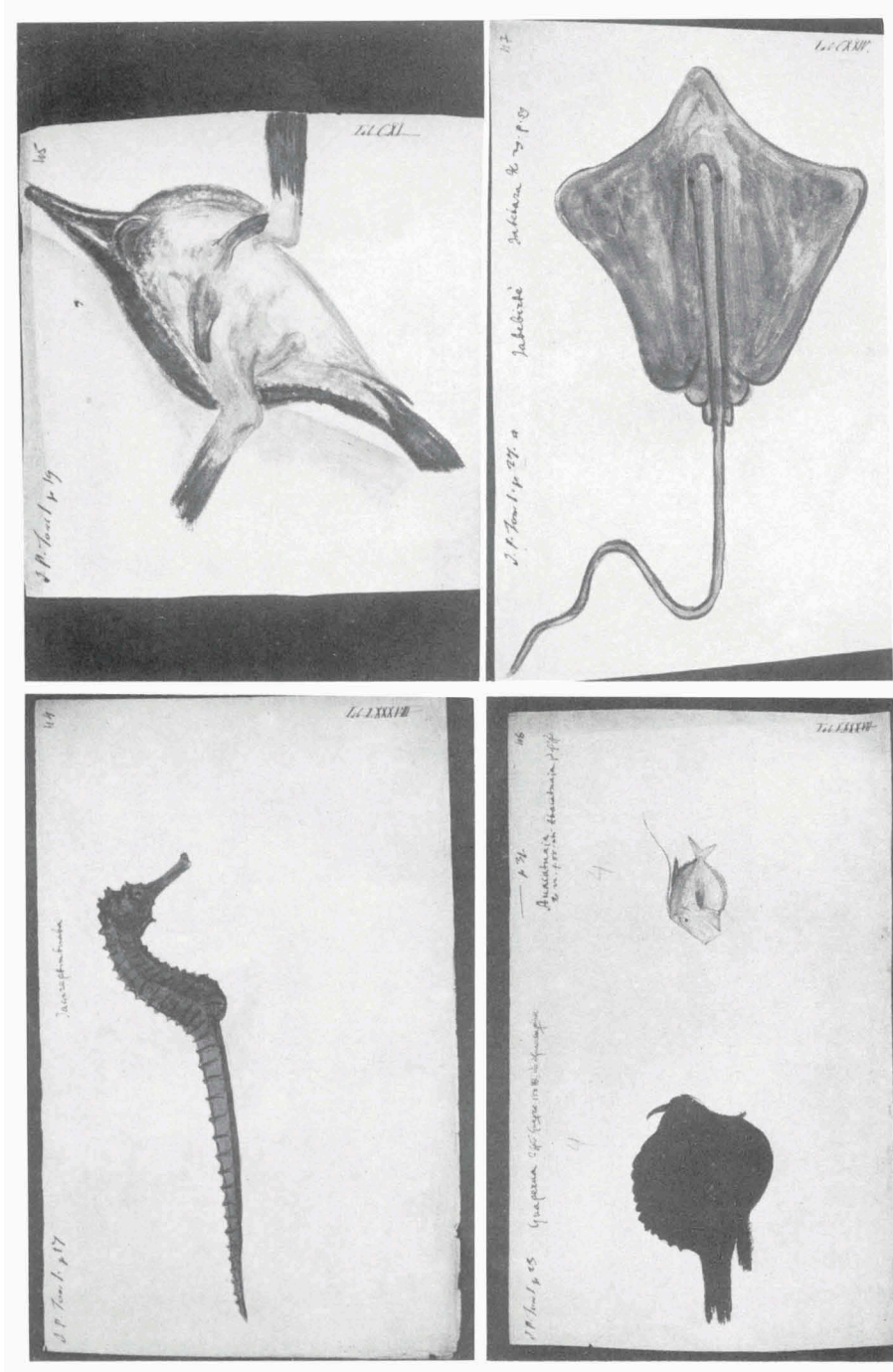


Plate 21. Top left, folio 44, Jacarepituaba (*Hippocampus erectus* Perry); top right, folio 45, no name (*Ogcocephalus vespertilio* (Linnaeus)); bottom left, folio 46, Guaperua (*Antennarius striatus* (Shaw & Nodder) & Auacatuaja (*Selene vomer* (Linnaeus)); bottom right, folio 47, Jabibirê (*Dasyatis guttata* (Bloch & Schneider))).

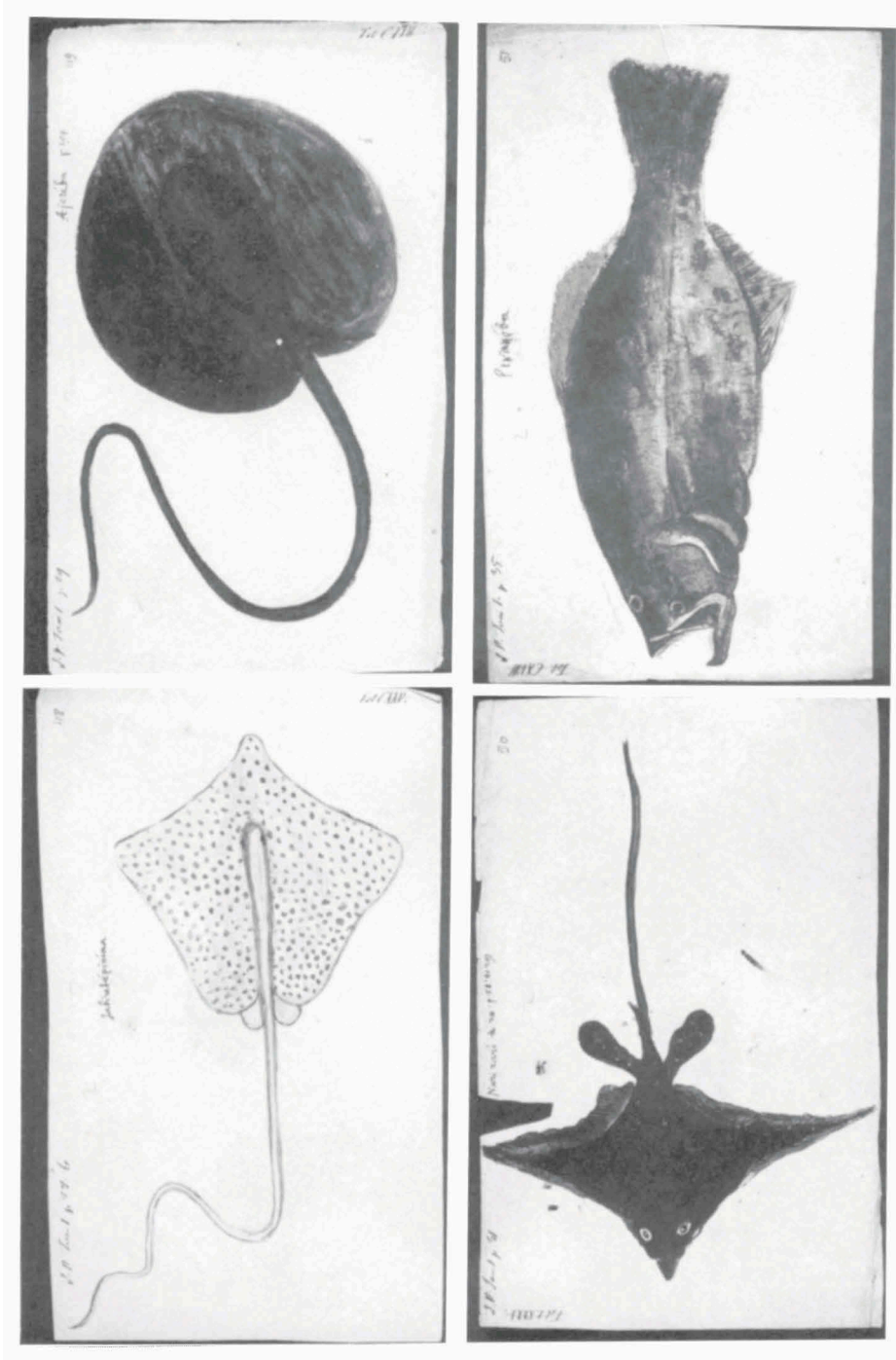


Plate 22. Top left, folio 48, Jabiretépina (*Dasyatis guttata* (Bloch & Schneider)); top right, folio 49, Ajeréba (? *Potamotrygon ajereba* (Walbaum)); bottom left, folio 50, Nari nari (*Aetobatus narinari* (Euphrasen)); bottom right, folio 51, Piraroba (? *Paralichthys zorax* (Günther)).

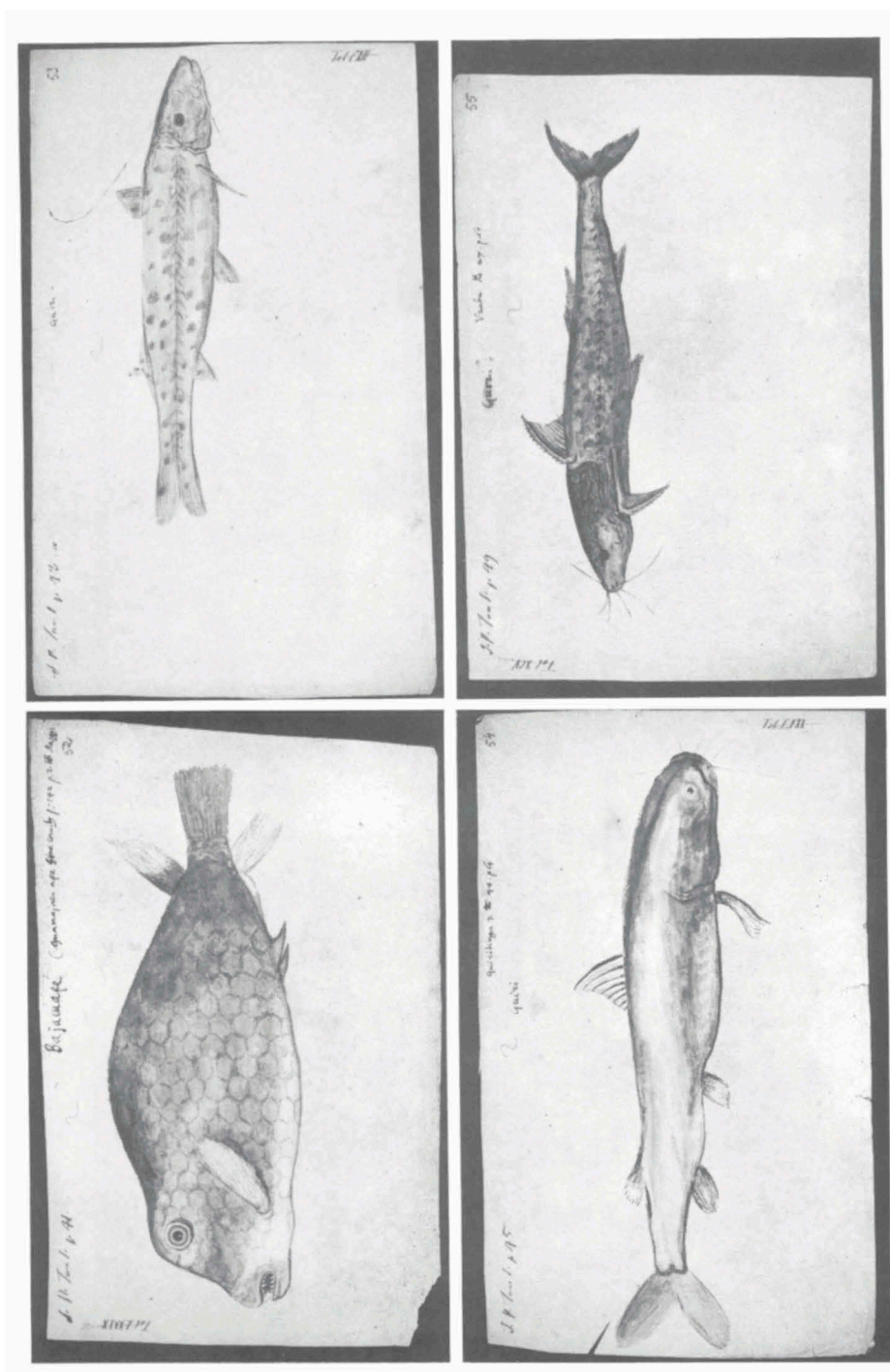


Plate 23. Top left, folio 52, Bajacupapé (*Lactophrys trigonus* (Linnaeus)); top right, folio 53, Guiri (*Pimelodus maculatus* Lacépède); bottom left, folio 54, Guiri(tinga) (*Arius passany* (Valenciennes)); bottom right, folio 55, Guiri, Urubu (*Franciscodoras marmoratus* (Reinhardt)).

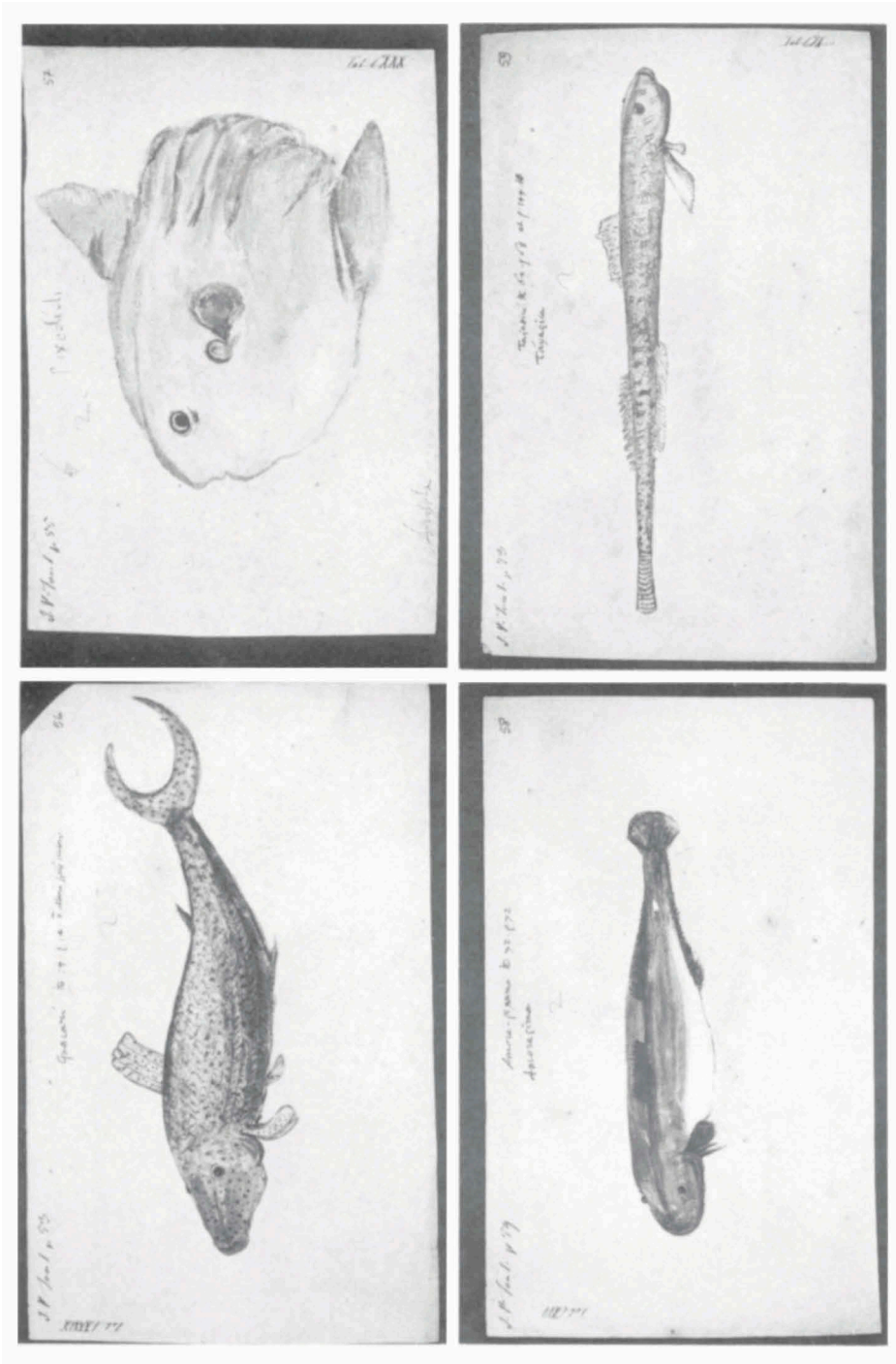


Plate 24. Top left, folio 56, Guacari (*Hypostomus spec.*); top right, folio 57, Pixedádi (*Mola mola* (Linnaeus)); bottom left, folio 58, Amore-pixuma (*Eleotris pisonis* (Gmelin)); bottom right, folio 59, Tajasica (*Cobitoides broussoneti* Lacépède).

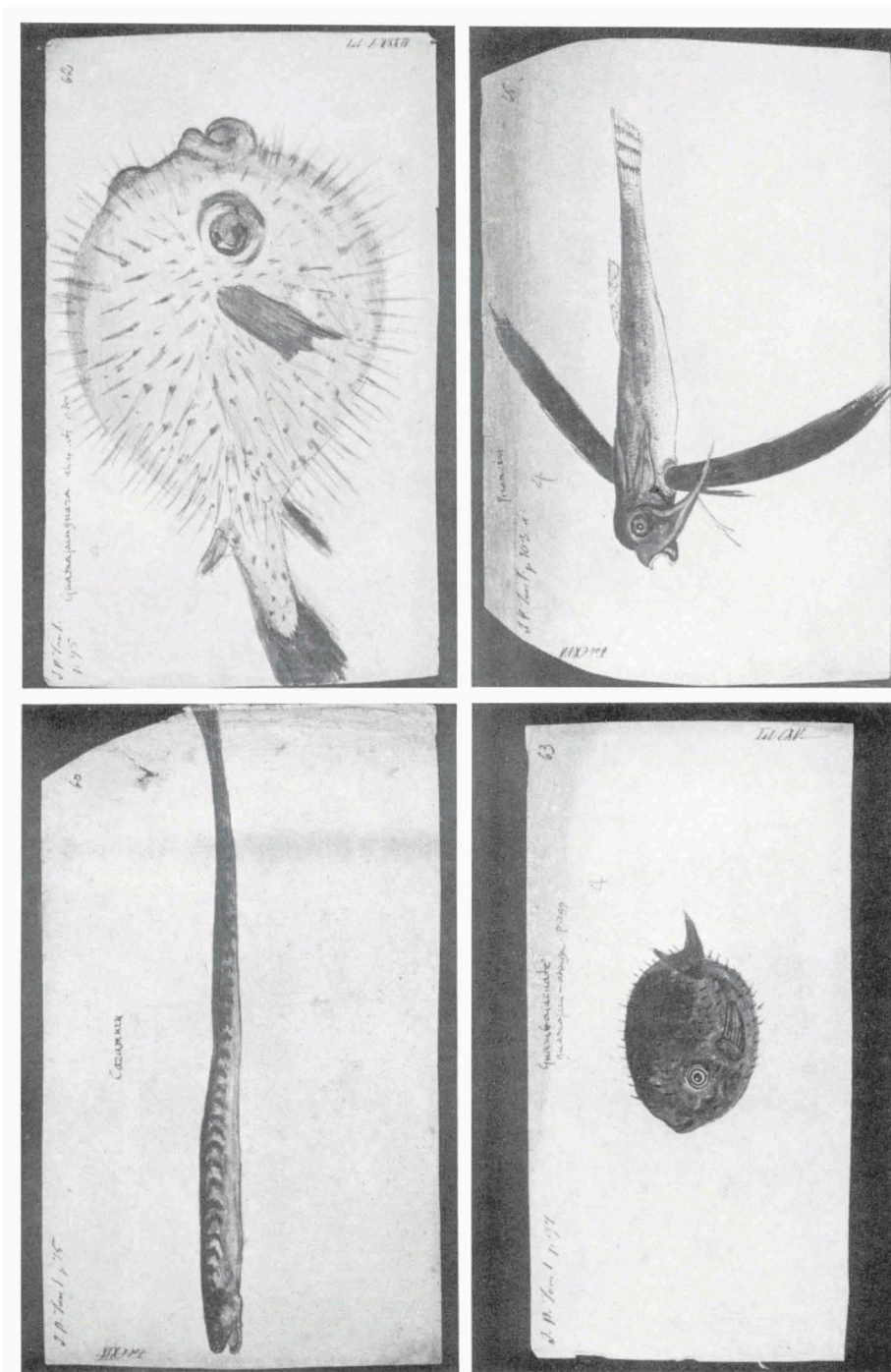


Plate 25. Top left, folio 60, Caramuru (?? *Echiophis intertinctus* (Richardson)); top right, folio 62, Guamajacuará (? *Diodon hystrix* Linnaeus); bottom left, folio 63, Guambajacuaté (? *Chilomycterus atinga* (Linnaeus)); bottom right, folio 65, Pirameiú (*Dactylopterus volitans* (Linnaeus)).

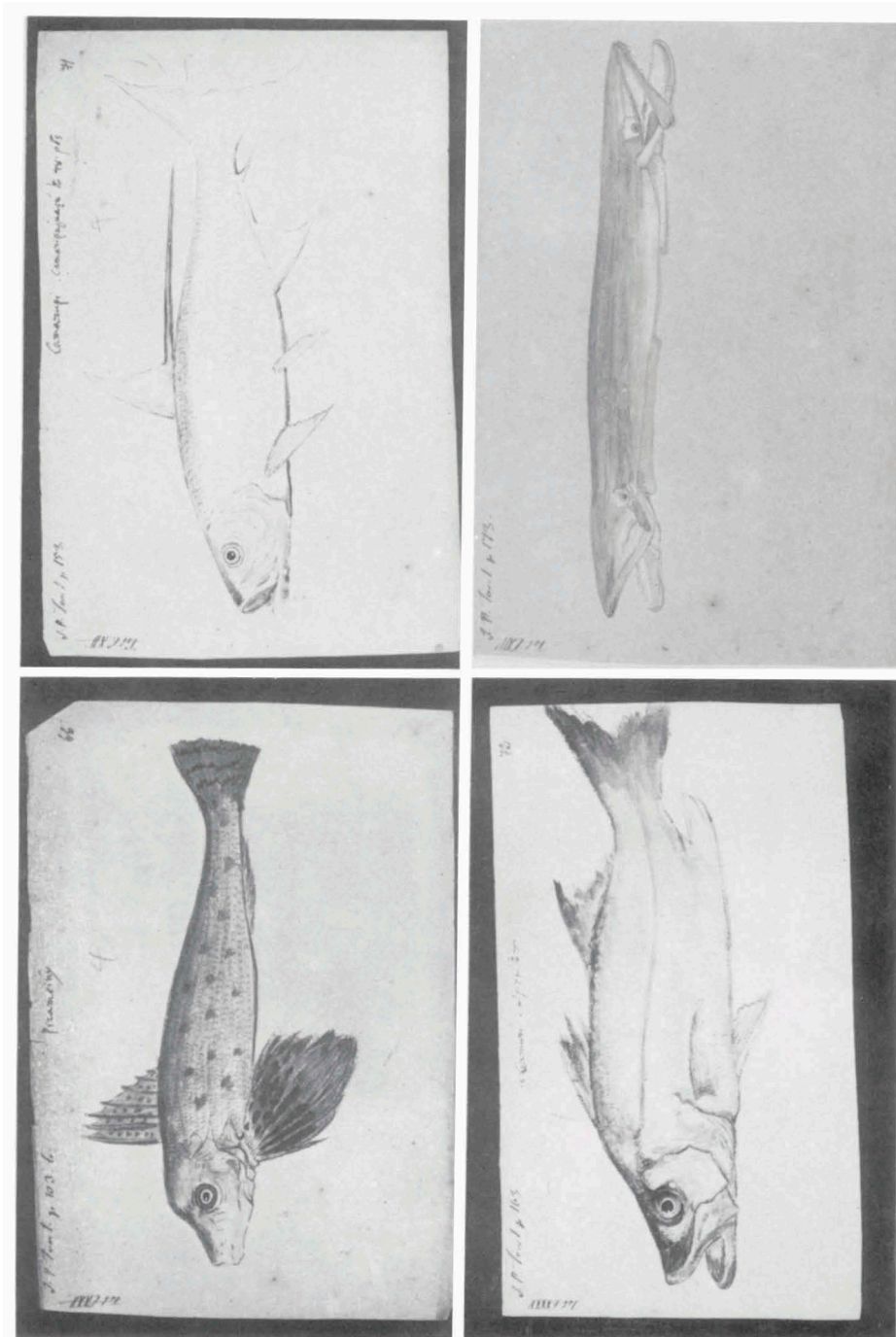


Plate 26. Top left, folio 66, Pirameiuy (*Prionotus atipionis* Teague & Myers); top right, folio 71, Camerupi (*Tarpon atlanticus* (Valenciennes)); bottom left, folio 72, Camuri (*Centropomus parallelus* Poey); bottom right, folio 73, "Monstrum biceps" (?).



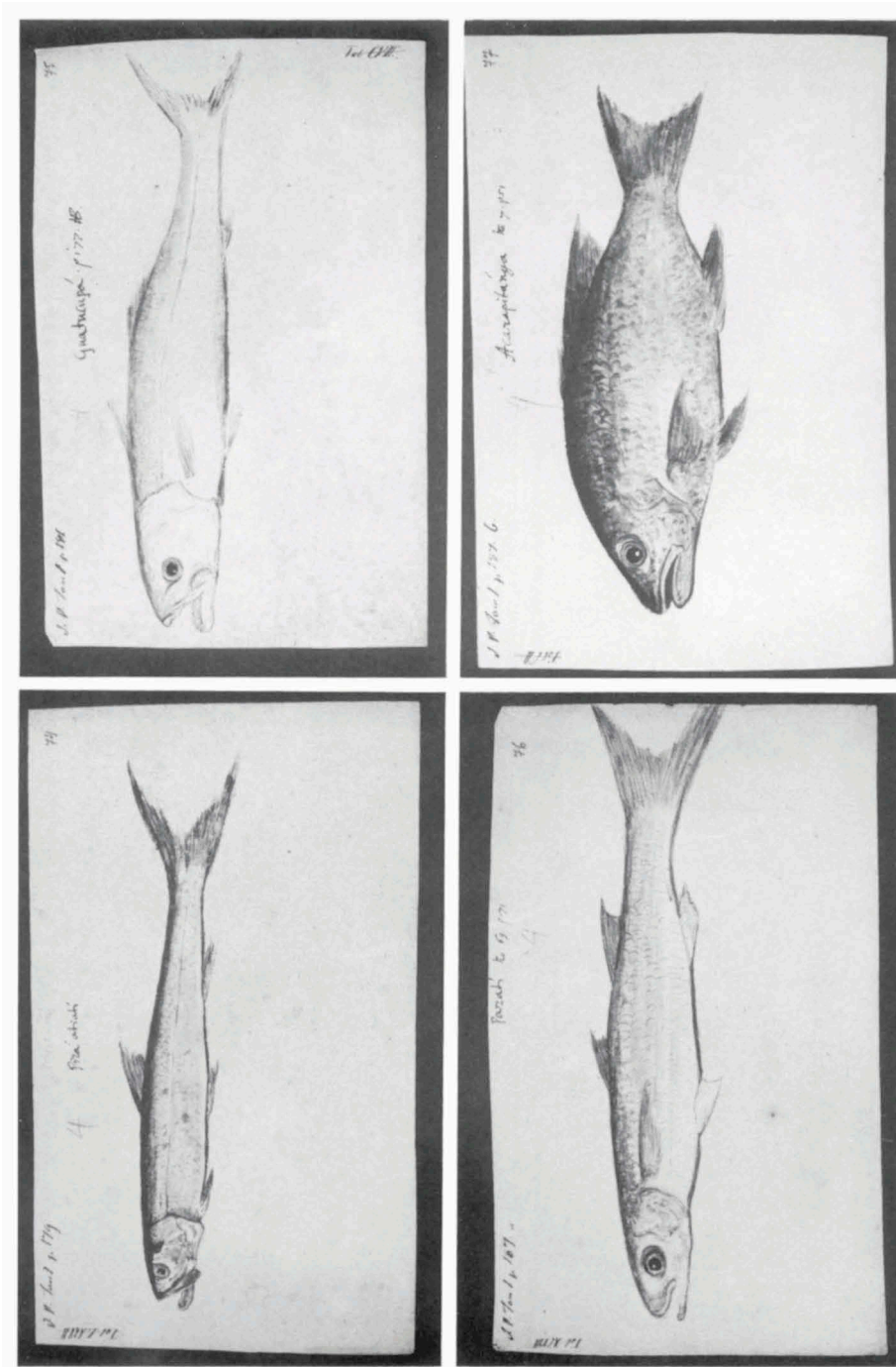


Plate 27. Top left, folio 74, Pirá atiatí (*Elops saurus* Linnaeus); top right, folio 75, Guaatucupá (*Cynoscion guatucupá* (Cuvier)); bottom left, folio 76, Parati (*Mugil liza* Valenciennes); bottom right, folio 77, Acarapitanga (*Lutjanus griseus* (Linnaeus)).

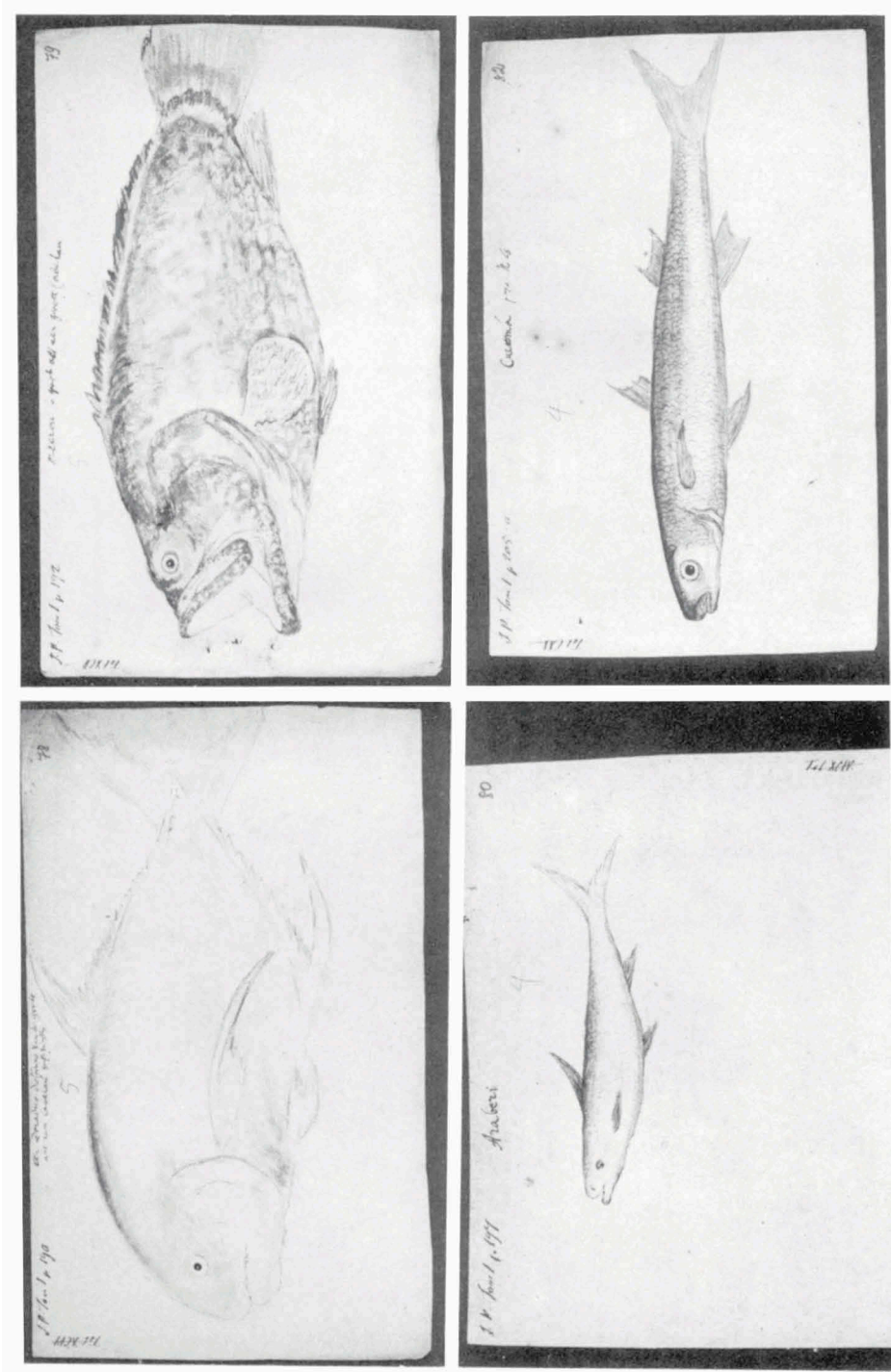


Plate 28. Top Left, folio 78, "Doradus dolfinus" (*Caranx hippos* (Linnaeus)); top right, folio 79, "Meerou" (*Promicrops itajara* (Lichtenstein)); bottom left, folio 80, Araberi (? *Etrumeus teres* (De Kay)); bottom right, folio 82, Curemá (*Mugil curema* Valenciennes).

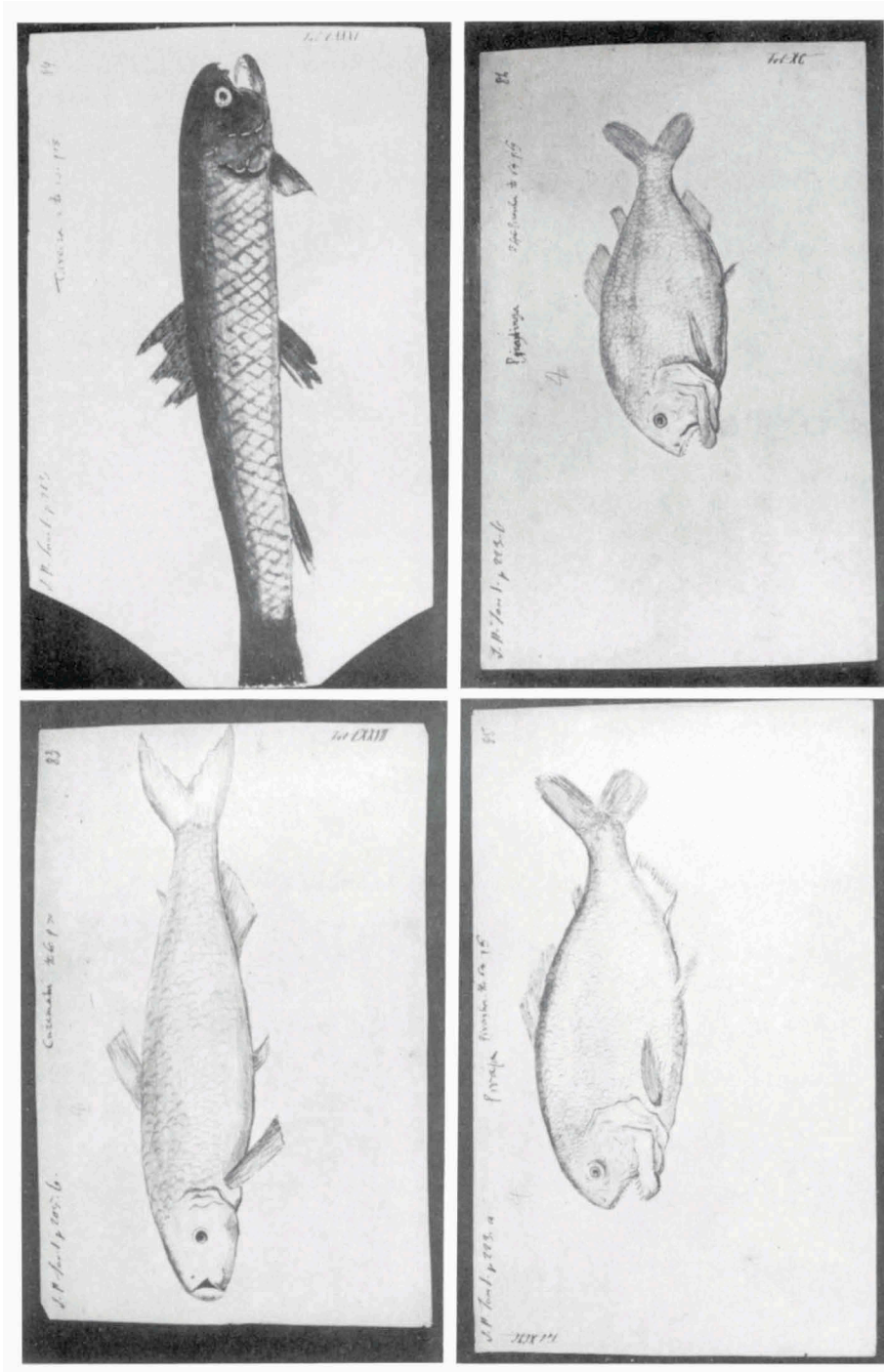


Plate 29. Top left, folio 83, Curematá (*Prochilodus marginatus* (Walbaum)); top right, folio 84, Tareira (*Hoplerthrinus urilaeniatus* (Spix)); bottom left, folio 85, Pirája (*Serrasalmus* (*Pygocentrus*) *pirajá* Cuvier); bottom right, folio 86, Piratinga (*Serrasalmus* (*Pygocentrus*) *pirajá* Cuvier).

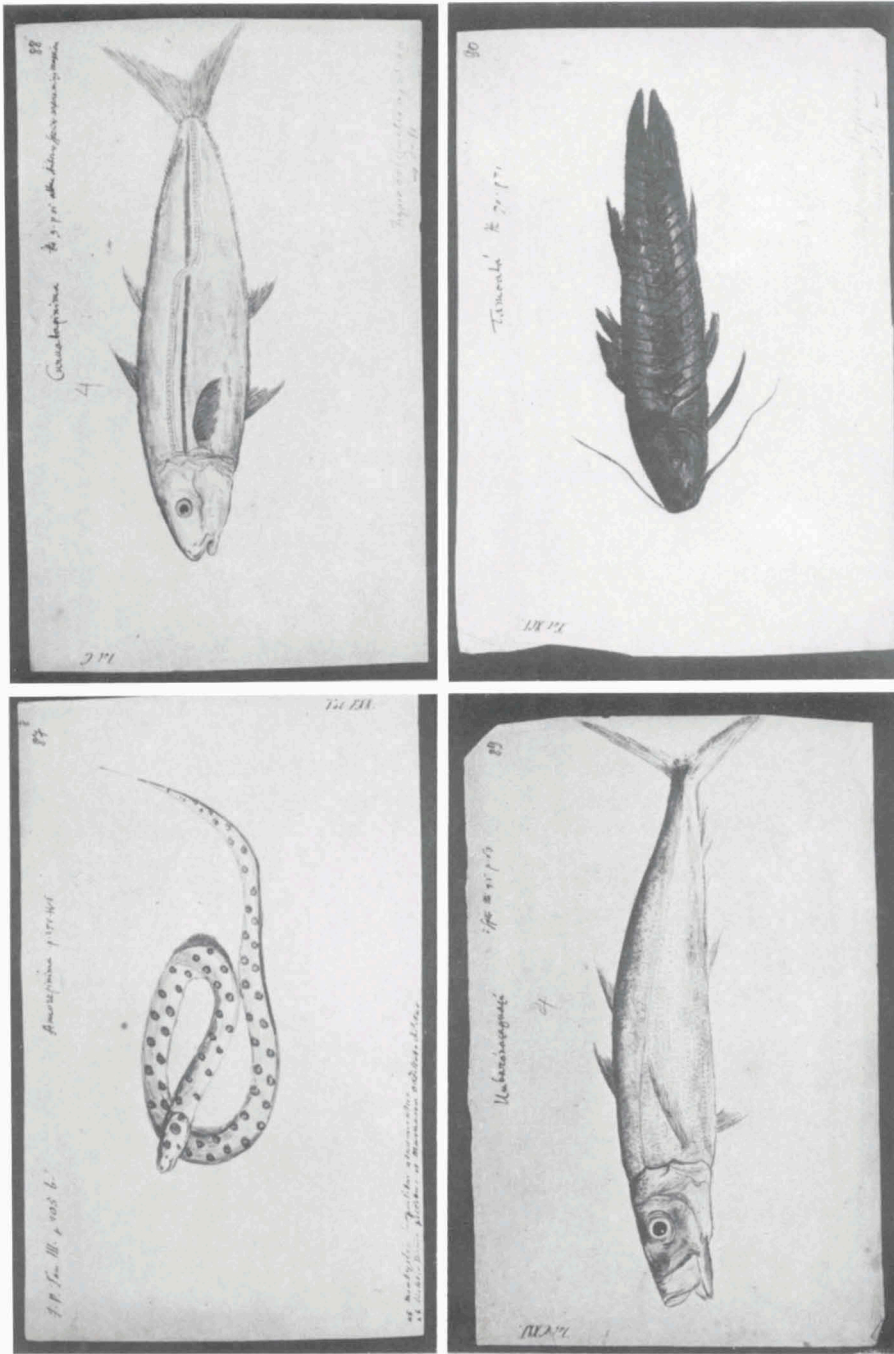


Plate 30. Top left, folio 87, Amorepinima (*Myrrichthys ocellatus* (Lichtenstein)); top right, folio 88, Curuatapinima (*Decapterus punctatus* (Agassiz)); bottom left, folio 89, Uubaránaçaguá (? *Inermia vittata* Poey); bottom right, folio 90, Tamoatá (? *Hoplosternum thoracatum* (Valenciennes)).

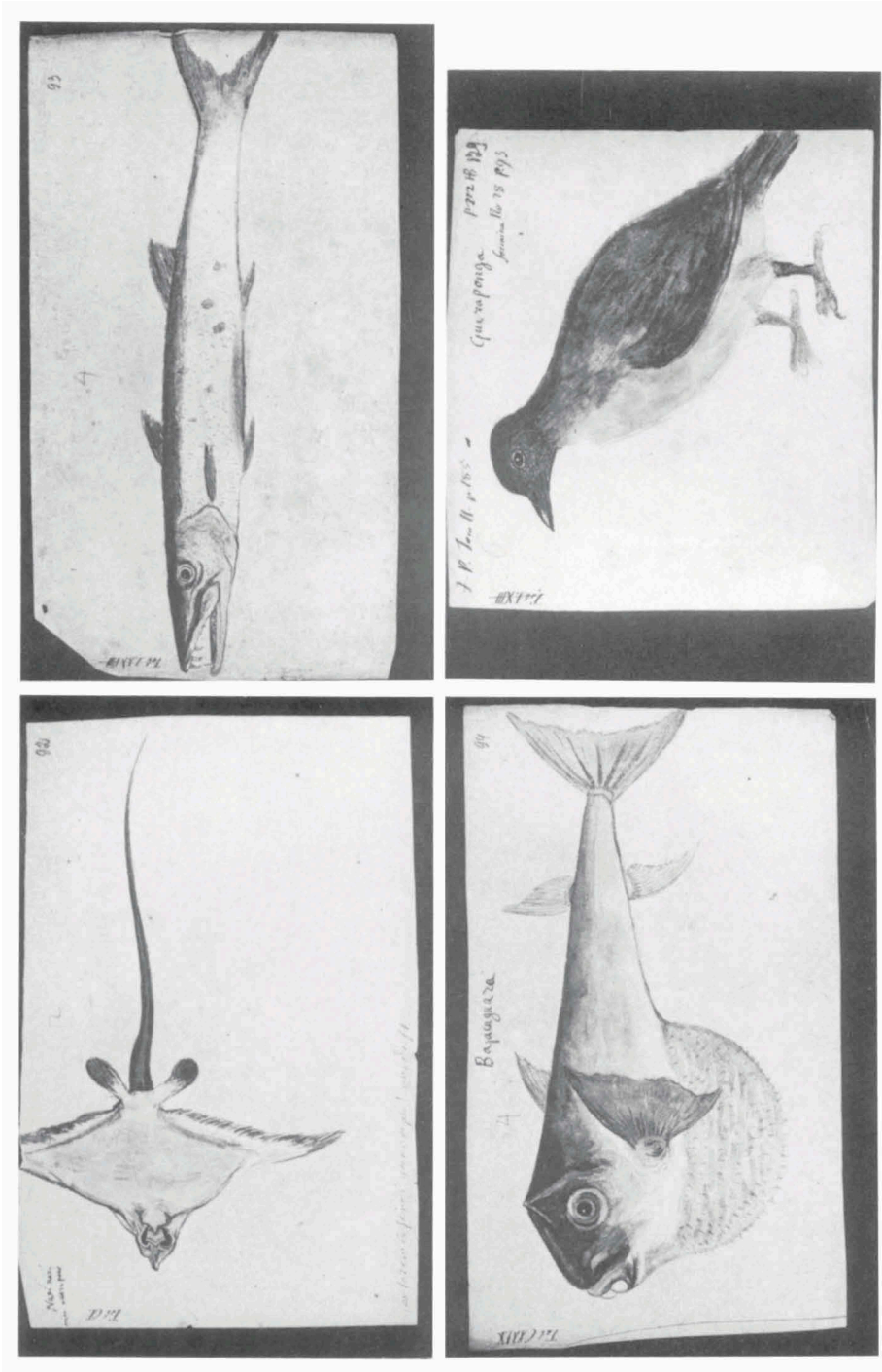


Plate 31. Top left, folio 92, Nari nari (*Aetobatus narinari* (Euphrasen)); top right, folio 93, Guebé (*Sphyaena barracuda* (Walbaum)); bottom left, folio 94, Bajacugara (*Lagocephalus laevis* (Linnaeus)); bottom right, folio 129, Guiraponga (*Procnias averano* (Hermann)).



Plate 32. Top left, folio 97, Miguajuba (*Phalacrocorax olivaceus* (Humboldt)); top right, folio 98, no name (*Cairina moschata* (Linnaeus)); bottom left, folio 100, Jacamini (*Calidris canutus* (Linnaeus)) & Quinguoanqui (*Phoenicopterus ruber roseus* Pallas); bottom right, folio 102, no name (*Procellaria aequinoctialis* Linnaeus).

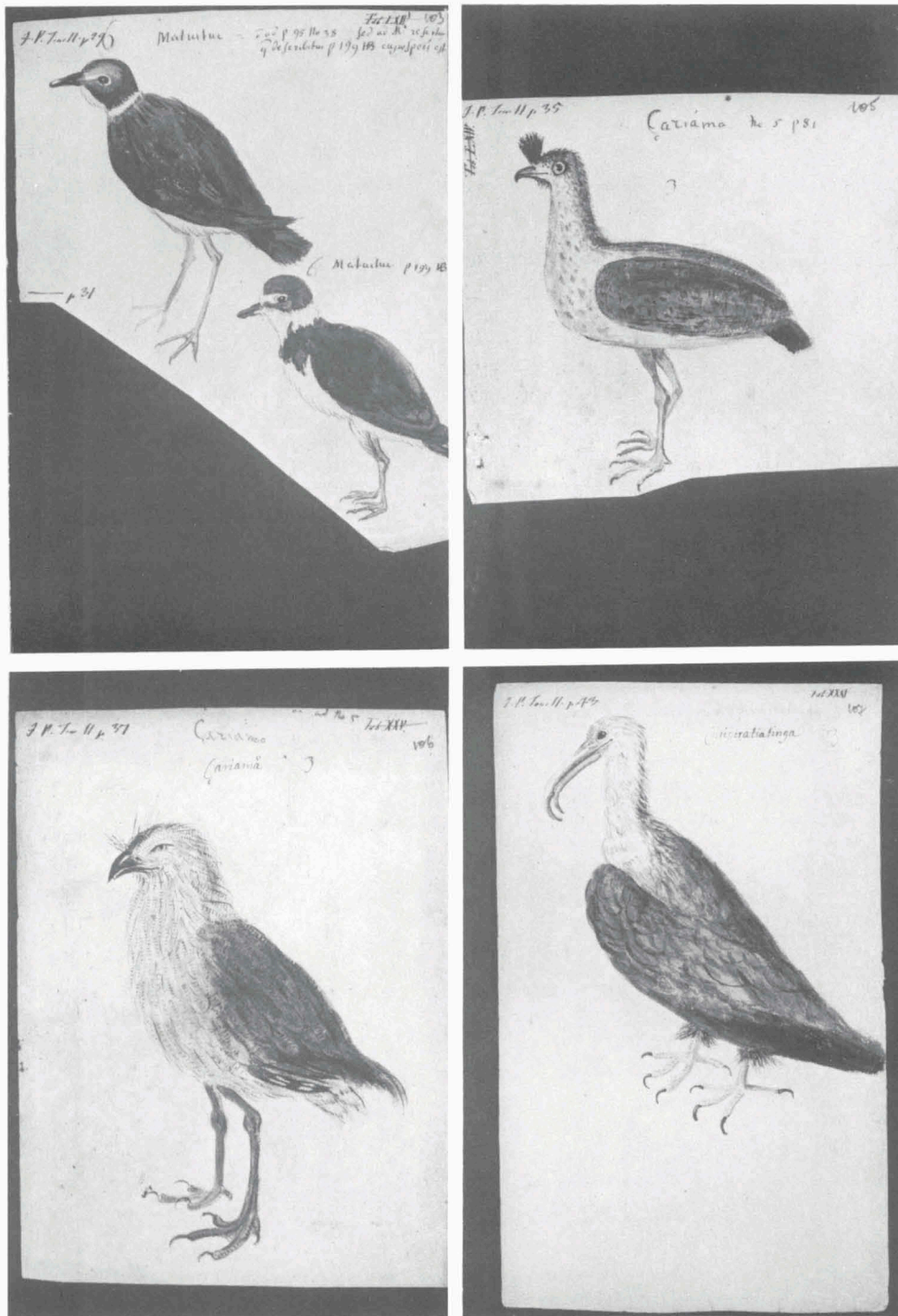


Plate 33. Top left, folio 103, Matuitui (*Charadrius ?semipalmatus* Bonaparte) & Matuitui (*Charadrius collaris* Vieillot); top right, folio 105, Çariama (*Cariama cristata* (Linnaeus)); bottom left, folio 106, Çariama (*Cariama cristata* (Linnaeus)); bottom right, folio 107, Caripiratiatinga (*Fregata magnificens* Mathews).

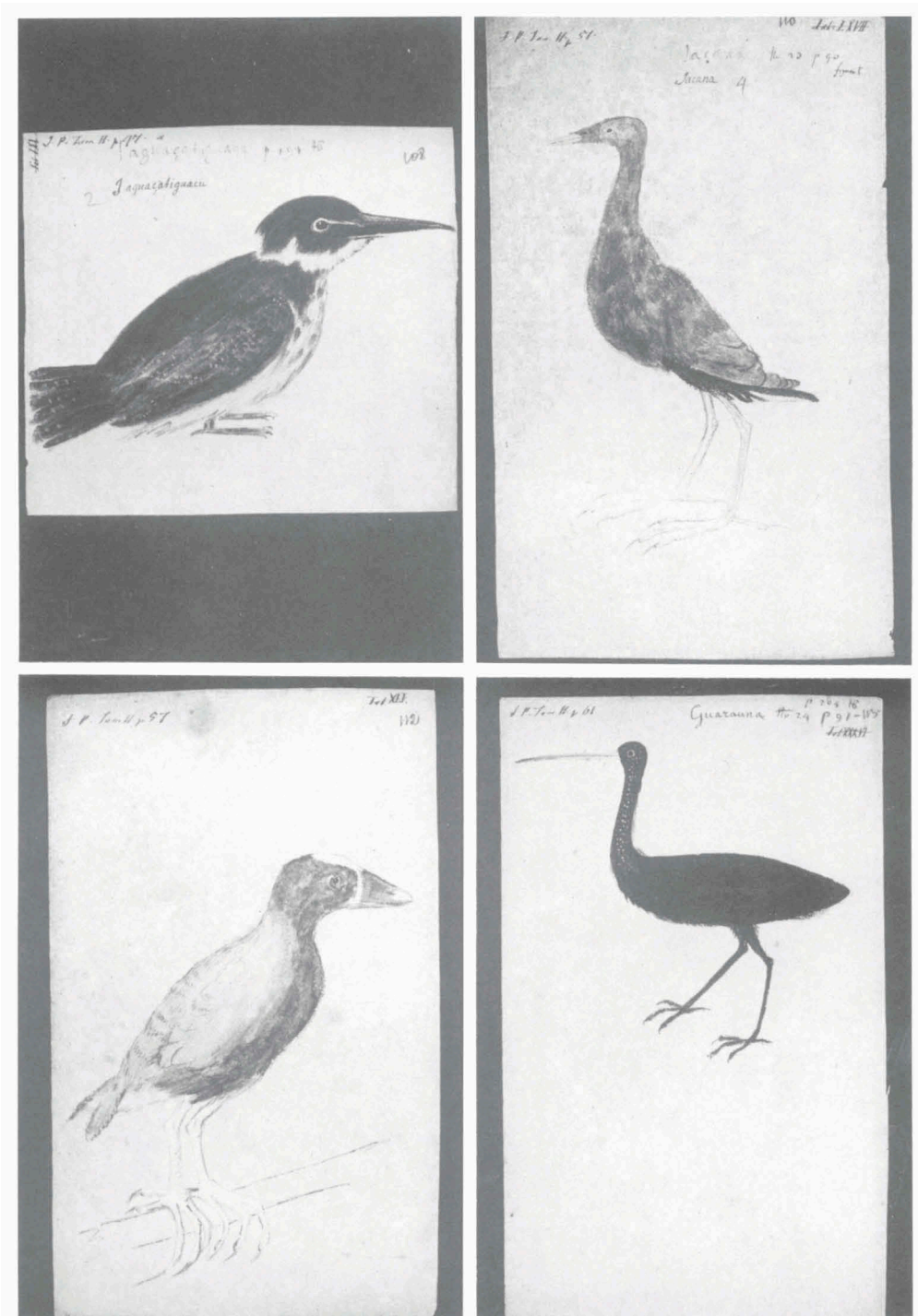


Plate 34. Top left, folio 108, Jaguaçatiguacu (*Chloroceryle amazona* (Latham)); top right, folio 110, Jacana (*Porphyryla martinica* (Linnaeus)); bottom left, folio 112, no name (*Porphyryla martinica* (Linnaeus)); bottom right, folio 113, Guarauna (*Aramus guarauna* (Linnaeus)).



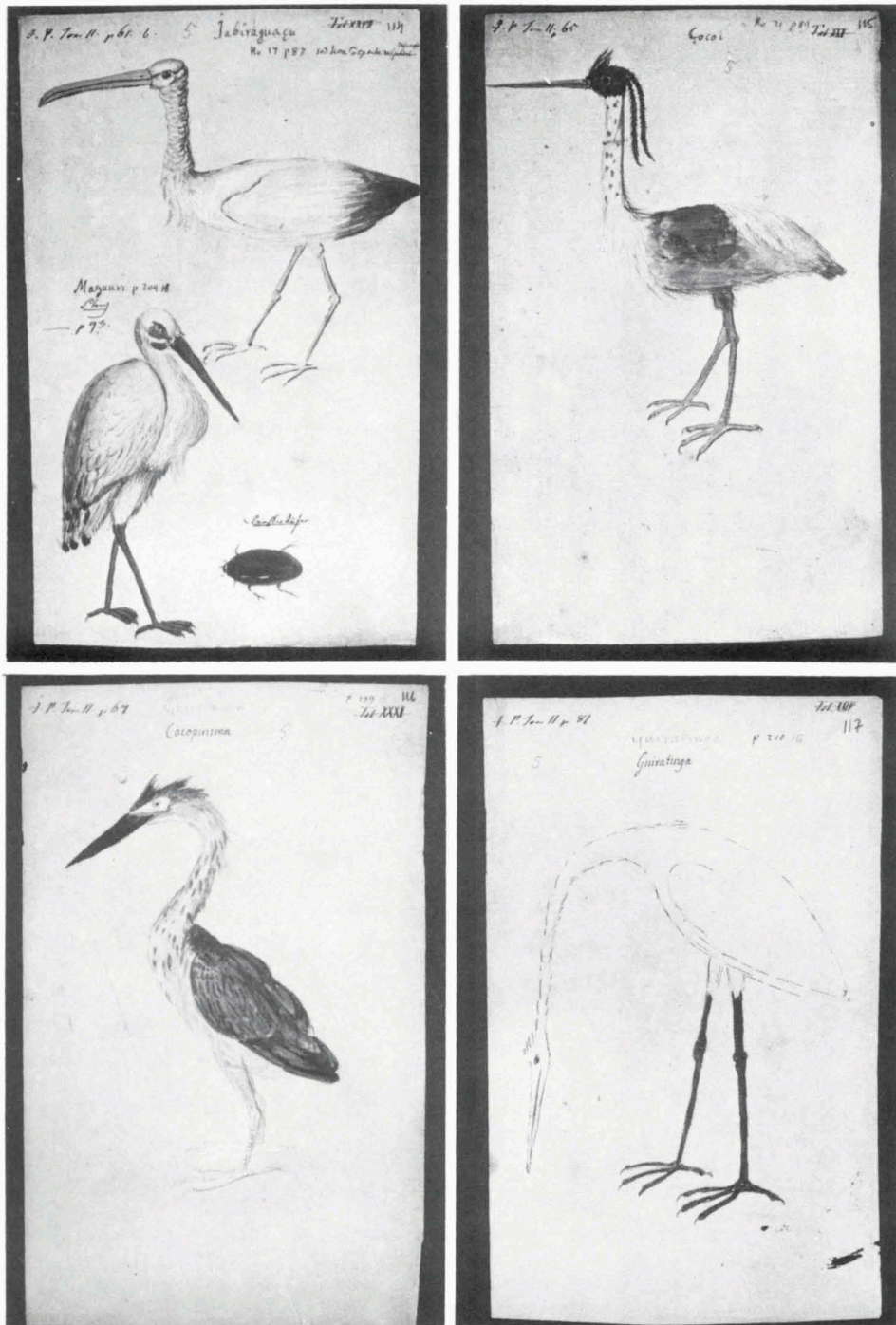


Plate 35. Top left, folio 114, Jabiruguaçu (*Mycteria americana* Linnaeus) & Maguari (*Euxenura maguari* Gmelin); top right, folio 115, Çocoi (*Ardea cocoi* Linnaeus); bottom left, folio 116, Cocopinima (*Butorides striatus* (Linnaeus)); bottom right, folio 117, Guiratinga (*Casmerodius albus agretta* (Gmelin)).

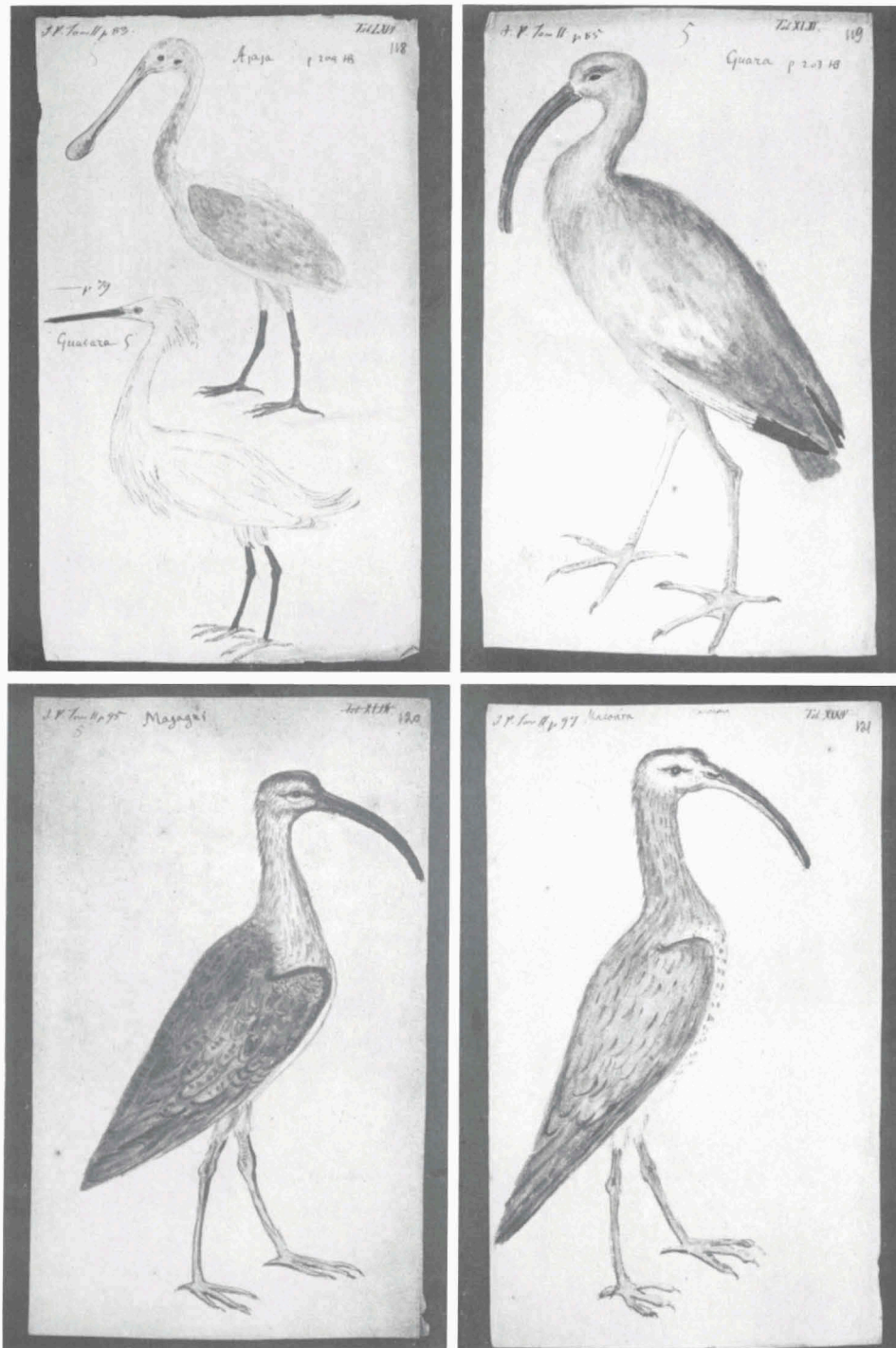


Plate 36. Top left, folio 118, Ajaja (*Aiaja ajaja* (Linnaeus)) & Guacara (*Egretta thula* (Molina)); top right, folio 119, Guara (*Eudocimus ruber* (Linnaeus)); bottom left, folio 120, Magagui (*Numenius phaeopus* (Linnaeus)); bottom right, folio 121, Macoára (? *Plegadis chihi* (Vieillot)).

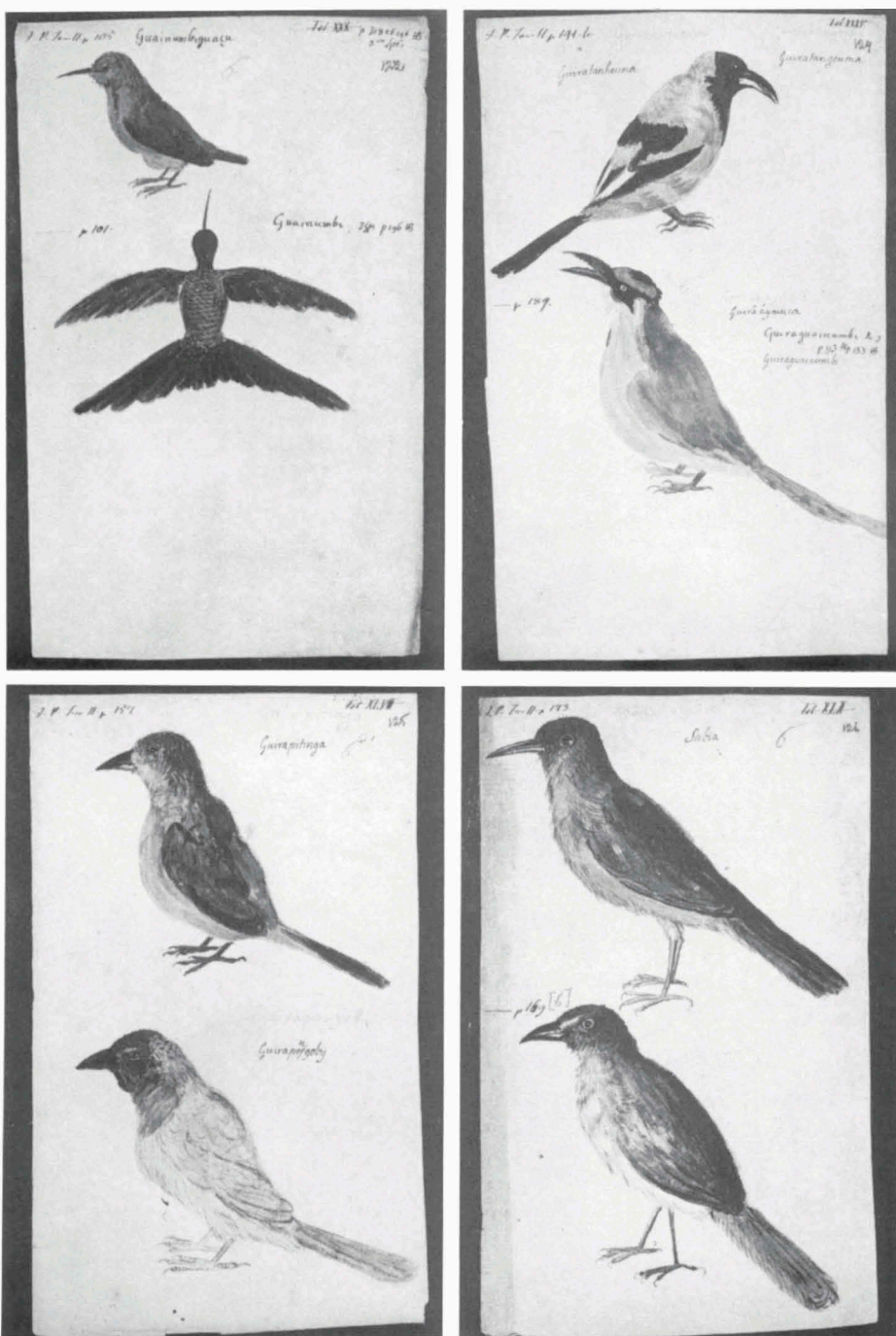


Plate 37. Top left, folio 122, Guainumbiguaçu (*Troglodytes musculus* Naumann) & Guainumbi (*Eupetomena macroura* (Gmelin)); top right, folio 124, Guiratanheuna (*Icterus icterus* (Linnaeus)) & Guirã ãymuca (*Momotus momota* (Linnaeus)); bottom left, folio 125, Guirapitinga (*Tachyphonus rufus* (Boddaert)) & Guirapongobi (? *Saltator maximus* (Müller)); bottom right, folio 126, Sabia (*Turdus rufiventris* Vieillot) & no name (*Saltator maximus* (Müller))

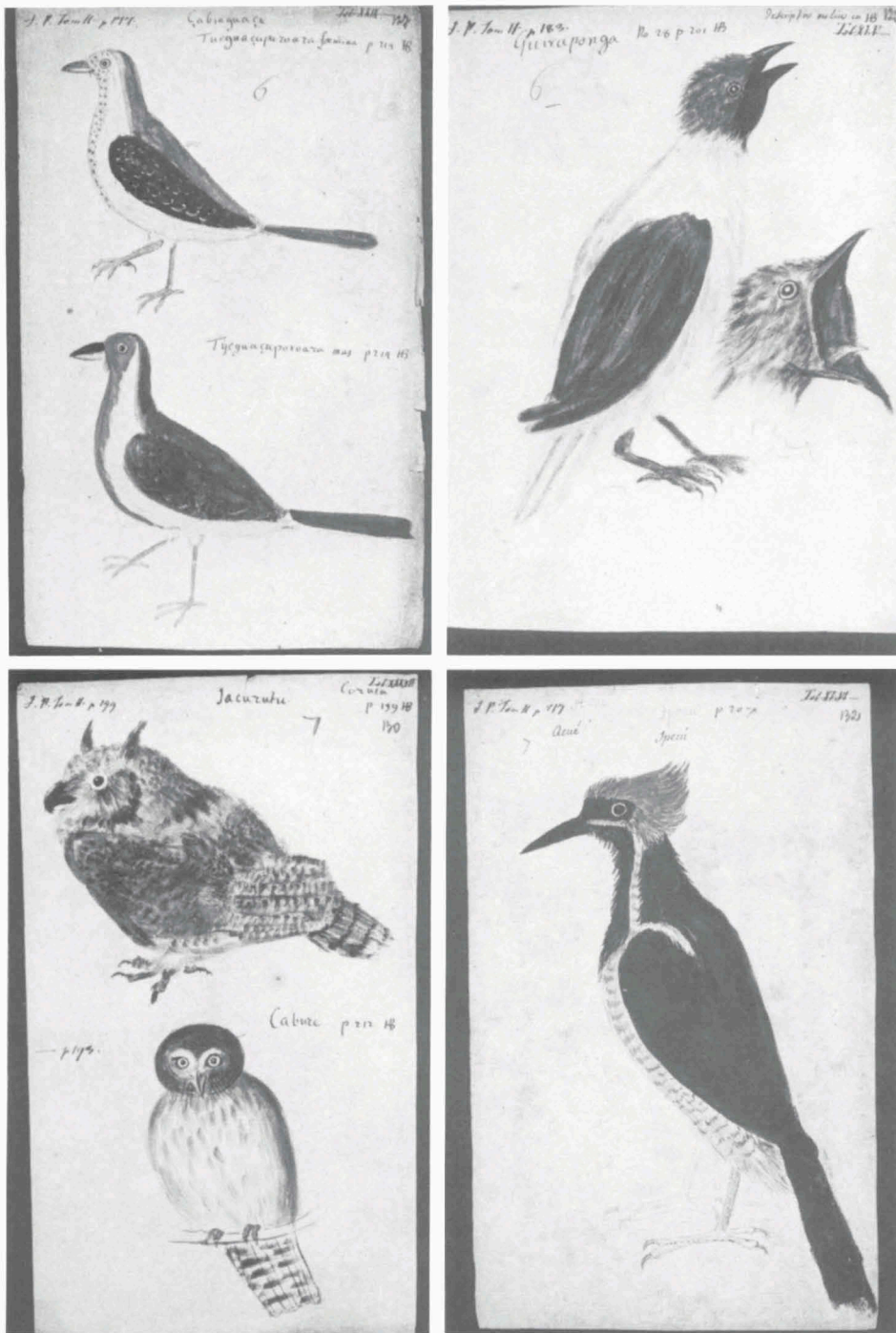


Plate 38. Top left, folio 127, Çabiaguacu, Tiiguaçuparoare (*Paroaria dominicana* (Linnaeus)) & Tijeguaçuporoare (*Paroaria dominicana* (Linnaeus)); top right, folio 128, Guiraponga (*Procnias averano* (Hermann)); bottom left, folio 130, Jacurutu (*Bubo virginianus* (Gmelin)) & Caburé (*Glaucidium brasilianum* (Gmelin)); bottom right, folio 132, Acué, Ipecú (*Dryocopus lineatus* (Linnaeus)).

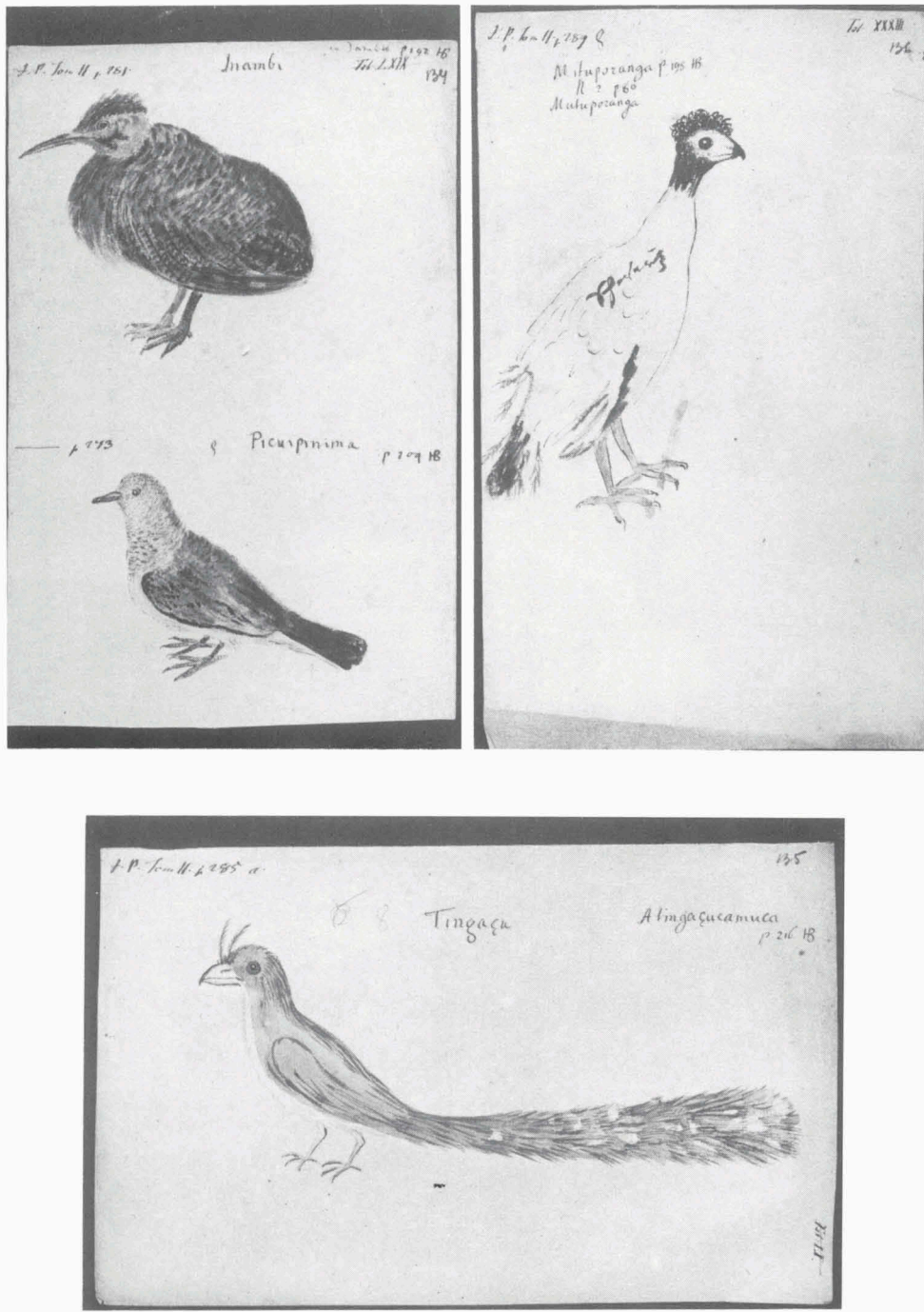


Plate 39. Top left, folio 134, Inambi (*Rhynchotus rufescens* (Temminck)) & Picuipinima (*Columbina passerina* (Linnaeus)); top right, folio 136, Mituporanga (*Crax fasciolata* Spix); bottom, folio 135, Tingaçu (*Piaya cayana* (Linnaeus)).



Plate 40. Top left, folio 133, Ibiiau (*Chordeiles acutipennis* (Hermann)); top right, folio 138, Pindâ (*Plagiobrissus grandis* (Gmelin)); bottom left, folio 140, Jacitatâguacu (*Astropecten marginatus* Gray) & Pinôguaçu (*Oreaster reticulatus* (Linnaeus)); bottom right, folio 141, Cayacânga (? *Octopus vulgaris* Cuvier).

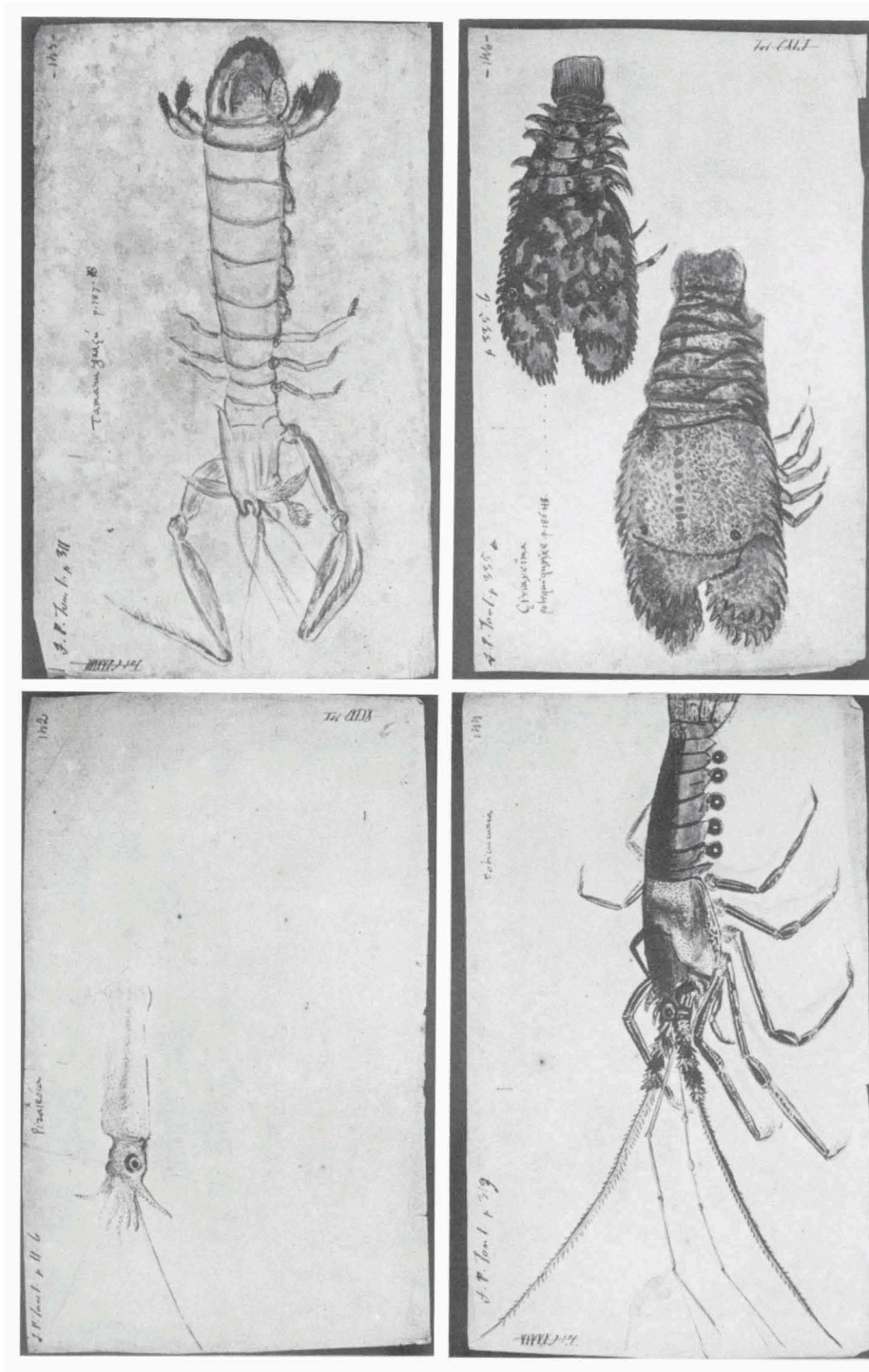


Plate 41. Top left, folio 142, Pirajóca (? *Loligo* (*Doryteuthis*) *plei* Blainville); top right, folio 143, Tamaru guacú (*Lysiosquilla* *scabricauda* (Lamarck)); bottom left, folio 144, Potucucuma (*Panulirus* *echinatus* S.I. Smith); bottom right, folio 146, Cinayeima, Potiquiyixé (*Farribacus* *antarcticus* (Lund)).

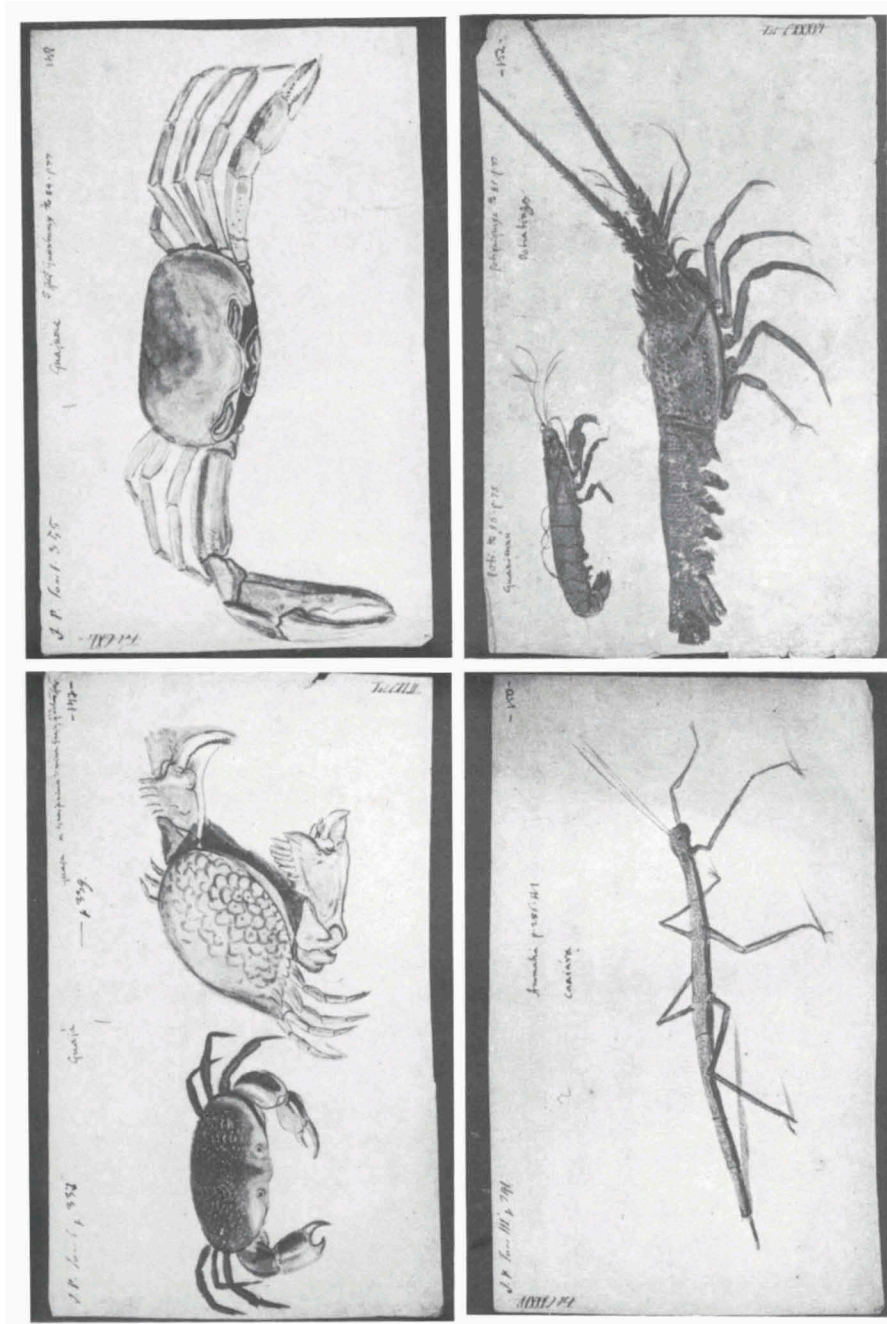


Plate 42. Top left, folio 147, Guajaja (*Carpilius corallinus* (Herbst)) & Guajaja (*Calappa ocellata* Holthuis); top right, folio 148, Guajume (*Carisoma guarahumi* (Latreille)); bottom left, folio 150, Arumatia (*Cladomorphus phyllinus* Gray); bottom right, folio 152, Guanicurú (*Atya scabra* (Leach)) & Potiquiquiya (*Panulirus echinatus* S.I. Smith).





Plate 43. Folio 34(32), no name (*Lama pacos* (Linnaeus)).

### List of folios and plates

Since for various reasons the reproductions of the folios could not be arranged in numerical order, the following list may facilitate a quick consultation of the required folios, as distributed over the 43 plates:

folio: 2 (plate 1)	54 (plate 23)	104 (plate 14)
3 (plate 1)	55 (plate 23)	105 (plate 33)
4 (plate 17)	56 (plate 24)	106 (plate 33)
4 verso (plate 17)	57 (plate 24)	107 (plate 33)
5 (plate 18)	58 (plate 24)	108 (plate 34)
6 (plate 18)	59 (plate 24)	109 (plate 15)
7 (plate 2)	60 (plate 25)	110 (plate 34)
8 (plate 7)	61 (plate 11)	111 (plate 15)
9 (plate 2)	62 (plate 25)	112 (plate 34)
10 (plate 3)	63 (plate 25)	113 (plate 34)
11 (plate 7)	64 (plate 11)	114 (plate 35)
12 (plate 3)	65 (plate 25)	115 (plate 35)
13 (plate 19)	66 (plate 26)	116 (plate 35)
14 (plate 4)	67 (plate 16)	117 (plate 35)
15 (plate 4)	68 (plate 12)	118 (plate 36)
16 (plate 5)	69 (plate 12)	119 (plate 36)
17 (plate 8)	70 (plate 12)	120 (plate 36)
18 (plate 5)	71 (plate 26)	121 (plate 36)
19 (plate 6)	72 (plate 26)	122 (plate 37)
20 (plate 19)	73 (plate 26)	123 (plate 15)
21 (plate 8)	74 (plate 27)	124 (plate 37)
22 (plate 6)	75 (plate 27)	125 (plate 37)
25 (plate 16)	76 (plate 27)	126 (plate 37)
26 (plate 20)	77 (plate 27)	127 (plate 38)
27 (plate 9)	78 (plate 28)	128 (plate 38)
28 (plate 20)	79 (plate 28)	129 (plate 31)
29 (plate 9)	80 (plate 28)	130 (plate 38)
30 (plate 9)	81 (plate 12)	131 (plate 15)
31 (plate 20)	82 (plate 28)	132 (plate 38)
32 (plate 9)	83 (plate 29)	133 (plate 40)
33 (plate 10)	84 (plate 29)	134 (plate 39)
34 (plate 43)	85 (plate 29)	135 (plate 39)
35 (plate 14)	86 (plate 29)	136 (plate 39)
36 (plate 10)	87 (plate 30)	138 (plate 40)
38 (plate 10)	88 (plate 30)	139 (plate 13)
39 (plate 20)	89 (plate 30)	140 (plate 40)
40 (plate 10)	90 (plate 30)	141 (plate 40)
41 (plate 11)	91 (plate 13)	142 (plate 41)
43 (plate 11)	92 (plate 31)	143 (plate 41)
44 (plate 21)	93 (plate 31)	144 (plate 41)
45 (plate 21)	94 (plate 31)	145 (plate 16)
46 (plate 21)	96 (plate 16)	146 (plate 41)
47 (plate 21)	97 (plate 32)	147 (plate 42)
48 (plate 22)	98 (plate 32)	148 (plate 42)
49 (plate 22)	99 (plate 14)	149 (plate 13)
50 (plate 22)	100 (plate 32)	150 (plate 42)
51 (plate 22)	101 (plate 14)	151 (plate 13)
52 (plate 23)	102 (plate 32)	152 (plate 42)
53 (plate 23)	103 (plate 33)	