

Ptolemaic style, inserted in editions of Julius Cæsar, Justinus Trogius Pompeius, and other classical authors; maps printed in theological works or books of devotion, of Palestine, Egypt, Sinai etc., founded on older prototypes or only invented at the writing-table; general maps similar to those reproduced on T. XXXII from MACROBIUS and SACROBOSCO and still employed without any modifications in editions of these authors during the whole of the 16th century; small schematic maps in such geographical compendia as *De geographia liber unus* by HENRICUS GLAREANUS, of which a number of editions were published in Basel, Friburg, Venice, and Paris, after 1527, or *Cosmographiæ introductio* (by APIANUS), the first edition of which was printed at Ingolstadt in 1529 etc. All these appear to be worthless from a geographical point of view. As regards the maps in Macrobius it may be remarked that, in the Basel edition of 1535, the typical form has been exchanged for a circular planisphere of 89 m. m. diameter, on which the outlines of Africa are laid down with tolerable correctness.

No copies are at present known of a number of maps belonging to this period, especially of those published separately. But it is to be hoped that several of them, as lately happened with the important map of Olaus Magnus, may hereafter be exhumed from the dust of the libraries, and I should feel it to be a great success, if this fac-simile atlas should be the cause of at least some discoveries of that kind. As examples of lost maps mentioned in literature may be cited: the Sarmatia by FLORIANUS, the map of Hungaria by LAZARUS, CRATANDER's reproduction printed at Basel in 1530 of NICOLAUS A CUSA's Germania, GERARD MERCATOR's map of Palestine printed in 1537, and a number of other maps mentioned in the *Catalogus auctorum* by Ortelius.

I hope, however, that comparatively few of the maps at present known have escaped my attention, and that the catalogue given above may suffice for an objective appreciation of the merits and defects of the period (1520—1550) under discussion.

X.

The transition to and the beginning of the modern period.

Jacopo Gastaldi. Philip Apianus. Abraham Ortelius. Gerard Mercator.

A decided change in the development of cartography occurred in the middle of the 16th century. The geographer had, until then, been satisfied with general maps based on the geographical data enumerated and commented upon in Ptolemy's cosmography, namely itineraries, valuations of the distances between different places and the bearings between them, and finally a few astro-geographical observations which, however, were almost always incomplete, no means existing before the discovery of chronometers, for determining the longitudes with even approximate exactness. The cartography of the New World was still almost exclusively limited to a general outline of the coast, and geographers scarcely attached as much importance to it as they now give to the mapping of the uninhabited north and south polar regions. As regards the Old World, faith in the infallibility of Ptolemy was yet almost undisturbed, and it was regarded as the greatest merit for a cartographer, to reconcile the newly collected data with the classical types of the 2d century. However, a few chorographical or topographical maps, perhaps directly called forth by the first chapter of Ptolemy's geography, were already published in print, and from the middle of the 16th century such special maps, founded upon actual surveys, became more and more common. They then reacted on the general maps, and communicated to these, even when their technical execution was defective, a completeness which is wanting in the productions of the time which may be called the period of incunabula of cartography. It was this breaking with classical authorities that formed the real source and cause of the modern period introduced by the works of Gastaldi, Philip Apianus, Ortelius, and Mercator.

The following chorographies or detailed maps of smaller districts were already published in print before the middle of the 16th century:

1. A map of *Lotharingia*, commenced in 1507 by Vosagi rupibus, and published in print in 1513. As the first printed topographical map founded on actual measurements, it is of great interest, and really deserves the epithet *nobile opus*, by which it seems to be designated in the author's preface (comp. above p. 69). The map, however, is far from exact. The skill of King René's cosmographer in making and calculating astronomical observations appears to have been very defective. For, even deducing a constant error of a whole degree, there still remain on the first modern topographical map greater errors of latitudes than those found on the better maps of Ptolemy, e. g. on his map of Egypt.

2. *Chorographia Eremi Elvetiorum*, *Chorographia Rheni* and *Chorographia Cretae*, printed for the first time in Ptolemaeus 1513, then reproduced from the same block in the edition of 1520, and on a reduced scale in the editions 1522, 1525, 1535 and Viennæ 1541. On these maps the geographical co-ordinates are also inexact, and the drawing is so rough, and so different from the style as well on modern maps as on the first printed maps of Ptolemy, that it requires some time to become conversant with them. But they are rich in details and have the unmistakable character of having been drawn by cartographers well acquainted with the countries. The map of Crete seems to be copied from a portolano, or at least to be founded on a Venetian original. I have not succeeded in obtaining any information as to the author of *Chorographia Provinciæ Rheni*. The third map, *Chorographia Eremi Elvetiorum*, is a tolerably accurate copy of the map of Switzerland constructed in 1496 by CONRAD TYRST. Some of the legends of the Tyrst map, however, are here omitted, evidently on account of the technical difficulty of rendering all the inscriptions on a wood-cut. A manuscript copy of the original on vellum is still preserved in the Imperial

library at Vienna. It has lately been reproduced in the 6th volume of *Quellen zur Schweizer Geschichte*, Basel 1884, but the publisher was unaware that the greatest portion of Tyrst's map had already been engraved in wood and printed in 1513.

3. A map of Avignon in: *Il Petrarca con l'esposizione d'Alessandro Vellutello*, s. l. 1528. This insignificant woodcut is only mentioned here as one of the few early topographical maps published in print.

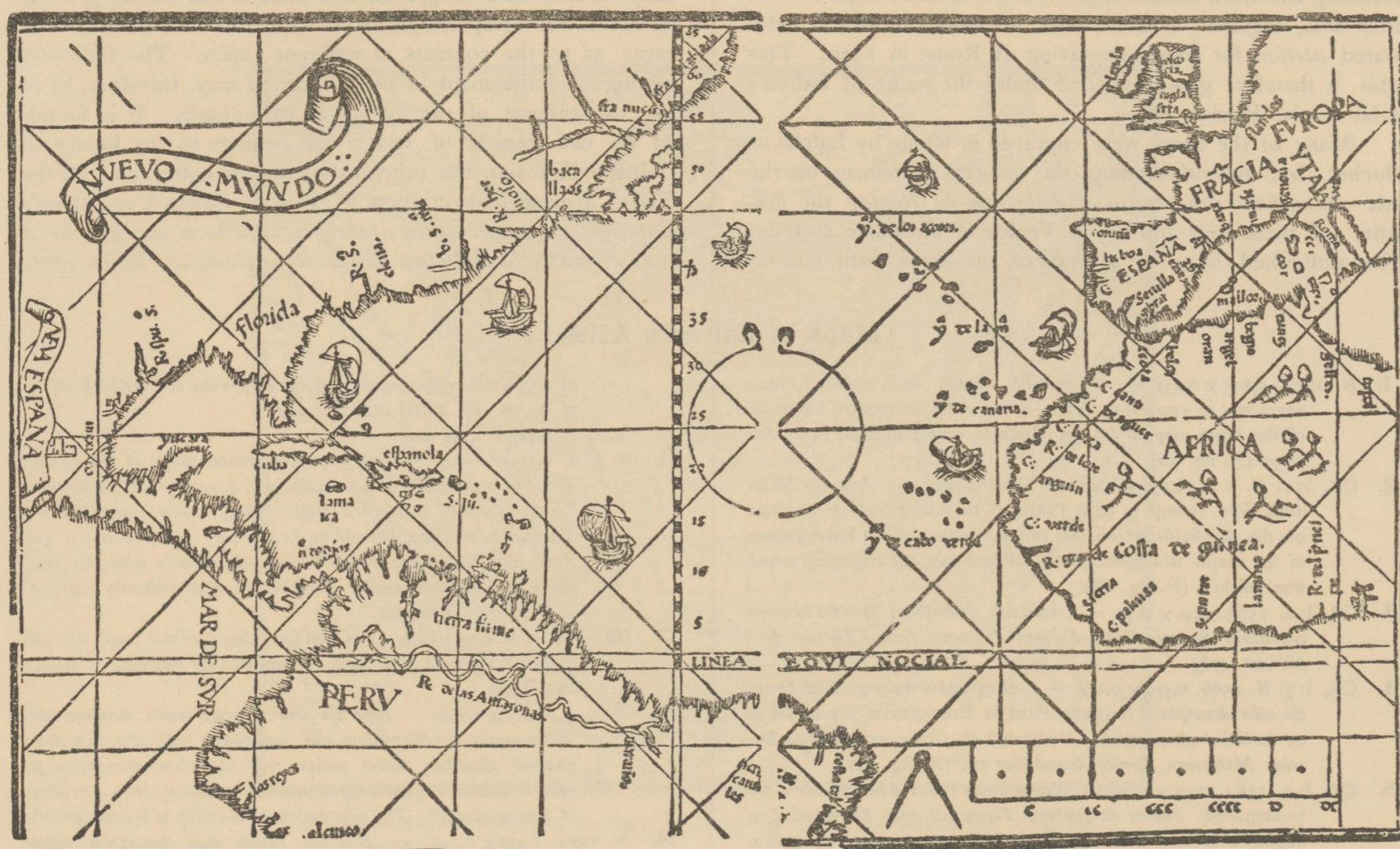
4. Several of the new maps in the different editions of Ptolemy's geography by MÜNSTER, and in his cosmography (comp. p. 108—110).

5. Some of the modern maps of smaller districts in MATTIOLLO-GASTALDIS *Ptolemeo*, Venetia 1548 (comp. p. 25).

To these may be added maps of islands etc. in DALLI SONETTI'S and BORDONE'S works, generally consisting of rudi-

1550 and 1570 by Gastaldi and other Italian geographers or artists, in Germany by Philip Apianus (1568), in the Netherlands by Ortelius (from 1562), and above all by Mercator (from 1537). It is by the maps of these eminent reformers that the period of incunabula in cartography was closed and the modern period introduced. The last chapter of this essay on early cartography may, therefore, be devoted to an enumeration of the most important of their works, and a short review of their influence on the development of the science.

When, as is generally the case, the new era in cartography is counted from the publication of the *Theatrum Orbis terrarum* and the merit of the reform is exclusively attributed to ORTELIUS, and to GERARD MERCATOR, great injustice is done to the draughtsmen of the excellent maps



75. From: PEDRO DE MEDINA, *Libro de grandezas e cosas memorables de España*, Alcalá de Henares 1548—66. (Orig. size 263 X 150 m. m.).

mentary sketches, hardly deserving the name of maps; maps of the Holy Land based on biblical traditions, on portolans and on observations by pilgrims; plans and views of ports and cities, often merely fictitious, yet sometimes with internal evidence that the draughtsman had been acquainted with the place represented; Ziegler's *Schondia* of 1532; Olaus Magnus' map of Scandinavia of 1539; Mathias a Michou's *Sarmatia Europea* of 1538; Herberstein's maps of *Moscovia* etc. Several of these maps may certainly be regarded as precursors of modern cartography, on account of their character of special maps, founded, not on a study of the old authors or on works of the Middle Ages, but on actual, more or less correct observations, and on modern itineraries, or surveys. Nevertheless very few of them are, as regards their execution, comparable to the maps added to some of the oldest editions of Ptolemy. From a cartographical point of view again, they are much inferior to the maps published at Rome and Venice between

printed in Italy during the 6th and 7th decennia of the 16th century. These maps often served as models to Ortelius, and many of them may, without disadvantage, be compared with works of Mercator. Their neglect, in the history of cartography, is evidently due to the circumstance that the Italian maps were published on separate sheets and never united into such a complete and systematic work as that of Ortelius' *Theatrum* or Mercator's *Atlas*. Many of them are, therefore, as are several of the most important maps of the same period published north of the Alps in separate sheets, entirely lost. Others have become so rare, even in Italy, that they have generally escaped the attention of investigators into the early history of cartography. Fortunately the most important maps printed separately in different towns of Italy had, in the 16th century, already been collected in one or more folio volumes, and provided with a common title, forming a magnificent copper-engraving, on whose inner field is written:

Geografia.
Tavole moderne di geografia
de la maggior parte del mondo
di diversi autori
raccolte et messe secondo l'ordine
di Tolomeo
con idisegni di molte citta et
fortezze di diverse provincie
Stampate in rame con studio
et diligenza
in Roma.

The rich border, surrounding this title, of which a facsimile is given on the title of the present work, is interesting, because it is the first instance of *Atlas* supporting the earth globe being used in print, as a symbol for a collection of maps. Neither the year of printing nor the name of the publisher are mentioned. But the engraved title is probably the work of ANTONIO or ANTOINE LAFRERI, a French artist who, together with his uncle DUCHET, founded a celebrated *atelier* for copper-engraving at Rome in 1540. This atlas is therefore generally cited under the name of Lafreri's Atlas or the Roman Atlas.

Many of the maps were engraved in Rome by Lafreri or Duchet, but notwithstanding the express statement on the title »*Stampate con studio et diligenza in Roma,*» the majority of them were printed in Venice or elsewhere in Italy. The unfinished state of several of the maps, their curious

mounting, difference in size etc., seem to indicate that we here only have to deal with a collection of the necessary material for a work resembling that of Ortelius, which Lafreri or some other geographer or editor intended to publish at Rome, and for which he perhaps had bought convenient plates from different Italian engravers.

Such an intention, if it ever existed, was never realised. But this collection was the cause that a number of maps were saved from destruction, of which probably no traces would otherwise have been found in literature. We here get an insight into the high development of cartography and of the industry of map-printing in Italy in the middle of the 16th century.

This collection is seldom mentioned in geographical literature. For example it is never alluded to by Lelewel, Humboldt, Peschel, Vivien de St. Martin, Ruge, Breusing. Probably only a very limited number of copies were originally issued, and at present this atlas is one of the greatest rarities in cartographical literature. Hence a notable difference exists as to the contents of different copies. The following catalogue of the maps in this collection may, therefore, be of use to students of the history of cartography. It is founded on two copies, of which one belongs to the library of Collegio Romano, the other to my private collection. Of the former a detailed description is given in CARLO CASTELLANI'S *Catalogo ragionato delle opere geografiche a stampa che si conservano nella biblioteca del Collegio Romano*, Roma 1876.

Maps in Lafreri's Atlas.¹

1. N. 1572. 0,805 × 0,533.² — A faithful though much reduced copy, engraved in copper at Rome in 1572 by ANTONIUS LAFRERI, of the large map of OLAUS MAGNUS, first published in Venice 1539 (N. fig. 32).
2. CR, I: 1. N. s. a. 0,835 × 0,462. — General map by *Antonius Florianus Utin.* (comp. p. 94). There are no inscriptions or drawings on the title-fields or on the two medallions at the lower corner of the maps, which seems to indicate that the engraving never was finished (N. fig. 48).
3. CR, I: 2. 1565. 0,50 × 0,30. — *Universale descrizione di tutta la terra conosciuta fin qui. Paulo Forlani Veronense fecit. Ferando berteli exc. 1565.*
4. CR, I: 3. N. 1566. 0,579 × 0,418. — *Cosmographia universalis ab Orontio olim descripta. JOANNES PAULUS CIMERLINUS Veronensis in aes incidit Anno 1566.* Dedicated to *Ill:mo viro Henrico Domino Matrevors, Comiti Arandelliae etc.* (N. fig. 53).
5. CR, I: 4. 1562. 0,52 × 0,30. — Planisphere. In the left corner there is engraved: *Paulus de furlanis Veronensis opus hoc ex:mi Cosmographi Domini Jacobi Gastaldi Pedemontani instauravit et dicavit ex:mo I. U. D. et aurato Aequiti Domino Paulo Michaeli Vincetino. Venetiis Ioan. Francisci Camotii aereis formis ad signum Pyramidis Anno MDLXII.*
6. CR, I: 5. s. a. 0,50 × 0,32. — General map. »*Ant. Lafreri, exc. Romae.*»
7. CR, I: 6. s. a. 1: 0,26 × 0,19. 2: 0,24 × 0,18. — General map in two parts, 1: »*Plolomaei typus,*» and 2: »*Septentrionalium partium nova tabula.*»
8. CR, I: 7. 1569. 0,41 × 0,82. — Map of Europe with the countries to the east and south of the Mediterranean, dedicated by PAULO FURLANI to GIACOMO MURARI MDLXIX.
9. N. s. a. 0,507 × 0,323. — Double cordiform map of the world. »*Ant. Lafreri exc. Romae.*» An elegant copy of G. Mercator's map of 1538, as copper-engraving far surpassing the original (comp. p. 90, N. Pl. XLIII and fig. 54).
10. N. s. a. 0,247 × 0,182 and
11. N. s. a. 0,242 × 0,182. — Two copper-engraved maps of the islands *Frisland* and *Estland* mentioned in the voyage of the brothers Zeno, published in Venice 1558. They nearly agree with the delineation of these islands on Zeno's map (comp. above p. 58). Even here, as in many other maps of Lafreri's atlas, the title-fields are left unfinished. These maps were evidently engraved in Venice by BERTELI.
12. CR, I: 8. s. a. 0,35 × 0,24. — Chart (portolano) of the South Atlantic Ocean with eight wind-roses. Dedicated by BERTELI to MARCO DEL SOLE.
13. N. s. a. 0,285 × 0,160. — *Hibernia sive Irlanda insula maxima inter Britanniam & Hispaniam sita, longitudine mill. 260, in regiones quatuor dividitur, habet miram coeli temperiem, episcopatus 50, nihil venenatum gignit, gens moribus incultior, bello, latrociniiis et musica gaudet.* The orientation of the map is South upwards.
14. N. 1562. 0,468 × 0,340. — *Britannia Insula quae duo regna continet Angliam et Scotiam cum Hibernia adiacente.* Two long title-legends. Beneath the right is written: *Venetis Anno MDLXII,* beneath the left: *Ferando de Berteli exc. 1561.*
15. CR, I: 12. N. 1558. 0,541 × 0,398. — *Britanniae insulae quae nunc Angliae et Scotiae Regna continet cum Hibernia adiacente nova descriptio.* Two long title-legends; beneath that in the right corner is engraved: *Romae Anglorum studio et diligentia MDLVIII,* and »*Sebastianus a Regibus Clodiensis in aes incidit.*» This map entirely agrees with the map of Britain in *Carte Nautiche di Battista Agnese dell' anno 1554,* preserved at *Biblioteca Marciana* in Venice and reproduced in fac-simile by THEOBALD FISCHER, Venetia 1881 (N. fig. 78).

¹ With regard to some of these maps I may refer to G. MARINELLI: *Saggio di cartografia della Regione Veneta*, Venezia 1881, where we find a few meagre notices regarding Gastaldi, Furlani, Camocio, and other Italian cartographers or engravers.

During the middle of the 16th century map printing reached a high development in Italy, especially in Venice. Lafreri's atlas is not the only instance of maps first published on detached leaves and afterwards collected and brought into the market with a common title-page. Such a collection, in oblong folio, was published about 1572 by Camocio with the title: *Isole famose, porti, fortesse, et terre marittime sottoposte alla Ser:ma Sig:ria di Venetia, ad altri Principi christiani, et al Sig:or Turco, nuovamente poste in luce, In Venetia alla libreria del Segno di S. Marco.* This collection contains 88 maps generally insignificant in a geographical respect, though often excellent as copper-engravings. An almost complete copy is preserved in the Royal Library at Stockholm. Copper-engraved maps were also inserted in the text of printed works, e. g. in *L'isole piu famose del Mondo descritte da Thomaso Porcacchi da Castiglione Arretino e intagliate da Girolamo Porro Padovano*, of which several editions were published, the first *In Venetia MDLXXVI.* The work contains a number of small well executed maps from different parts of the earth. I have reproduced one of them on pl. XLIX. Another collection of small maps engraved in copper by ANGELO MARELLI and representing islands in the Mediterranean (and Britain) was published in *Francesco Ferretti's Diporti Notturni etc.*, Ancona 1580.

² CR = Biblioteca del Collegio Romano, according to Castellani's catalogue. N = Nordenskiöld's copy of Lafreri's atlas. The numbers following indicate the year of printing (s. a. = no date) and the size of the map in metres.

- [N. s. a. — On this map follows, in my copy of the atlas, a printed leaf: »Nova et antiqua locorum nomina in Anglia» and »Nova et antiqua locorum nomina in Scotia».
16. CR, I: 13. N. 1554. 0,475 × 0,375. — *La vera descrizione di tutta la Francia, et la Spagna, et la Fiandra . . . MDLIII.*
17. CR, I: 14. N. 1560. 0,559 × 0,437. — *Hispaniae Descriptio. Dominicus Zeno (not Zendi) Venetus restituit. Venetiis MDLX.*
18. N. s. a. 0,240 × 0,180. — *Minorica.*
19. CR, I: 17. N. 1558. 0,51 × 0,38. — *Totius Galliae descriptio cum parte Angliae, Germaniae Flandriae, Brabantiae, Italiae, Romae usque, Pyrrho Ligorio Neap. auctore. Romae MDLVIII. Michaelis Tramesini Formis. Cum Pontificis Maximi ac Veneti Senatus privilegio ad decennium. Sebastianus a Regibus Clodiensis incidebat.*
20. N. 1571. 0,498 × 0,372. — The same map, but the end of title-legend changed into: *Pyrrho Ligorio Neap. auctore. Claudii Ducheti formis 1571.*
21. CR, II: 16. N. 1556. 0,628 × 0,456. — *Totius Galliae exactissima Descriptio.* According to a long dedication at the upper corner to MARCUS ANTONIUS RADICI, this map was engraved by PAULUS FORLANI VERONENSIS S. D. from an original by the distinguished mathematician ORONTIUS, and printed at Venice, ex aeneis formis Bolognini Zalterii MDLXVI.

31. CR, I: 25. 1566. 0,47 × 0,38. — *Frisia antiquissima trans Rhenum provincia etc. a Jacobo Darent. Belga descripta. Romae MDLXVI.*
32. CR, II: 62. N. 1572. 0,520 × 0,384. — Chart of the Baltic and North Sea, *Venetis MDLXII apud Ioannem Franciscum Camocium* (N. fig. 25).
33. CR, I: 26. s. a. 0,52 × 0,36. — *Europa settentrionale. Dalla Svezia e dal ducato de Moscovia alla Lapponia e al Mare Sitichum.*
34. N. 1568. 0,517 × 0,373. — *Di M. Iacomo Castaldo vi si rappresenta la prima parte della descrizione del regno di Polonia, con la sua scala di miglia, intagliata da Paolo furlani veronese al segno della Colonna. Venetia l'anno 1568.* (N. fig. 79).
35. N. 1568. 0,497 × 0,382. — *Il vero disegno della seconda parte del Regno di Polonia, dell' eccmo m. Giacomo Gastaldo Piemontese. In Venetia l'anno MDLVIII. Intagliata da Paolo Forlani Veronese al segno della Colonna immerzaria.* Embracing not only Poland but also the main part of the European Russia.
- Instead of the above mentioned two maps, the Collegio Romano collection contains two others, viz.
36. CR, I: 27. 1562. 0,52 × 0,38. — *Il disegno . . . del regno di Polonia, e parte del ducato di Moscovia . . . Scandia, Suetia . . . Ustinga . . . Severa in sino al Mare Maggiore. Giaco de Castaldi piemontese cosmogr. MDLXII f. in Venetia.*



76. General map from: JOHANNES HONTERUS, *De Cosmographia rudimentis*, Basileae 1561. (Orig. size).

22. CR, II: 19. N. 1562. 0,438 × 0,328. — *Descrittione del Ducato di Savoia.* Dedicated by PAULO FORLANI to LUIGI BALBI, Venetia MDLXII.
23. CR, I: 18. N. 1555. 0,610 × 0,444. — Switzerland. Dedicated by ANTONIO SALAMANCA to JODOCUS A MEGGEN, *Practorianorum Praefectus. Romae MDLV.* In the left corner: *Iacobus Bosius Belga in as incidebat.*
24. CR, I: 19. 1558. 0,47 × 0,35. — *Gallia Belgica. Romae MDLVIII.*
25. CR, I: 20. N. s. a. 0,505 × 0,376. — *Flandriae recens exactaque descriptio. Claudio Ducheto formis.*
26. CR, I: 21. N. s. a. 0,505 × 0,397. — *Brabantiae Belgarum provinciae recens exactaque descriptio. Venetiis. Bolognini Zalterii formis.*
27. N. 1563. 0,490 × 0,385. — *Gelbrae, Cliviae, Juliae, nec non aliarum regionum adiacentium nova descriptio. Anno MDLXIII. Venetiis. Apud Ioannem Franciscum Camocium. Pauli Forlani Veronensis incidente.*
28. CR, I: 23. 1566. 0,49 × 0,37. — The same map, but »*Per Iacobum Darent. Belgam, Romae MDLXVI.*»
29. CR, I: 24. N. s. a. 0,495 × 0,378. — *Hollandiae Batavorum veteris insulae et locorum adiacentium exacta descriptio. Bolognini Zalterii formis.*
30. N. 1566. 0,475 × 0,385. — *Frisiae antiquissimae trans Rhenum Provinc. et adiacentium regionum nova et exacta descriptio. Venetiis. Io. Francisci Camotii formis ad signum Pyramidis MDLXVI.*

37. CR, I: 28. 1562. 0,36 × 0,25. — *Nova descriptio de la Moscovia per leccete M. Giacomo Castaldo piemontese cosmographo. In Venetia MDLXII. Ferando berteli exc.*
38. N. s. a. 0,248 × 0,183. — *Gotlandia.* No inscription on the title-field of the map, bound in an almost identical map in my collection, printed separately from another engraving, there is written, at the base of the otherwise blank title-field: *Ferando Bertelli.*
39. N. 1562. 0,503 × 0,374. — *Germaniae omniumque ejus provinciarum, atque Austriae, Boemiae, Ungariae . . . descriptio. Ferando Berteli exc. 1562.* An almost exact copy of the map (by NICOLAUS A CUSA) of central Europe printed at Rome in 1507 (N. fig. 13).
40. CR, I: 31. 1564. 0,35 × 0,24. — *Germania del Gastaldo. Paulo Forl. Veronese f. 1564. Ferando Berteli exc.*
41. CR, II: 30. N. s. a. 0,642 × 0,472. — *Bohemiae nova et exacta descriptio . . . Bolognini Zalterii formis.* The map is drawn in a manner deviating considerably from the style of drawing of other maps in Lafreri's collection.
42. CR, I: 32. N. 1570. 0,355 × 0,280. — *Descrittione del Ducato di Baviera . . . MDLXX. Paolo Forlani Veronese f.*
43. CR, I: 33. N. 1559. 0,446 × 0,378. — *Nova descriptio totius Ungariae. Romae MDLVIII.*
44. CR, I: 34. N. s. a. 0,413 × 0,283. — *Austria et Ungaria.*

45. CR, I: 35. 1566. 0,48 x 0,34. — *Vera et ultima discriptione di tutta l'Austria, Ungheria, Transilvania, Dalmatia . . . In Venetia MDLXVI. Intagliato da Paolo Furlani Veronese al segno della Colonna in Merzaria.*
46. CR, I: 36. s. a. 0,50 x 0,35. — Hungary with Servia, Transylvania, Austria, Friaul, northern portion of Adria, and Dalmatia.
47. CR, I: 37. N. 1560. 0,510 x 0,350. — The country about the lower part of Danube, between Lat. 43° and 48° 20' from Belgrad to the Black Sea. *In Roma per Ant. Lafreri. Fabius Licinius fec.*
48. N. 1560? 0,510 x 0,350. — A continuation of the last map of the Donau countries, between Lat. 43° and 48° 3/4, extending westward as far as to Bavaria and Venice. As the want of border seems to indicate, these fine maps seem not to have been finished.
49. CR, I: 38. N. 1564. 0,380 x 0,272. — *Nova discriptione del Friuli. Anno MDLXIV. Paulo Forlano Veronese f.*
50. CR, I: 39 and II: 32. 1564. 0,42 x 0,32. — Illyria (Carinthia, Croatia and Dalmatia). *Bologninus Zalterius. Venetiis MDLXVIII.*
51. CR, I: 40. N. 1569. 0,496 x 0,317. — *Istria di M. Pietro Copo.* Engraved by FERRANDO BERTELLI and dedicated to ALDUS MANUTIUS. This COPO, whose old map had been engraved by the excellent and industrious engraver, but weak cartographer, Bertelli, is probably the same COPPO of whose general map of the world I have given a fac-simile above (fig. 65 p. 103).
52. CR, II: 38. N. 1570. 0,519 x 0,353. — *Il vero ritratto di Zarra et di Sebenico . . . MDLXX da Martino Rota Sebenzan.*
53. CR, I: 41. 1570. 0,40 x 0,29. — *La vera et fidele discriptione di tutto il Contado di Zara e Sebenico . . . intagliato da Paolo Forlani Veronese. Venetia 1570.*
54. CR, I: 42. N. 1565. 0,405 x 0,284. — *Nova discriptione dela Dalmatia et Croatia. MDLXV. Ferando Berteli exc. in Venetia.*
55. CR, I: 44. N. 1561. 0,770 x 0,536. — *Il disegno della geografia moderna de tutta la provincia de la Italia . . . all' Illmo Sig:or ilsr Alfonso secondo da Este, duca di Ferrara quinto Giacopo di Castaldi Piemontese cosmografo in Venetia . . . Fabio Licinio exc.* Copied on a reduced scale by Ortelius 1570.
56. CR, I: 45. 1566. 0,50 x 0,36. — *Descrizione del Piemonte, Monferra, et la maggior parte della riviera di Genova . . . Opera dell' Ecc:te M. Giacomo Gastaldo . . . Venetiis MDLXVI.*
57. CR, I: 46. N. s. a. 0,510 x 0,400. — *Regionis subalpinae vulgo Piemonte appellatae descriptio, aeneis nostris formis excussa.*
58. CR, I: 47. 1558. 0,40 x 0,30. — Upper Italy; *Romae Vicentii Luchini aereis formis ad Peregrinum 1558.*
59. CR, I: 48. 1570. 0,74 x 0,48. — *La Nuova Descriptione della Lombardia.* Dedicated by the cosmographer GIORGIO TYLMAN to CRISTOFORO MADRUTIO; stampata in Roma appresso Lafreri. L'A. 1570.
60. CR, I: 49. 1567. 0,45 x 0,29. — *Nova discriptione di tutto il ducado di Milano . . . Venetia appresso Ferrando Bertelli Nel MDLXVII.*
61. CR, I: 49. N. 1564. 0,485 x 0,390. — *Marchia Anconitana, Picaenum olim dicta . . . Romae apud Vincentium Luchinum 1564.*
62. CR, I: 51. 1559. 0,50 x 0,38. — Tuscany, *Romae Anno MDLVIII.*
63. CR, I: 52. 1564. 0,47 x 0,32. — *La discriptione della Campagna di Roma . . . Roma l'Anno MDLXVIII.*
64. N. 1560. 0,445 x 0,318. — *Paese di Roma.* Neither engraver nor place of printing are stated, only the year 1560, at the right corner below a papal coat of arms.
65. CR, I: 53. N. s. a. 0,477 x 0,301. — *Regno di Napoli.*
66. CR, I: 54. 1567. 0,36 x 0,21. — *La descriptione dela Puglia. Opera di Giacomo Gastaldo Cosmographo in Venetia. Ferando Berteli 1567.*
67. CR, I: 55. N. 1560? 0,520 x 0,483. — *Geographia particolare d'una gran parte dell' Europa . . . Opera nuova di Giacomo di Castaldi Piemontese.* Dedicated to GIO. GIACOPO FUCCARI CONTE DI KIRCHBERG E DI WEISEMHOM. This map is a continuation of the maps 47, 48 and 70.
68. CR, I: 56. N. s. a. 0,493 x 0,370. — *Sicilia insularum omnium (ut inquit Diodorus) optima.*
69. CR, I: 57. N. s. a. 0,304 x 0,202. — *Sardinia insula.*
70. CR, I: 57. N. s. a. 0,302 x 0,198. — *Cirrus sive Corsica.*
71. CR, I: 58. s. a. 0,28 x 0,20. — Elba.
[N. 1564. — Two printed folios: *I nomi antichi et moderni della Italia . . . di Giacomo de Gastaldi Piemontese, Cosmografo.* (Colophon:) *In Venetia MDLXVIII Con privilegio.*]
72. CR, I: 59. N. 1565. 0,447 x 0,375. — *Nuovo disegno dell' Isola di Malta . . . Ant. Lafreri Romae Anno 1565.* Another impression probably from the same plate, but dated 1569, occurs in CR, II: 47.
73. CR, I: 60. N. s. a. 0,425 x 0,290. — *La dimostrazione del luogo dove al presente si trova l'armat di Barbarossa et de Christiani, detto il golfo dell' Artha . . .*
74. CR, I: 61. N. 1564. 0,369 x 0,270. — *Corfu. Ferando Berteli exc. 1564.*
75. CR, I: 62. s. a. 0,28 x 0,21. — Another map of Corfu.
76. CR, I: 63. s. a. 0,47 x 0,34. — *Fortezza di Soppollo.*
77. CR, I: 64. 1569. 0,45 x 0,32. — *Morea. Appresso Gio. Francesco Camocio 1569 con privilegio.*
78. CR, II: 54. N. 1570. 0,328 x 0,245. — *Peloponnesus Nunc Morea l'Anno 1570. Per Claudio Ducheto.*
79. CR, I: 66. 1564. 0,38 x 0,27. — *El vero et nuovo disegno di tutta la isola di Candia. Venetiis, Io. Francisci Camotii aereis formis ad signum Pyramidis 1564.*
80. N. s. a. 0,281 x 0,205. — *Creta Insula, hodie Candia.*
81. CR, I: 67. N. s. a. 0,267 x 0,203. — *Rhodus.*
82. CR, I: 68. s. a. 0,56 x 0,47. — The Archipelago.
83. N. s. a. 0,530 x 0,486. — Greece and the Archipelago. Beneath in the right corner: *fabius Licinius fecit Venetiis.* This map and the maps 47, 48 and 67, form together Gastaldi's *Geographia particolare d'una gran parte dell' Europa* printed on four sheets, of which the first is not signed, the second is signed: *In Roma per Ant. Lafreri Fabius Licinius fecit,* on the third we only meet the cosmographer's name, and the fourth is signed: *fabius Licinius fecit Venetiis.*
[N. 1570. — A printed folio leaf: *Nomina antiqua et recentia urbium Graeciae descriptionis a N. Sophiano jam aeditae;* (colophon:) *Romae sub anno Domini MDLXX Typis Antonii Lafreri.*]
84. CR, I: 69. 1558. 0,61 x 0,41. — *Totius Graeciae descriptio. Romae Vincentii Luchini aereis formis ad Peregrinum 1558.*
85. CR, I: 70. s. a. 0,61 x 0,41. — *Graeciae Chorographia* by FRANCESCO SALAMANCA. *Sebastianus Clodiensis incidit.*
86. CR, I: 71. N. 1562. 0,596 x 0,437. — Africa. The dedication to *Eccmo Philosopho, Mathematico . . . Guardianio grande della Scuola de S. Marco il Sig:or Thomaso Ravenna,* is signed: PAOLO FORLANI VERONESE and dated *Venetia MDLXII.*
87. CR, I: 72. N. s. a. 0,437 x 0,300. — *Disigno dell' Isola de Gerbi.*
88. N. s. a. 0,400 x 0,245. — *Fortezza di Gerbi.*
89. CR, I: 73. N. 1570. 0,338 x 0,260. — *La nuova et copiosa discriptione di tutto l'Egitto l'Anno MDLXX.*
90. CR, I: 74. s. a. 0,25 x 0,19. — *S. Lorenzo* (Madagascar).
91. CR, I: 75. N. 1566. 0,584 x 0,421. — *Asia Minor. Opera dell' Eccmo M. Giaco Castaldo Piemontese. In Venetia Appresso Gio. Franc. Camotio 1566.*
92. CR, I: 76. 1570. 0,44 x 0,33. — *Il vero disegno della Natolia e Carmania . . . di Giacomo Gastaldo Cosmographo. Venetiis MDLXX. Bolognini Zalterii formis.* Probably another edition of the last map.
93. CR, III: 78. N. 1561. 0,735 x 0,428. — *La discriptione della prima parte dell' Asia, con i nomi antichi e moderni di Jacopo Gastaldi Piemontese Cosmografo . . . Restituta da Antonio Lafreri. L'anno MDLXI. Jacobus Bossius Belga incidit.* Two years previously the same map was engraved by FABIVS LICINIUS (comp. CR, II: 66).
94. CR, I: 78. 1566. 0,33 x 0,26. — *Syria and Palestine; In Venetia l'Anno MDLXVI.*
95. CR, I: 79. N. s. a. 0,504 x 0,256. — *Tabula Moderna Terrae Sanctae.*
96. CR, I: 80. N. s. a. 0,535 x 0,382. — *Palestinae sive Terrae Sanctae descriptio. Romae apud Joannem Franciscum vulgo Della Gatta.*
[N. 1564. — A printed folio leaf: *Nomi antichi et moderni della prima parte dell' Asia . . . di Giacomo de Gastaldi, Piemontese Cosmografo.* (Colophon:) *In Venetia 1564.*]
97. CR, I: 81. N. 1561. 0,748 x 0,473. — *Il disegno della seconda parte dell' Asia.* Dedicated all illmo sig:or Marcho fucharo, Barone di Kirchberg e d'Waissenhoven by Giac. di Castaldi in Venetia 1561.
[N. 1564. — A folio leaf: *I nomi antichi e moderni della seconda parte dell' Asia . . . di Giacomo di Castaldi . . . in Venetia 1564.*]
98. CR, I: 82. N. 1561. 0,733 x 0,632. — *Il disegno della terza parte dell' Asia.* On the right side a larger field with the superscription: *I nomi antichi e moderni della terza parte dell' Asia per me Giacomo di Castaldi . . . in Venetia 1561;* farther down: *Fabius Licinius excudebat.* In the north-eastern corner of the map is written *Ania Pro.* As far as I know, it is the first time this name, which was afterwards transferred to the strait between Asia and America (*Fretum Anian,* comp. fig. 81), occurs in cartographical literature.
99. CR, I: 83. N. s. a. 0,263 x 0,202. — *Taprobana.*
100. N. 1566. 0,243 x 0,175 and
101. N. 1566. 0,245 x 0,170. — Two maps engraved on the same plate; the former, representing *l'Isola Cuba,* is signed *F. B.;* the latter *l'Isola Spagnola . . . in Venetia l'ano 1566. Ferando Berteli exc.*

102. CR, I: 84. N. s. a. 0,505 X 0,365. — *La descrizione di tutto il Peru* (South America). Dedicated to GIO. PIETRO CONTARINI by PAULO DI FORLANI. A fac-simile on a reduced scale is given by me, fig. 80.
103. CR, I: 86. N. 1566. — *Il disegno del discoperto della Nova Franza ... Venetiis aeneis formis Bolognini Zalterii. Anno MDLXVI.* An interesting map of North America. (N. fig. 81).
104. CR, I: 86. N. s. a. 0,417 X 0,375. — *Victoria di Chatolici contra Hugonoti.* Plan of a battle delivered in the vicinity of La Rochelle between Papists and Hugenots, *il settimo giorno di quest' anno 1569*.
105. CR, I: 87. 1567. 0,26 X 0,19. — Paris. *In Venetia l' Anno MDLXVII.*
106. CR, I: 90. s. a. 0,38 X 0,18. — Jerusalem.
107. CR, I: 101. s. a. 0,50 X 0,36. — Augsburg.
108. CR, I: 102. s. a. 0,19 X 0,25. — Mirandola.
109. CR, I: 102 A. 1567. 0,18 X 0,25. — Parma. *Nell' anno del Signore MDLXVII.*

117. CR, I: 112. 1567. 0,54 X 0,41. — Messina. The dedication signed: *1567 per Antonio Lafreri.*
118. CR, I: 116. s. a. 0,41 X 0,28. — *Disegno de' porti e forti del Isola de Malta.*
119. CR, II: 100. N. 1565. 0,514 X 0,372. — *Disegno dell' Isola di Malta. In Roma per Antonio Lafreri nel anno 1565.*
120. CR, II: 98. N. 0,383 X 0,278. — *Il vero ritratto di Nettuno.*
121. N. 0,463 X 0,245. — *El Pignon ... Apresso Gio. Francesco Camotio Domenico Zenoi.*

Nos. 1—121 comprise all the maps as well in the first volume of Collegio Romano's as in my copy of Lafreri's Atlas. In the library of the Collegio Romano there are further two other volumes belonging to the same collection. These consist, according to the catalogue of Castellani, partly of some of the above recorded maps, here bound not in the first but in the second or third volume, partly of new editions of the



77. Moscovia by HERBERSTEIN, copper-engraving by HIRSCHVOGEL 1549. (Orig. size 261 X 164 m. m.).

110. CR, I: 103. s. a. 0,72 X 0,44. — Venice. *Ex aeneis formis Bolognini Zalterii.*
111. CR, I: 104. 1569. 0,70 X 0,42. — Ancona. Dedicated by GIACOMO FONTANA to the duke of Urbino; *Ancona a di 3 di Marzo 1569.*
112. CR, I: 105. 1561. 0,54 X 0,40. — Rome. The dedication signed: BARTOLOMEUS PHALETIUS, *Romae Calendis Ianuarii MDLXI. Sebastianus a Regibus Clodiensis in aere incidebat.*
113. CR, I: 106. N. 1557. 0,465 X 0,346. — *Urb. Romae topographia ... public. impen. fieri curavit Paul III pont. max. dum bello parthenop. premeretur An. MDLXII. Sebastianus a Regibus Clodiensis in aere incidebat.*
114. CR, I: 107. N. 1557. 0,388 X 0,255. — *Il vero disegno del sito di Hostia e di Porto ... MDLVII.*
115. CR, I: 111. 1566. 0,55 X 0,38. — Naples; *Ant. Lafrerii formis Romae MDLXVI.*
116. N. s. a. 0,430 X 0,295. — *Il vero disegno in sui proprio luogo ritratto del infelice paese di Posuolo.* The environs of Naples with Monte Nuovo.

maps in the first volume, and of new impressions from the old plates, but with altered dates and sometimes also with altered names of the editor and engraver, and finally of the following maps not before mentioned:

122. CR, II: 42. 1567. 0,39 X 0,34. — Piedmont; *per Paolo Furlani, MDLXVII.*
123. CR, II: 65. s. a. 0,55 X 0,44. — Cyprus with the opposite shores of Egypt and Asia minor.
124. CR, II: 104. s. a. 0,45 X 0,30. — Constantinople.
125. CR, III: 3. 1546. 0,64 X 0,38. — *Universale.* A planisphere by Giacomo Cosmographo in Venetia MDXXXXVI. Probably an older edition of No. 4, and one of Gastaldi's first works.
126. CR, III: 14. 1559. 0,53 X 0,39. — *Nova totius Hispaniae descriptio. Pyrrho Ligorio Neap. Auctore Romae MDLVIII. Michaelis Tramezzini formis ... Sebastianus de Regibus Clodiensis in aere excidebat.*

127. CR, III: 16. 1561. 0,66 × 0,35. — Map of Portugal by ACHILLE STAZIO, dedicated to the cardinal GUIDO ASCANIO SFORZA; *Romae... MDLXI. Michaelis Tramesini formis. Sebastianus a Regibus Clodiensis in aere incidebat.*
128. CR, III: 22. 1563. 0,59 × 0,43. — Switzerland; *Venetis Anno MDLXIII. Paulus de Furlanis Veronensis fecit.* Dedicated to JODOCUS A MEGGEN. Probably a new edition of the map No. 23.
129. CR, III: 27. 1559. 0,49 × 0,41. — Flanders; *Venetis MDLVIII.*
130. CR, III: 32. 1558. 0,52 × 0,38. — Chart of the seas surrounding Scandinavia; *Michaelis Tramesini formis MDLVIII. Jac. Bossius Belga in aere incidebat.* Probably a new edition of No. 32.
131. CR, III: 33. 1561. 0,48 × 0,37. — Belgium; *MDLXI.*
132. CR, III: 35. 1552. 0,35 × 0,25. — Germania; *Opera di Jacopo di Gastaldi. In Venetia 1552. Appresso Gabriel Giolito al segno della Fenice.* An edition of Gastaldi's Germania older than No. 40.
133. CR, III: 37. s. a. 0,50 × 0,38. — *Tabula Moderna Poloniae, Ungariae, Boemiae, Germaniae, Russiae, Lithuaniae. Ant. Sa(lomon) exc.*
134. CR, III: 45. 1563. 0,66 × 0,40. — Friaul; *Per Pyrrho Ligorio Napolitano... In Roma del MDLXIII, con le forme di M. Michele Tramezzino. Sebastiano di re da Chioggia intagliava in rame.*
135. CR, III: 47. 1567. 0,48 × 0,34. — Piedmont. Dedicated by PAOLO FURLANI to ANDREA DEGLI OREFICI, *di Venetia, l'Anno MDLXVII.*
136. CR, III: 54. s. a. 0,55 × 0,37. — *Sacra Tuscia.*
137. CR, III: 55. s. a. 0,24 × 0,32. — The Papal states.
138. CR, III: 57. 1558. 0,69 × 0,44. — *Nova regni Neapolit. Descriptio... Pyrrho Ligorio Neap. auctore. Romae MDLVIII. Michaelis Tramesini formis, Sebastianus a Regibus Clodiensis in aere incidebat.*
139. CR, III: 63. 1545. 0,53 × 0,37. — Sicily; *Per Giacomo Gastaldo Piemontese Cosmographo in Venetia 1545.*
140. CR, III: 72. 1566. 0,40 × 0,26. — Cyprus; *Expensis Io. Fr. Camotii... Venetiis ad Signum Pyramidis MDLXVI.*
141. CR, III: 89. s. a. 0,35 × 0,24. — Chart of the Atlantic Ocean from the western coast of Africa and the British islands to Brasil and Canada. Dedicated by FER. BERTELI to MARCO DEL SOLE.
142. CR, III: 114. 1555. 0,94 × 0,52. — Roma; *Ex typis et diligentia Ant. Lafreri. Jac. Bossius Belga in aere incidebat.*¹

The total number of maps in the above catalogue is 142. 87 of them are dated, viz.

Printed before 1556.....	3.
» 1556—1560.....	21.
» 1561—1565.....	27.
» 1566—1572.....	36.

The maps in Lafreri's atlas are consequently, with few exceptions, printed or dated between 1556 and 1572. The most important of them are of GASTALDI. Others are drawn by PYRRHUS LIGORIUS, ANTONIUS SALAMANCA, JACOBUS DAVENTERIUS, PIETRO COPPO, MARCUS ROTA SEBENZAN, GEORGIUS TILMAN, GIACOMO FONTANA, ACHILLES STAZIO, BARTOLOMEUS PHALETIUS, JOHANNES FRANCISCUS, ANTONIUS FLORIANUS, and DOMINICUS ZENOL. The most prolific engravers have been FERRANDO BERTELLI, PAOLO FORLANI, ANTONIO LAFRERI, SEBASTIANUS A REGIBUS CLODIENSIS, JACOBUS BOSSIUS, FABIVS LICINIUS, and FABIA LICINIA. Forlani and Lafreri were also publishers and dealers of maps, and judging from the expressions »*apud*» or »*ex aereis formis*», we may even be permitted to consider as such JOANNES FRANCISCUS CAMOTIUS, MICHAEL TRAMEZINI, CLAUDIUS DUCHETUS, VINCENTIUS LUCHINI, and BOLOGNINUS ZALTERIUS.

The maps are all printed from copper-engravings, and many, from this point of view, are real masterpieces. Several

¹ One map in the copy of Collegio Romano (II: 1) Viterbo, »*Tarquinio Ligustri Viterb. fecit 1596*», is here omitted, because it evidently has been inserted in the collection without originally having belonged to it.

² What a prominent place the art of map-drawing and the map industry occupied in Italy in the middle of the 16th century is evident e. g. from the fact that there is in the *Catalogue of Printed Maps* of the British Museum, under the subsection *General Maps*, to be found from the period between 1550 and 1570, six maps of France, six of Italy, six of Britain, seven of Germania, four of Spain, four of Poland, six of Greece, three of Ireland, all engraved in copper and printed in Italy (Rome and Venice); whereas this catalogue does not, from the same time, contain one single general map of these countries printed to the north of the Alps.

³ Comp. *Peter und Philip Apian, zwei deutsche Mathematiker u. Kartographen* von Dr. SIEGMUND GÜNTHER (*Abhandl. der Königl. Böhm. Gesellschaft der Wissenschaften*, VI Folge, Bd. 11) Prag 1882.

of them, especially maps of the Mediterranean countries, were copied by Ortelius. Of the maps in Lafreri's atlas the following have been here reproduced, generally on a reduced scale: No. 1 (fig. 32); No. 2 (fig. 48); No. 4 (fig. 53); No. 9 (fig. 54); No. 15 (fig. 78); No. 32 (fig. 25); No. 34 (fig. 79); No. 102 (fig. 80) and No. 103 (fig. 81).

The reason why I have occupied myself so fully with Lafreri's collection of maps is, that Italy, through the maps from different parts of that country, which were saved from destruction by this collection, contributed to the development of cartography in a degree as yet almost entirely overlooked. This entitled Italian cartographers, for a short time, again to occupy the foremost place in that science or art, the aim of which is to give us a cartographical representation of the earth's surface.² The most prominent cartographer or, as he was generally styled, cosmographer of this period in Italy, and indeed in the whole world, was no doubt JACOPO GASTALDI or CASTALDI. Unfortunately I have not been able, in the literature accessible to me, to find any other date relating to his biography than that he was born at Villa Franca in Piedmont, and that he lived in Venice, where the main part of his cartographical work was published. A memoir: *Notizie di Jacopo Gastaldi, cartografo Piemontese del secolo XVI*, by BARONE MANNO and CAV. VINCENZO PROMIS, inserted in *Atti della R. Accademia delle Scienze di Torino*, Vol. 16 (1881), contains only an incomplete enumeration of his works, without any other contribution to his biography than the mentioning of his birth-place. It is to be hoped that further investigations among the archives and libraries of Piedmont and Venice may bring to light at least a few data concerning the life of this geographer, one of the most productive and prominent of the sixteenth century and fully deserving the epithet: *eccellentissimo cosmografo Piemontese*, by which he was generally designated by contemporary authors. His later works are not only equal to the maps in the first edition of *Theatrum Orbis terrarum* but often superior, as well as regards originality as execution. It would be unjust not to cite his name in the history of cartography, together with those of Ortelius and Gerard Mercator, among the promoters of the great reform in cartography accomplished in the latter part of the 16th century.

Among the reformers of cartography PHILIP APIANUS, a son of PETRUS APIANUS or BIENEWITZ, also occupies a prominent place.³ He was born in 1531 and died in 1580. In 1552 he had already been nominated successor to his illustrious father in the mathematical professor's chair, at the university of Ingolstadt. In 1554 the construction of a modern map of Bavaria was entrusted to him, and he applied himself to this work with such energy that in 1561 he had already finished the measurements and triangulation on which the new map was to be based. Its first edition was published at Munich in 1566; the second at Ingolstadt in 1568. The title (of the edit. 1568) is: *Bairische Landtafeln XXIII Darinnen das Hochlöblich Fürstenthumb Obern und Nidern Bayrn, sambt der Obern Pfaltz, Ertz und Stifft Saltzburg, Eichstet und andern mehrern anstossenden Herschafften mit vleiss beschriben und in druck gegeben Durch Ph. Apianum.* My copy contains, besides 24 special maps printed on 22 double folio-leaves and mentioned on the title-page, a general map: »*Ein klaine*

Landtafel des Lands Oberrn und Niderrn Bayern, surrounded by a border formed of the coats of arms of the most important towns etc. of Bavaria, and divided into 24 rectangles or squares each corresponding to one of the special maps. According to GÜNTHER a reprint of the Bairische Landtafel was published in the 17th century, and a new edition with maps engraved in copper was published at Berlin in 1766. In 1802 and 1881, some new copies were drawn from the old blocks, which are yet preserved at Munich, and are remarkable as being provided with stereotyped legends.¹ The Bairische Landtafel are of coarse execution, and are disfigured by ornaments (coats of arms etc.) which are out of proportion and are foreign to cartography. They are, in technical respects, by no means to be compared with the above mentioned Italian copper-

	Ph. Apianus. Lat. Long.	The true position. ² Lat. Long.
Nuremberg	49° 27' 31" 41'	49° 28' 31" 45'
Regensburg	48° 57' 32" 45'	49° 1' 32" 47'
Ingolstadt	48° 42' 32" 6'	48° 45' 32" 7'
Augsburg	48° 18' 31" 36'	48° 21' 31" 35'
Munich	48° 1' 32" 16'	48° 8' 32" 16'
Salzburg	47° 42' 33" 47'	47° 48' 33" 43'
Passau	48° 28' 34" 10'	48° 34' 34" 7'

This table shows that the latitudes of APIANUS are affected by a constant error of about 4'. The corresponding error in the longitudes is included in the difference of 21° 41' which I have adopted between the first meridian of Apianus and Greenwich. With due regard to this correction and reduction, the agreement between the true positions and the positions given by Apianus is as complete as possible, without



78. Map of Britain 1558. From LAFRERI'S atlas. (Orig. size 541 X 398 m. m.)

engravings. But as to the correctness of the relative positions of the towns, rivers, mountains etc., the maps of Philip Apianus, based as they are on real triangulation, cannot be too highly appreciated. In this respect they are far more accurate than any similar previous or contemporary work, perhaps with the exception of Mercator's map of Flanders, which I have not had an opportunity of examining.

The following comparison between the astronomical positions of the places on his *Bairische Landtafel* and their true positions, will show that I do not exaggerate the merit of PHILIP APIANUS in this respect.

¹ According to GÜNTHER, who considers this to be the first instance of the employment of stereotype.
² According to *Philips' Imperial Library atlas*. In order to facilitate a comparison between the true longitudes and the longitudes of Apianus, the former are increased by 21° 41', corresponding to the difference between Greenwich and the point of departure of Ph. Apianus. Ferro is situated 18° 10' W. from Greenwich.
³ In order to refer the longitudes to the same point of departure I have here increased the numbers given in Philips' Atlas by 22° 49'.

stating the exact point in the town, to which the geographical coordinates are referable.

In order to show the enormous progress introduced by the map of Apianus I here give a table of latitudes and longitudes adopted for Italy by Gastaldi in his above (p. 120) mentioned: *Nomi antichi et moderni della Italia*, inserted in Lafreri's atlas.

	Gastaldi. Lat. Long.	The true position. ³ Lat. Long.
Milan	45° 58' 30" 35'	45° 27' 32" 0'
Trieste	45° 37' 35" 50'	45° 38' 36" 37'
Venice	45° 0' 34" 0'	45° 30' 35" 13'

	Gastaldi		The true position.	
	Lat.	Long.	Lat.	Long.
Bologna.....	43° 34'	33° 36'	44° 30'	34° 40'
Ancona.....	43° 12'	37° 0'	43° 37'	36° 20'
Genoa.....	42° 40'	30° 56'	44° 25'	31° 44'
Nice.....	42° 18'	28° 25'	43° 41'	30° 4'
Rome.....	41° 12'	36° 30'	41° 54'	35° 22'
Naples.....	40° 37'	38° 5'	40° 50'	37° 4'
Messina.....	37° 48'	40° 12'	38° 11'	38° 23'
Palermo.....	37° 18'	37° 20'	38° 6'	36° 10'
Syracuse.....	36° 19'	40° 4'	37° 3'	37° 55'

These tables prove that the geographical coordinates of Apianus are far more exact than those of Gastaldi, which no doubt principally depends on the fact that whilst the map of Apianus is based on trigonometrical surveys, the map of the sea-encircled Italy is founded on portolanos and on compass-bearings taken, perhaps, during the 13th or 14th century, before the variation of the compass was known. Furthermore, a comparison between the maps of Ph. Apianus, the best of the early German cartographers, and of Gastaldi, the most prominent Italian cosmographer from the same time, shows, that if the Italians, in the middle of the 16th century, were still foremost in the art of drawing and engraving maps, the art of constructing them on mathematical principles and by the aid of astronomical observations had already been transferred to the countries to the north of the Alps. It was not long, either, before the cosmographers from these countries were able, as regards technical execution, to compete with copper-engravers in the native country of the art. From that time the most prominent and productive cartographers are no longer found in Venice, or Rome, but in the Netherlands, France, Germany, and England, to which countries the whole industry of cartography was soon transferred. This change was connected with a complete reform in the science. The period of incubation, characterized by a slavish following of the old doctrines and types of Ptolemy, was closed, and a new period succeeded, which was characterized by the effort to found the knowledge of the lands and seas of the earth, not on commentaries of the writings of more or less classical authors, but on new and careful investigations, based if possible on topographical surveys and astronomical observations. The reform had been prepared by Gastaldi and Ph. Apianus, but it was first accomplished by ORTELIUS and GERARD MERCATOR. As the history of the early period of cartography would be incomplete and difficult to understand without a comparison with the time immediately succeeding it, I shall yet here give a brief sketch of the significance of the work of the last mentioned eminent cartographers, and of their relation to the preceding period, from which the main parts of the material they employed were borrowed.

ABRAHAM ORTELIUS OF ORTEL (ORTELS), was born at Antwerp in 1527, and he died at that place in 1598.¹ In his youth he seems to have established himself as a map-dealer in his native city. In 1547 he became a member of a guild in Antwerp, as a colourist of maps, and several years later he still, according to a very remarkable letter from JOHANNES RADERMACHER to JACOB COOL (HESSELS, p. 772), contributed to the support of his family by purchasing the best maps he could get hold of, pasting them on canvas, colouring them, and then selling them either in his own country or abroad. In connection with this business he seems to have undertaken

¹ For the biography and bibliography of Ortelius we have, besides various older sources, a recently published work of great value to the whole history of the geography during the 16th century, viz: *Ecclesiae Londinae-Batavae Archivum. Tomus primus: Abrahami Ortelii (Geographi Antverpensis) et virorum eruditorum ad eundem et ad Jacobum Colium Ortelianum (Abrahami Ortelii sororis filium) epistulae, cum aliquot aliis epistulis et tractatibus quibusdam ab utroque collectis (1524—1628). Ex autographis mandante Ecclesia Londina-Batava edidit JOANNES HENRICUS HESSELS, Cantabrigiae 1887.* The biographical data which I have given here are borrowed from this work.

repeated voyages to different countries, and by it he acquired an extensive knowledge of the existing map-literature. Whole map-collections were united occasionally into a volume, and new editions of rarer maps were published. Finally the results of his labours were embodied in his great systematic collection of maps under the title of *Theatrum orbis terrarum*.

The first edition was published at Antwerp in 1570, with 53 plates in double folio. A second edition left the press in the same year, and then edition followed rapidly on edition until 1612, when the last one was published. It contained 128 modern maps + 38 ancient or historical maps collected in a separate appendix: *Parergon sive veteris Geographiae aliquot tabulae*. For a more particular description of the different editions, and the many additions, at first printed separately, and afterwards incorporated in the main work, I may refer to: P. A. TIELE, *Bibliographische Adversaria*, Haag 1876, to the *Nederlandsche Bibliographie van Land- en Volkenkunde*, as well as to HESSELS' above cited work.

In 1573 Ortelius was nominated Geographus Regius by Philip II. Before 1570 he had already published maps, e. g. *Typus Orbis Terrarum*, sold separately already about 1560 and later inserted as the first map into the *Theatrum*; a map of Egypt no longer extant; a map of Asia published in 1567 *in majori tabula*, according to the text on the first page of *Asiae nova descriptio* in the *Theatrum* of 1570. Among maps now extant the *Typus Orbis terrarum* seems to be his first work. I have given a full size fac-simile of it on tab. XLVI. Most of the maps in the *Parergon* were, according to the title-vignettes, constructed by Ortelius himself, whereas the modern maps in the *Theatrum* are almost always copies of the works of other cartographers whose names are given.

Ortelius was thus an enterprising dealer in maps, a zealous collector, and an intelligent publisher, but with the exception of the above named map of the world and of a few other works, he was neither an author of modern maps nor a map-draughtsman or map-engraver. He never seems to have executed any topographical survey; nor did he contribute to the development of science by the introduction of any new projections, or by setting his own hands to the engraving of maps. The great influence he exercised and the great fame he acquired depend on the fact that he was the first who collected all the map-material accessible, and employed it with great discernment and skill for a systematical collection of maps, by which Ptolemy's classical work was definitively supplanted in modern literature.

Ortelius is, moreover, entitled to great praise for giving the author's name on almost every map he copied. His *Theatrum* is thus, to this very day, of immense importance in the history of geography, as a collection of geographical documents, by which many a map, otherwise entirely lost, has been saved. In the first edition of the *Theatrum* he gives a valuable contribution of his own to the history of cartographical literature by inserting in the introduction a catalogue of all the maps that the indefatigable collector had been able to accumulate. As this catalogue gives a faithful, though by no means complete idea of the maps most extensively in circulation in central Europe before 1570, I shall here reproduce it together with a few illustrative remarks, which, however, the want of space and of time for necessary researches have prevented me from making so complete as the importance of the subject merits.

Catalogus Auctorum

tabularum geographicarum, quotquot ad nostram cognitionem hactenus pervenire; quibus addidimus, ubi locorum, quando, et a quibus excusi sunt.¹

Ægidius Bulionius Belga, *Galliam Belgicam descripsit; quam edidit Antverpiæ Joannes Liefrinck; et Sabaudiam cum Burgundie Comitatu, evulgatam apud Hieronymum Cock, Antverpiæ.*—Of the last mentioned map two editions s. l. et a. are preserved at the Bibliothèque nationale in Paris. It is reproduced by ORTELIUS in *Theatrum Orbis Terrarum*, edit. 1570, Tab. 12.

Ægidius Tschudus, Rhetiam, Helvetiamque; Basilee apud Isingrinum.—Reproduced by SEB. MÜNSTER in several of his geographical works;

As cartographer of Switzerland Tschudi had a predecessor in CONRAD TÜRST of Zürich, who, as early as in 1496, delineated a map of this country, which for its time was very meritorious, and which was printed as woodcut in the editions of Ptolemy of 1513 and 1520. Tschudi was born in 1505 and died in 1571 (JÖCHER).

[Andreas Pagradus Pilsniensis, Sarmatiae Europaeae partem, quae subiacet Sigismundo Poloniae Regi; Venetiis 1569.]—In a letter to Ortelius



79. The north-eastern Europe by JACOPO GASTALDI, Venetia 1568. From LAFRERI'S atlas. (Orig. size 517 X 373 m. m.)

by ORTELIUS 1570, 31, and by QUAD in *Geogr. Handbuch*, 1600, 12. GESNER (*Bibliotheca Universalis*, Tiguri 1545, fol. 5) mentions with much praise Tschudi's description and map of Switzerland. The description was, according to Gesner, originally written in German. Later it was translated into Latin by Seb. Münster, and published at Basel in 1538 with the map on nine leaves. An edition of this map, published at Basel MDLX by MICHAEL ISINGRINIUS, was reproduced by photolithography at Zürich in 1883, by Hoefler & Burger.

by NICOLAUS SECOVIUS, *egues Polonus* (HESSELS, *Ortelii Epistula*, p. 217) the name is corrected to POGRABIUS. This important map of the region between the Oder and Dnieper, from 47° 50' to 56° latit., was published at Venice in 1570, *Nicolai Nelli aereis formis*. In the upper corner of it is engraved: *Partis Sarmatiae Europaeae, quae Sigismundo Augusto Regi Poloniae potentissimo subiacet, nova descriptio*. In the lower corner is a long dedication: *Generoso domino Nicolao Tomicio... Domini Joannis de Tomice, Castellani Gnesnen, filio Andrea Pograbijs Pilsnensis S. P. D. In*

¹ According to the edition Antverpiæ 1570. I have given, in brackets, the names of a few authors of maps previous to 1570, added to the *Catalogus* in later editions. The success of the *Theatrum* led to several other similar publications at the end of the 16th century, such as Mercator's *Atlas*, the publication of which had been planned almost simultaneously with the work of Ortelius, though its first edition did not appear before 1595, and the *Speculum Orbis Terrarum*, Antverpiæ 1578, of Gerard de Judaeis, containing 38 maps in folio, drawn (or copied) by GER. DE JUDAEIS and engraved partly by him partly by JOA. and LUC. A DEUTECUM. I have only seen the second edition of this rare work, *Speculum Orbis terrae, Antverpiæ, Sumptibus viduae et heredum Gerardi de Judaeis 1593*, published after Gerard's death by his son CORNELIUS DE JUDAEIS. The number of maps is here augmented to 84, of which 33 are in the first and 51 in the second volume. The maps resemble those in the *Theatrum*. De Judaeis generally gives the names of the authors of the maps, and owing to this circumstance his *Speculum Orbis terrae* has obtained a lasting place in cartographical literature. As an example of the maps of de Judaeis a fac-simile of pl. 2 in his work is given on T. XLVIII.

Among the smaller atlases MATTHIAS QUAD'S *Geographisch Handbuch*, Cöln 1600 (a Latin edition: *Fasciculus Geographicus*, Cöln am Rein 1608) deserves to be mentioned, because even here the names of the authors of the maps are given, and because it contains reproductions of some few maps, the originals of which appear to be lost. On pl. XLIX one of Quad's maps is given in fac-simile.

chorographiis, quas Venetiis editas vidi, Generose Tomici, non rectam Poloniae, nostrae patriae, descriptionem animadverti etc. . . Patavii 1569. The map is remarkable for its richness in topographical details and for accuracy in the spelling of the names. Its size is 0,693 X 0,476. The map 98 of the edition of the *Theatrum* of 1595 is partly based on the work of Pograbius.

Andreas Thevetus, *Galliam* [Parisii 1578. *Ibidem idem quoque Orbem terrarum, sub lili formam.*] — In *Cosmographie universelle* d'ANDRÉ THEVET, *Cosmographie du Roy*, Paris 1575, there are maps of Africa, Asia, Europe, and America, but none of France. Nor is there any map of France by Thevet cited in the *British Museum Catalogue of Printed Maps*. He was born in 1502 and died in 1590.

Antonius Jenkinsonus, *Russiam*; Londini 1562. — ORTELIUS 1570, 46; DE JUDAEIS, *Speculum Orbis Terrae*, Antverpiae 1593, II: 9.

Antonius Wied, *Moscoviam*; Antverpia. — Anton Wied's *Moscovia*, dated: *ex Wilda Lithauia 1555*, but engraved in 1570, is reproduced in fac-simile by Dr. H. MICHOW, *Die ältesten Karten von Russland*, Hamburg 1884. Also in the *Catalogue of Brit. Mus.*

Augustinus Hirsvogel, *Regionum hactenus non visarum (uti titulus habet) Tabulam* edidit; continet vero *Slavoniam, Carinthiam, Styriam, Goritziam, etc. vicinasque regiones; Nurembergae apud Joannem Weygel.* — Slavonia, Carinthia etc. reproduced by ORTELIUS 1570, 41; Oesterreich ober Enns: DE JUDAEIS II, 16; Illyricum seu Slavonia: DE JUDAEIS II, 17. Hirsvogel was a celebrated copper-engraver and painter in glass and enamel at Nuremberg. He also occupied himself with mathematical and cartographical works. Among others he contributed several engravings to Herberstein's *Moscovia* (comp. p. 113 and fig. 77). † 1560. (DOPPELMAYER, *Nachricht von den nürnbergischen Mathematicis und Künstlern*, p. 156 and 199.)

Augustinus Justinianus, *Nebia Espisc. Corsicae descriptionem in Tabulam redegit, ut ipsemet inquit in sua Historia Genuensi.* — A map based on the description of Justinianus was published in the work cited below of LEANDRO ALBERTI and in QUAD's atlas (the map 64 is signed: *Leander Albertus ex commentariis Augustini Justiniani*). Aug. Justinianus published: *Psalterium Hebraeum, Graecum, Arabicum et Chaldeum*, Genua 1516, celebrated for an interesting annotation about Columbus and his family, inserted at the Psalm XIX. Justinianus was born at Genoa in 1470 and died in 1536 (JÖCHER).

Bartholemaeus Scultetus, *Misnia et Lusatia Chorographiam; Goritzii, anno 1569.* — Misnia: ORTELIUS 1573, 29; DE JUDAEIS, II: 29; QUAD 20; Lusatia: BLAEU, *Geographia Blaviana*, Amsterdam 1662, III s. 121. Four maps of Bartholemaeus Scultetus are mentioned in the *Brit. Mus. Cat. of Printed Maps*, p. 3739. Scultetus died in 1614 (JÖCHER).

Benedictus Bordonius, *Italiae Tabulam; uti habet Leander in sua Italiae descriptione.* — I have above (p. 104) mentioned the maps in Bordonius's *Isolario*, but I have not seen any other cartographical works by him.

[**Bernardus Brognolus**, *Veronens. Territorium evulgavit; Venetiis 1564.* — ORTELIUS 1584, 66.]

Bernardus Sylvanus, *cuius Galliam, et Italiam, citat Robertus Caenalis in Gallica sua historia.* — The maps of Gallia and Italia cited by Caenalis are probably nothing but the slightly modernized classical maps which Sylvanus published in his edition of Ptolemy, Venetiis 1511. A general map of the world by Sylvanus is reproduced N. T. XXXIII.

Bonaventura Brochardus, *Palistinam; Parisiis, apud Poncetum le Preux.* — Bonaventura Brochard was a French monk of the beginning of the 16th century. He wrote an account of a journey to Sinai and Jerusalem.

Bonaventura Castilioneus, *Longobardiam; auctor Joannes Antonius Castilioneus, in libello qui de Insubrum antiquis sedibus inscribitur.* — Bonaventura Castilioneus was a canon at Milano living near the middle of the 16th century. The work here cited was published, contrary to his wish, by his kinsman ANTONIUS. I have not had access to the original edition, which was printed in 1541 in quarto under the title of: *De Gallorum Insubrium antiquis sedibus, Mediolani apud Io. Antonium Castilioneum*. There is a later edition at the Royal Library of Stockholm, Bergami 1593, but without map.

Carolus Heydanus, *Germania Typum; Antverpia apud Hieronymum Cock.*

Carolus Clusius A., *Hispaniam; antiquis ac recentibus locorum in ea nominibus inscriptam; quam nos propediem edituri sumus.* — Carolus Clusius or Charles Lescluse was a celebrated botanist, born in 1525, † 1609. His map of Spain is not inserted in the *Theatrum*, but on T. 12, ed. 1570, Ortelius reproduces his map of *Gallia Narbonensis*.

Caspar Vopellius Medebach, *Descriptionem Orbis terrarum; Item Europae totius; ac Rheni tractum; omnia Colonia.* — I have reproduced a globe of Vopel on T. XL (comp. p. 82). An enormous cordiform map of the same geographer is preserved in the Hauslab Collection at Vienna. In a letter to Ortelius (HESSELS, p. 43) Vopel is blamed by POSTELL, because he makes North America communicate with Asia. A copy of his large map of Europe on 10 sheets is preserved in the Bibliothèque Nationale at Paris; it is printed at Antwerp by *Bernart van den Putte Figuersnyder 1566*.

Caspar Bruschius Egranus, *Montis Piniferi (quem Fiechtelberg vulgo nuncupant) Tabulam; Ulmae apud Sebastianum Francum.* — Caspar Bruschi, *Comes Palatinus* and *Poeta laureatus*, was born at Schlackenwald in Bohemia in 1518, † 1559. The map mentioned here was probably intended for his description of Fichtelgebirge. I have not seen the original edition. In an edition of 1663, in the Royal Library at Stockholm, the map is wanting.

Christianus Schrot Sonsbekensis, *Gelriam cum Clivia, vicinasque Regiones, Antuerpia apud Bernardum Puteanum; Eandem tabulam idem recognovit, edique curavit per Hieronymum Cock, Antuerpia; Descripsit quoque universam Germaniam, quam idem Cock prelo excudit.* — Geldria et Clivia etc.: ORTELIUS 1570, 15; Terra Sancta: ORTELIUS 1584, 97; Saxonia: DE JUDAEIS, II: 8; Tractus Danubii: DE JUDAEIS, II: 27 et 28; Westphalia: ORTELIUS 1584, 46.

Christophorus Zellius, *Europae Typum; Nurembergae.* — According to Doppelmayer (p. 143 and 207) sein *Formschneider aus Nürnberg*. He published maps of Europe, Prussia etc., † c. 1590.

Christophorus Pyramius, *Germaniae Tabulam; Bruxellis Brabantiae.* — In the edition of 1595 is written that this map was printed *Bruxellis Brabantiae 1548*.

Cornelius Antonij, *Regionum Orientalium Tabulam (uti titulus habet) Continet autem Daniae Regnum, et circumiacentes Regiones, Excusam Amstelrodami. Idem descripsit Europam, editam Francofurti ad Moenum.* — Daniae regni typus: ORTELIUS 1584, 44. Cornelis Antoniszoon published in 1544 a large wood-cut map of Amsterdam. Compare *Geschiedenis van Amsterdam* door J. TER GOUV, V, Amst. 1886, and C. G. BRUUN, *Cornelius Antoniadis Kaart over Danmark* (Geogr. Tidskr. Khvn 1888, p. 148).

Diegus Gutierus, *Americam; Antuerpia apud Hieronymum Cock.* — *British Mus. Catal. of printed maps*, p. 1704. The map is dated 1562. The name is here written DIEGO GUTIEREZ. Concerning the two Spanish cosmographers of this name, see: HARRISSE, *Cabot*, p. 231.

Dominicus Machaneus, *Benaci lacus Chorographiam; a Leandro Alberto citatam legimus.* — Domin. Macaneus' *Verbani Lacus Chorographica descriptio*, inserted in *Thesaurus antiquitatum et historiarum Italiae*, IX: 7, Lugduni Batavorum 1723, does not contain any maps. Machaneus died in 1530 (JÖCHER). A map of the Garda lake (Lacus Benacus), possibly a reproduction of the map of Machaneus, is inserted in *Georgii Jodoci Bergani Benacus* . . . Verona apud Antonium Puteolum 1546.

Erhardus Reych Tyrolensis, *Palatinatus Bavariae tractum; Nurembergae 1540.* — The original map, which I have not seen, is mentioned in the *Beiträge zur Landeskunde Bayerns*, München 1884, p. 84. It is reproduced by ORTELIUS 1570, 30, and by DE JUDAEIS, II: 26.

Ferdinandus à Lannoy, *Burgundiae Comitatus Tabulam; apud Hieronymum Cock, Antuerpia. Sed nondum edita est.* — Lannoy's map is published by ORTELIUS (1579, 23) and according to information in the edit. 1595 of his *Theatrum*, it seems not to have been published separately.

Fernandus Aluares Zeccus, *Lusitaniam; Roma, apud Michaelē Tramezzinum 1560.* — ORTELIUS 1570, 8.; the map is dated: Roma 1560. Portugallia: QUAD 56; BLAEU, IX, p. 92.

Florianus, *Tabulam Sarmatiae, Regna Poloniae et Hungariae utriusque Valachiae; nec non Turciae, Tartariae; Moscoviae, et Lithuaniae partem comprehendentem, Cracoviae 1528.* — The publisher of this map was probably the same Florianus Unglerius, who in 1512, at Cracow, published Stobnicza's *Introductio in Pholomei Cosmographiam* (comp. p. 68). He should not be confounded with the Florianus who published the general map which I have reproduced on p. 81, fig. 48.

Franciscus Monachi Mechliniensis, *Regiones Septentrionales; Antuerpia, apud Syluestrum à Parisiis.* — Comp. above p. 102.

Gabriel Symeoneus, *Almania tabulam; in libello inscripto Dialogus Pius et Speculativus [Lugduni, apud Guilielmum Rovilium 1560].* — Limaniae topographia: ORTELIUS 1570, 10; BLAEU VII, p. 131. Gabriel Simeon was born at Florence and lived in the middle of the 16th century (JÖCHER). A copy of *Description de la Limagne d'Auvergne . . . Traduite du livre Italien de Gabriel Simeon en langue Françoise par Antoine Chappuys du Dauphiné . . . à Lyon par Guillaume Roville 1561*, in the Royal Library of Stockholm, does not contain any map.

Gemma Frisius, *Universi Orbis Tabulam, Antuerpia.* — N. T. XLIV; p. 102. GESNER (fol. 267) says respecting the map of Gemma Frisius: *Impressa anno 1540 Lovanii, ut videtur.* It thus seems to have been originally published independently of the cosmography of Apianus. Reinerus Gemma Frisius was born in 1508 at Dockum in Frisland. He devoted himself to the study of medicine and mathematics; † 1555 or 1558 (JÖCHER).

Georgius Collimitius, *Hungariae Tabulam [Lazarus] (quam Cuspi-nianus edidit) recognovit.* — Collimitius was a physician and mathematician of the court at Vienna. He has written a good deal about medicine and astrology (JÖCHER). In the edition of 1595 of Ortelius it is said, that it was the map of Hungaria of Lazarus which was published by Collimitius.



80. Map of South America by PAULO DI FORLANI. From LAFRERI's atlas. (Orig. size 505 x 365 m.m.)

Gerardus Mercator Rupelmundanus, Palestina, siue Terra Sancta; Item Flandria, Louanii. Postea Europa; Deinde Orbis Uniuersi ad usum nauigantium accommodati Tabulam, Duisburgi edidit. Excudit quoque Britannica Insulae Tabulam, ab alio quopiam descriptam. — I shall finish this chapter with a short review of Mercator's well known merits as a cosmographer.

Godefridus Mascopius Embricensis, Diocesis Monasteriensis et Osnaburgensis Typum; Embrica edidit per Remigium Hogenbergum 1558. — ORTELIUS 1570, 24.

Gregorius Amaseus, Fori Iulij Tabulam descripsit; quam ab Auctore se habuisse, inquit Leander in sua Italia. — Gregorio Amaseo was an Italian author, † 1541. The map has probably belonged to his *Descriptio geographica Italiae et Forojulienensis ad Leandrum Bonnoniensem* of which a manuscript exist at the Abbey of St. Germain (HOEFER-DIDOT). It seems uncertain whether the map was ever published in print.

Henricus Zellius, Europam; Nurembergæ. — Prussiae descriptio: ORTELIUS 1570, 22; QUAD 17. His name is mentioned by DOPPELMAYER with that of his kinsman Christophorus.

Hieronymus Chiauez, Americam descripsit, quae nondum in lucem prodit. — La Florida: ORTELIUS 1584, 8; Hispalensis conventus: ORTELIUS 1570, 15. It is possible that the map 6 in the edition of 1595 (*Mare Pacificum*) is also based on a work by the same cosmographer. The «Victoria» is here represented under square sails, with the inscription:

*Prima ego velivolis ambiui cursibus Orbem
Magellane novo te duce ducta freto,
Ambiui, meritoque vocor Victoria. Sunt mi
Vela, alae; precium, gloria; pugna, mare.*

Hieronymus Bellarmatus, Tusciam; Romæ. — ORTELIUS 1570, 36; DE JUDAEIS, I: 21.

Humfredus Lhuyd Denbygiensis, Angliae Regni Tabulam; Item Cambriae Corographiam, quas nos Deo fauente aliquando publicabimus. — Anglia: ORTELIUS 1573, 8; Cambria & Wallia: ORTELIUS 1573, 9; Anglia: QUAD 52. Lhuyd or Llwyd was an English archaeologist, † about 1570.

Iacobus à Dauentria, Brabantiae; Hollandiae; Gelriae; Frisiae; Zelandiae Tabulas descripsit et edidit, Mechliniae. — Brabantia: ORTELIUS 1570, 16; Zelandicarum Insularum descriptio: ORTELIUS 1570, 18; Hollandia: ORTELIUS 1570, 19; Zelandicarum Insulae: QUAD, 45.

Iacobus Castaldus Pedemontanus, Orbis Uniuersalis typum, magna forma; eandem minori forma; Item Asiae; Africae; Hispaniae; Italiae; Siciliae; Hungariae; et Pedemontanae Tabulas; Venetiis, omnia per Mattheum Paganum. — I have before given a short account of the works of this distinguished cosmographer. To what extent these were used by the Dutch cosmographers appears from the following list of maps by Gastaldi copied by Ortelius and de Judaeis. *Italia*: ORTELIUS 1570, 32; DE JUDAEIS, I: 18; *Pedemontanae, vicinorumque regionum descriptio*: ORTELIUS 1570, 34; *Patavini territorij chorographia*: ORTELIUS 1573, 45; *Apulia*: ORTELIUS 1573, 45; *Grecia*: ORTELIUS 1570, 40, QUAD, 66; *Sicilia*: ORTELIUS 1570, 38; *Romania*: ORTELIUS 1584, 89; *Asia* (three large maps) DE JUDAEIS, I: 8, 9, 10.

Iacobus Homen Lusitanus, Europam navigatoriam descripsit, quae edita fuit Venetiis 1569. — In the British Museum are kept: HOMEM DIEGO; *La vera descrizione della navigazione de tutta Europa, et parte dell' Africa et dell' Asia... Fatta dell' eccellente cosmografo G. Home Portugense, 1572.* Some other maps of this cosmographer are also extant, partly printed, partly handdrawn (comp. CASTELLANI, *Catalogo*, p. 250; HARRISSE, *Cabot*, p. 243).

Iacobus Zieglerus, Palaestina, Scandia, Aegypti et Arabiae, libri forma, et in iis Commentaria. Argentorati, apud Petrum Opilionem 1532. — I have above (p. 60 and 104) given an account of Ziegler's maps and a fac-simile (fig. 30) of one of them. Ziegler was born at Landshut and died in 1549 (JÖCHER).

Ioannes Auentinus, Bauariae Tabulam; Landshuti Anno 1533. — Reproduced by SEB. MÜNSTER from 1540; ORTELIUS 1570, 29. Auentinus was born in 1466 at Abensberg in Bavaria, † at Regensburg in 1534 (JÖCHER). The map of Auentinus was probably constructed for his great work *Annales Boiorum*. Of this work the Royal Library at Stockholm has the edition, Ingolstadii 1554. But it does not contain any map.

Ioannes Baptista Guicciardinus, Uniuersi terrarum Orbis imaginem, maxima forma; quam Aquila comprehendit, Antuerpiae 1549.

Ioannes Bucius Aenicola, Europam; sub forma puella, Parisiis apud Christianum Wechelum. — In GESNER'S *Bibliotheca*, Tiguri 1545, fol. 393, this map is mentioned, with the addition that it is printed in Paris on two leaves, altera tantum facie impressa ut liceat affigi ad parietem.

Ioannes Calameus, Biturigum Regionem; Lugduni apud Gryphum. — ORTELIUS 1570, 10.

Ioannes Crigingerus, Bohemiae, Misniae, Turingiae, et collateralium Regionum Tabulam; Pragae 1568. — Bohemia: DE JUDAEIS, II: 11; Saxonia: ORTELIUS 1570, 23. The name is also written CRIGINGER, GRIGVIGERUS

or CRUGINGERUS. He was a dean at Marienburg in Bohemia and published a map of Meissen, Bohemia, and Thuringia at Prague in 1568 (ADELUNG'S continuation of JÖCHER).

Ioannes Cuspinianus, Hungariam; quam Petrus Apianus edidit; uti Auctor est Wolfg. Lazius in sua Hungariae Tabula. — Johannes Cuspinianus, or Spieshammer, was physician, ambassador (*Orator*) and librarian of the emperor Maximilian I; he was born in 1473, † 1529. A detailed biography of him is found in *Vitae Clarissimorum Historicorum*, Jena 1740.

Ioannes Dominicus Methoneus, Europam; Venetiis, apud Mattheum Paganum.

Ioannes Georgius Septala Mediol. Ducatum Mediolanensem, et Regiones vicinas, Antwerp, apud Hieronymum Cock. — ORTELIUS 1570, 33.

Ioannes a Horn, Germaniae Inferioris Tabulam; Antuerpiae.

Ioannes Honterus, Tabulas Geographicas edidit libelli forma; sub titulo, Rudimentorum Cosmographicorum, Tiguri apud Christoph. Froschouerum. — I have at p. 112 given an account of Honter's cosmographical works. Some of his maps, or some maps printed in his cosmography, are reproduced on N. T. XLIV, and fig. 71, 72, 76. Honter was an evangelical theologian from Kronstadt in Transylvania, † 1549 (JÖCHER).

Ioannes Ioliuetus, Galliam; Parisiis, aut Lugduni (apud Oliverium Truchetum 1560). — ORTELIUS 1570, 9. He was a native of Limoges and geographer to Francis I. A map of Berry by him was printed in 1545. Several editions were published of his map of France (HOEFER-DIDOT). In the Bibliothèque Nationale at Paris there is a large wood-cut map (size 0,853 x 0,552 m.) *Descriptions des Gaules, avec les confins d'Allemagne, et d'Italie.* JOANNES JOLIVET inventor. A Paris par Marc du Chesne 1570.

Ioannes Mellinger Halens. Turingiae Tabulam, Wimarie. — ORTELIUS 1573, 29; DE JUDAEIS, II: 29. Lüneburgensis Ducatus: QUAD 1608, 34; BLAEU III, p. 180.

Ioannes Stumpfius, Heluetiae Tabulas; in historia Heluetica volumine, Tiguri excuso, apud Christophorum Froschouerum. — A narrative of a journey in Switzerland in 1544 by Johannes Stumpf is entered into *Quellen zur Schweizer Geschichte*, Vol. 6. GESNER relates (fol. 456), that Stumpf in 1545 was occupied with a description of Switzerland and neighbouring countries, «cum tabulis locorum exactissime depictis». I suppose that Stumpf was the author of an Atlas published at Zürich 1562 by «Cristoffel Froschouer» under the title: *Hierum findst du lieber Läser schöner recht und wolgemachter Landtafeln XII* etc. (Bibl. Nationale in Paris). Stumpf was born in 1500 at Bruchsal (Speyer), † 1566 at Zürich (JÖCHER).

Ioannes Sambucus Pannonius, Transsylvaniam; Viennae Austriae. 1566. Item Hungariam, ibidem; 1570. — Fori Julii descriptio: ORTELIUS 1573, 42; Transsylvaniam: ORTELIUS 1570, 43; Hungaria: ORTELIUS 1579, 77; QUAD, 69; Illyricum: ORTELIUS 1573, 54. Sambucus was born in 1531 at Turnov in Hungaria, † 1584 at Vienna (JÖCHER).

Ioannes Surhonius, Veromanduorum Regionem; Antwerp, apud Christophorum Plantinum 1558. — Veromandois: ORTELIUS 1570, 11. Several other maps (Lutzenburgum ducatus, Namurcum, Veromanduum, Artesia, Picardia) by Ioannes Surhonius are from 1579 reproduced in different editions of Ortelius' *Theatrum*. The *Artesia* of Surhonius is reproduced by DE JUDAEIS, II: 50.

Laurentius Frisius, Cartam uniuersalem Marinam (ut vocant) alicubi in Germania. — Occurs for the first time in Ptolemaeus 1522 (N. T. XXXIX).

Lazarus Secretarius Cardinalis Strigon. Hungariae typum primum descripsit, qui editus est Ingolstadii per Apianum, Anno 1528. — According to information in the edition of 1595 of Ortelius, this map was published by Georgius Collimitius.

Leander Albertus, Corsicam, Siciliam, Sardiniam; in libro cui titulus est de Insulis Italicis, Venetiis impresso, 1568. — In the *Isole appartenenti alla Italia di F. Leandro Alberti Bolognese*, Venetia 1567, there are copper-printed maps of Venetia, Corsica, Sardinia, Sicily, and some small islands (Is. Tremiti) near the eastern coast of Italy.

Leuinus Algoet, Regionum Septentrionalium Typum; apud Girardum Iudaum, Antwerp. — DE JUDAEIS, II: 4. Remarkable map of the Scandinavian peninsula, dated 1570. Algoet was, according to JÖCHER, a mathematician from Ghent.

Macæus Ogerius, descripsit regionem et Comitatum de La Maine Galliae provinciam, impressam in urbe Cenomanorum ibidem, 1539. — A copy of this map is, according to M. G. MARCEL, preserved in the Bibliothèque nationale at Paris. Reproduced in the later editions of the *Theatrum* of Ortelius.

Marcus Ambrosius Nissensis, Liouoniam, Vicinasque Regiones, Antwerpiae, sed nondum edita. — According to Ortelius the map was not yet published in 1595.

Marcus Iordanus, Daniae Regni Typum; Hafniae, apud Ioannem Vinitorem 1552. [Idem Holsatiae, Sleswig etc. Hamburgi, apud Joachimum Leoninum, 1559. Et typum Corographicum Itinerum D. Pauli, necnon Abrahami Patriarchae etc. Wittenbergae, apud Joannem Cratonem, 1562.

Nicolaus Genus, *huius Tabula Regionum Septentrionalium habetur in Geographia Ptolemaei, à Girolamo Ruscelli in Italicam versa; excusa Venetiis, apud Vincentium Valgristum.* — The map of the northern countries by NICOLO and ANTONIO ZENO (N. fig. 29) in the Ptolemy editions of 1561, 1562 etc. (comp. p. 57).

Nicolaus Germanus, *Huius Galliae Chartam citat Robertus Cœnalis. Puto hunc eundem esse cum Nicolao à Cusa.* — Ortelius here evidently speaks of a map in the Ptolemy of NICOLAUS GERMANUS, Ulmæ 1482 and 1486. On the upper border of the map in the last edition is printed: *Tabula Moderna Francie.* It would be highly interesting to know the age of the original on which this map is based. Probably it is much earlier than Cusa's map of Germany.

Nicolaus Nicolaus Delphinus, *Europam marinam; Antuerpie apud Ioannem Stelsius. Idem Gallie Tabulam promittit.* — The left side of the map 11 in Ortelius 1570 is occupied by »*Caletensium et Bononiensium dittonis accurata delineatio Parisiis 1558*» by NICOLAUS NICOLAUS. The first of the maps here mentioned by Ortelius is, probably, the reproduction of the map in the French edition of MEDINA'S *Arte de Navegar*, translated by Nicolay and printed at Lyon in 1553. Nicolas de Nicolay was a celebrated French traveller, born in 1517, † 1583. (DIDOT-HOEFFER; compare also HARRISSE, *Cabot*, p. 239.)

[**Nicolaus Reger**, *edidit Ptolemaei tabulas gemino schemate, veteri scilicet ac recentiori, ut testatur Rob. Cœnalis in suo Galliae opere.*] — JOHANNES (not Nicolaus) REGER was only the factor of the editor of Ptolemy, printed at Ulm in 1486 (comp. p. 16).

Nicolaus Sophianus, *Græcie Tabulam; Romæ [eadem postea evulgata fuit Basileæ per Oporinum.]* — ORTELIUS 1579, 93. According to GESNER (fol. 523) the *tabula Græcie elegantissime depicta* of Sophianus were first printed at Rome, then, in 1543, with explanatory remarks by NICOLAUS GERBELIUS at Basel by OPORINUS.

Orontius Fineus Delphinus, *Gallie descriptionem; et Orbis terrarum typum, sub forma cordis humani. Idem Tabulam Regionum, quarum in sacris Bibliis fit mentio. Omnia Parisiis apud Gormontium.* — Maps by Orontius Fineus are here given on fig. 53 and T. XXI. The map of Gallia of 1525 is to be found in the Bibliothèque nationale at Paris, and editions of the same of 1561 and 1563 in the British Museum (*Catal. of Printed Maps*, p. 1336). According to Gesner Orontius' map of France of 1525 is »*scirciter sex chartarum magnitudine*». Gesner also cites a double heart-shaped map by this geographer printed in 1536 by HIERONYMUS GORMONTIUS, »*in tabula duabus chartis opinor*». Orontius Fineus (Finé) was born at Briançon in 1494, † at Paris in 1555.

Olaus Magnus Gothus, *Regionum Septentrionalium Tabulam, Venetiis.* — Regarding the lately rediscovered large map of the North by Olaus Magnus see p. 60. A very exact copy, engraved at Rome in 1572, is here reproduced on a reduced scale (N. fig. 32).

Paulus Iovius, *Lariz lacus tabellulam, cum, libello; Venetiis.* — ORTELIUS 1570, 35; 1573, 46. Regarding the map of Russia by Paulus Jovius see page 114. *Lacus Lariz* is the ancient name of the Lake of Como. Paulus Jovius was born at Como in 1483, † 1552.

Petrus Apianus, *Europam; Peregrinationem D. Pauli; et Typum universalem; omnia Ingolstadij.* — The map of Europe of Petrus Apianus is probably lost. Yet several of his maps are still extant; some of these are reproduced here: N. T. XXXVIII, fig. 57, 58, and described on p. 99.

Petrus ab Aggere, *Orbis terrarum Typum, Aquila comprehensum; Mechliniæ.*

Petrus Boekel, *Thietmarsorum Regiunculam; Antuerpie, apud Ioan. Liefrinck [1559].* — Thietmarsia: ORTELIUS 1570, 22; DE JUDÆIS, II: 7; QUAD, 74. Born at Antwerp; lived in the first part of the 16th century as a painter to the court of Mecklenburg-Schwerin. Published also a map of Denmark (JÖCHER).

Petrus Coppus, *Hystriam, Venetiis.* — LAFRERI'S atlas. ORTELIUS 1573, 55. In PIETRO ANGELO ZENO, *Memoria de' scrittori Veneti Patritii*, Venetia 1662, is written about the family of Coppo: *1540 Pietro figliuolo di Giacomo con ogni più esquisita diligenza descrisse il sito dell' Istria.* A very insignificant map of the world by this geographer is reproduced fig. 65.

Petrus Laicstein, *Iudeam per iustros eius loca descripsit, quam descriptionem Christianus Serot in Tabulam redegit. Extat Antuerpie apud Hieronymum Cock 1570.* — ORTELIUS 1584, 97.

[**Petrus de Medina**, *Hispania tabulam, Hispali per Ioannem Gutierum 1560, at valde rudem.*] — Concerning Medina's maps see above p. 110. One of them is reproduced fig. 75.

Philippus Apianus, *Bavariæ Tabulam, Ingolstadij 1568.* — Comp. p. 122.

Pyrrhus Ligorius Neapolitanus, *Regni Neapolitani; item Græcie tabulam; Romæ, per Michaëlem Tramezinum.* — Several maps of Ligorius are inserted in Lafreri's atlas (Comp. above p. 118, No. 19 and 20; p. 122 No. 126, 134 and 138). His *Regnum Neapolitanum* was reproduced by ORTELIUS 1570, 37; DE JUDÆIS, I: 19; QUAD 1608, 64. Ligorius was an architect and archaeologist from Naples, † 1586 (HOEFFER-DIDOT).

Sebastianus Cabotus Venetus, *Universalem Tabulam; quam impressam æneis formis vilius, sed sine nomine loci, et impressoris.* — At present only one copy of the large map of the world attributed to Sebastian Cabot is known. It is preserved in the Bibliothèque nationale at Paris (comp. p. 90). The great explorer Sebastian Cabot died at an advanced age shortly after the year 1557. A minute and excellent monograph: *Jean et Sebastien Cabot*, was published by HARRISSE, Paris 1882.

Sebastianus Munsterus, *Germaniæ Typum, Basileæ, quem Tilemannus Stella emendavit et locupletavit, Wittenbergæ, apud Petrum Zeitz 1567.* — *Basiliensis territorii descriptio*: ORTELIUS 1573, 38; DE JUDÆIS, II: 24. A great number of maps of Münster are printed in his geography and cosmography (comp. p. 108). Seb. Münster was born in 1489 at Ingelheim, † 1552 at Basel.

Sebastianus à Rotenhan, *Franconiam Orientalem; Ingolstadij, Anno 1533 [1543].* — Franconia: ORTELIUS 1570, 24; Franconia Orientalis vulgo Franconia: QUAD, 22. The original is cited under the year of 1520? in *Beiträge zur Landeskunde Bayerns*, München 1884. Rotenhan was a great traveller and much employed in public service by the Emperor Charles V. He was born in Franconia 1478, † 1532.

[**Sigismundus ab Herberstein**, *Moscoviciæ tabulam, in eius Commentariis Basileæ excusis, apud Joannem Oporinum.*] — Compare p. 113. A detailed biographical work about him was published by FRIEDRICH ADELUNG at St. Petersburg in 1818. Herberstein was born in 1486 at Wippach in Carinthia, † at Wien in 1566.

Sta. Por. *depinxit Ducatum Osowieczimen. et Zatoriensem, Venetiis 1563.* — A map of this region, signed *Sta. Por. pinxit*, and dedicated to Sigism. Myskowski was published »*In Venetia alla libreria del S. Marco 1563*». Size 0,321 x 0,244. It was reproduced by QUAD (map 72) and BLAEU, II: p. 32 and 33.

Stephanus Geltenhofer, *Campaniæ Tabulam; Suppresso tamen suo nomine, Antuerpiæ.*

Thomas Geminus, *Hispaniæ Tabulam; Londini.* — In the Bibliothèque nationale at Paris there is a magnificent engraved map of Spain on four leaves (total size 0,940 x 0,767) »*excusum Londini per THOMAM GEMINUM 1555*» and dedicated to the King and Queen of England *Philip and Maria*. It is the first map I know of, that was printed in England. Not mentioned in the *British Mus. Catal. of Printed Maps*.

Tilemanus Stella Sigenensis, *Palestinae tabulas duas descripsit, quarum unam inscripsit Itinerarium Israëlitarum ex Aegypto; alteram, Corographia Regni Iudææ et Israël. Wittebergæ. [Item comitatum Mansfeldiensem, Coloniae apud Franciscum Hogenbergum Lutzenburgi. Item dittonem accuratissime descripsit, nondum (1595) autem edidit. Idem promittet absolutissimam totius Germaniæ descriptionem.]* — Mansfeldiæ Comitatus descriptio: ORTELIUS 1573, 28; QUAD, 21; BLAEU, III: p. 113; Palestina: ORTELIUS 1570, 51; DE JUDÆIS, I: 13.

Vincentius Corsulensis, *Hispaniam; Venetiis; apud Matthaëum Paganum.* — The same as JOHANNES VINCENTIUS, a Spanish dominican, born in Asturia (JÖCHER).

Wenceslaus Godreccius, *Poloniæ Tabulam, Basileæ apud Oporinum.* — ORTELIUS 1570, 44; QUAD, 71.

Wolfgangus Lazius, *Hungariæ Corographiam; Vienna. Item Austriae; Nurenbergæ. Idem Comitatum Tyrolensem; Styriam; Hystriam; et Carinthiam edidit.* — Austria: ORTELIUS 1570, 27; DE JUDÆIS, II: 15; BLAEU, III: p. 19; Rhetiæ alpestris descriptio in qua hodie Tirolensis Comitatus: ORTELIUS 1573, 40; Goritiæ, Karstii, Chaczeolæ, Carniolæ, Hystriæ et Windorum Marchæ descriptio: ORTELIUS 1573, 40; Carinthiæ ducatus & Goritiæ palatinatus: ORTELIUS 1573, 55; Hungaria: ORTELIUS 1570, 42. In Münster's cosmography, edit. 1550 and 1559, p. 682 and 683, there is a map of Vienna by W. Lazius. Wolfgang Lazius was a physician to the Emperor, councillor and historiographer at Vienna; born in 1514, † 1565.

Wolfgangus Wissenburgius Basiliensis, *Palestinam; Argentinæ apud Richelium.* — Of this map GESNER says (fol. 629): *Descriptio Terræ Sanctæ per eundem (Wolfg. Wissenburgius) in tabula septem chartarum digesta, ita ut in parietem affigi possit, cum libello (chartæ unius) eandem declarante ibidem (Argentorati) excusa est 1538.* The map was printed in 1532 and 1536 in ZIEGLER'S often cited work (GESNER, fol. 367).

With due regard to the circumstance that Waldseemüller is cited twice, the names of 99 authors of maps are enumerated in the *Catalogus auctorum*. As regards 79 of these, I have been able to examine or to give references either to the original editions or to more or less accurate reproductions of their works. With respect to twelve of the remaining I have succeeded, in the literature accessible to me, in discovering at least a few biographical data, but no maps; for eight, neither biographical data nor maps could be traced. Forty six of the cited maps are reproduced in Ortelius' *Theatrum*. Hereafter several of the maps of which I have not succeeded in finding any notices, during the very incomplete researches I could devote to this question, will no doubt be discovered in the recesses of libraries. But the above remarks on the catalogue of Ortelius will suffice to show how much the history of cartogra-

we look in it for several of the most prominent draughtsmen and publishers of maps during the period of incunabula, such as Ruysch, Stobnicza, Battista Agnese, Petrus Apianus, Vadianus, Girava, and others, and whole groups of maps appear to have been entirely unknown to him. Thus we do not find in Ortelius even a hint of the existence of such maps as the portolanos, or of the globe-prints, or of the hand-drawn charts of the Indian Archipelago and America of which no small number is likely to have existed in the Spanish Netherlands in 1570. It is also surprising that Ortelius, as may be concluded from his remarks concerning »Nicolaus Germanus» and »Nicolaus Reger», appears to have totally overlooked the often very important new maps added to the different editions of Ptolemy's geography.



82. Map of the New World. From: PETRVS MARTYR, De orbe novo decades VIII, annot. RICH. HAKLUYTI. Paris 1587. (Orig. size 204 X 163 m. m.)

phy is indebted to the publisher of *Theatrum Orbis terrarum*, and this is due precisely to that want of originality for which he, from another point of view, has been justly censured. Many remarkable omissions, however, occur in his catalogue. In vain

GERARD MERCATOR¹ was born in the small Flemish town of Rupelmonde on the 5th of March 1512.² When he had finished his schooling, he was sent to the University of Louvain, where he obtained an academical degree and at first

¹ The chief source for Mercator's biography is: *Vita celeberrimi clarissimique viri Gerardi Mercatoris Rupelmundani, a Domini Gualtero Ghymio, Patricio Teutoburgensi, ac ejusdem oppidi antiquissimi Praetore dignissimo, conscripta*, introducing the first edition of *Atlas* of 1595. A monograph of Mercator based on extensive investigations in the archives, was published by Dr J. VAN RAEMDONCK in *Gerard Mercator, sa vie et ses oeuvres*, St. Nicolas 1869, and in the above mentioned works regarding Mercator's globes and his map of Flanders by the same author. Valuable contributions to his biography and to his position as a geographer have further been given by LELEWEL (*Géographie du moyen âge*, Bruxelles 1852), BREUSING (*Gerhard Kremer gen. Mercator*, Vortrag gehalten zu Duisburg 30. März 1869), and by others.

² Van Raemdonck gives the name »Gerard Mercator ou de Cremer», Breusing »Gerhard Kremer genannt Mercator». This translation of names into German or French is manifestly quite unauthorised. In his numerous writings as well as in his letters he always names himself GERARD MERCATOR. Ghymius does not know of any other name. Nor is there any other to be found in the first edition of the great *Atlas* edited by his son Rumoldus, neither on the maps nor in any of the many introductory papers. In the French edition of 1613 only the Latin form of the name was used for Mercator himself, for his father, uncle, and children, though other names are cited in their German or Flemish form in the same work. The same is the case in the works of ORTELIUS, in JÖCHER'S *Allgemeines Gelehrten-Lexicon*, in FREHERUS' *Theatrum virorum eruditione singulari clarorum*, in fine in all works of the 16th—18th centuries examined by me. From this I draw the conclusion that Mercator himself never used the names KREMER or DE CREMER and that he, consequently, should not be designated with any of these names. I will not deny that his ancestors may have been called Cremer or Kremer, but it is wrong, serves no purpose, and is misleading not to permit the great geographer to retain the name always used by himself, as well as a philosopher as a private man, the name by which he was exclusively designated by his contemporaries, and for which he earned such an illustrious place in the history of science.

applied himself to the study of philosophy. But after having married (1536) he began, in order to obtain the means of support for his family, to occupy himself with map-drawing, engraving in copper, and the construction of astronomical instruments. In this he had, according to the account he often gave to Ghymmius, no other guidance than some instruction by Gemma Frisius, probably in the mathematical elements of cosmography. He soon became a complete master of his new profession, a manufacturer of instruments, surveyor, drawer, and engraver of maps. His first known work is a large map of the Holy Land published in 1537, which was much admired, but which, like many other old maps printed separately, has been lost. The next year he published the map of which I have given a fac-simile on pl. XLIII (comp. p. 90 and 106). It is neither spoken of by Ghymmius, nor by any other of Mercator's earlier biographers. He was then charged by some merchants with the construction of a map of Flanders, which was already completed in 1540. This map, consisting of eight leaves, was also long considered as lost until it was lately rediscovered (comp. p. 108). In 1541 Mercator published a pamphlet on the employment of Italic letters in map-print, and his large terrestrial globe, mentioned p. 82, is dated the same year. Like some of his preceding works it is dedicated to the senator NICOLAUS PERRENOTUS GRANVELLA. Through this influential counsellor of the Emperor Mercator received the commission to make for Charles V various cosmographical instruments, which were praised as very ingenious and admirably executed. They were so much appreciated by the Emperor that he took them with him in his campaigns, during one of which they were burned by the enemy. Mercator's eminent and powerful protectors could not, however, avert from the artless and simpleminded man, whose tendency to mysticism was probably obvious to most of his acquaintances, the charge of heresy, which occasioned his imprisonment in 1544. After repeated earnest remonstrances from the authorities of the University, and when certificates of his innocence had been obtained from different quarters, Mercator was liberated. His imprisonment is supposed to have lasted about four months. Subsequently his *Chronologia* and the *Atlas* published by his son were inscribed in the *Index librorum prohibitorum*. In 1551 he finished his large celestial globe, a pendant to the above mentioned terrestrial globe, and published, as a manual for the use of them, two small tracts: *De usu globi* and *De usu annuli astronomici*. In 1552 he moved from Louvain to Duisburg, where he applied himself to his investigations with renewed energy. Here he made two small globes for Charles V, a celestial one of pure crystal, on the surface of which the stars and constellations were engraved with diamonds and indicated by a cover of gold, and a very elaborate terrestrial globe of wood. Here he also constructed for sale, but always with the utmost care, several other globes, which were sold at Nuremberg.¹ His first cartographical work accomplished at Duisburg was the large map of Europe, of which a few plates had already been engraved during his stay at Louvain. In existing collections of maps no copy of this work has been found, and this seems to be the case with a new edition of it published in 1572 (see Addenda). Of this work Ghymmius says: *Quod*

opus tantis laudibus a doctissimis quibusque viris passim effertur, ut vix simile in geographia, in lucem unquam prodissse videatur. The first edition of 'Europa' being finished, Mercator received a commission to engrave on copper an elaborate map of England, which an English friend, whose name Ghymmius does not mention, had constructed. This great work, finished in 1564, is also lost. But I suppose that the 15 maps of Britain in Mercator's atlas of 1595, signed *per Gerardum Mercatorem cum privilegio*, are slightly modified copies of these plates. About the same time he made for the government a survey of Lorraine, *oppidatim et per singulos pagos*, which work, according to Ghymmius, *cum tanto vitae discrimine conjuncta fuit, adeoque vires illius debilitavit, ut parum abfuerit quin ex terrore gravissimum morbum sibi consiliasset et animi perturbationem incidisset*. Yet no decrease in Mercator's energy can be perceived during the next few years. It therefore seems probable to me that this account, by Ghymmius, of Mercator's illness caused by fear, ought to be referred to his imprisonment for heresy, which episode is altogether omitted by the biographer. In 1568 Mercator published his comprehensive *Chronologia*, which was much praised by contemporary scholars. He had wasted much intellect and spent much labour on this work, though it has hardly had any permanent influence on science, and at present is probably very seldom consulted by chronologists. In the next year, 1569, he published his large epochal map of the world on an increasing cylindrical projection, of which I have given an account p. 96. It is one of the most original and valuable cartographical works ever published, but it was but little understood and appreciated by the author's contemporaries. It is reproduced in full size, but without some of the important legends, by Jomard, and in a much reduced scale by CHARLES P. DALY (*On the early history of cartography*, in the *Journal of American Geogr. Society*, XI, 1879). Mercator then elaborated a new edition of Ptolemy's atlas, which was published in 1578. It was received with universal approbation and was often reprinted during the next hundred and fifty years. On account of the modifications introduced on the maps of the old atlas, which were *ad mentem Auctoris restitutae et emendatae*,² this work is at present of less value than the uncorrected and uncritical copies of the original maps, published in the 15th and the beginning of the 16th century. Yet various improvements in the map-projections were introduced in this work, concerning which I may refer to BREUSING'S *Leitfaden durch das Wiegentalter der Kartographie*, Frankfurt a. M. 1883. Mercator had, according to Ghymmius, commenced the compilation of a new systematic atlas of the whole surface of the earth, long before Ortelius. The work was almost finished in manuscript, when Ortelius edited his *Theatrum*, which caused Mercator to postpone the printing of his work. Only parts of it were published, at the urgent request of his friends; namely Gallia and Germania in 1585, and Italy in 1590. A similar collection of maps of the northern countries was ready for printing at the time of Mercator's death on the 2d of Dec. 1594. In the following year his son RUMOLDUS published, at Duisburg, under the title of: *Atlas sive cosmographicae meditationes de fabrica mundi et fabricati figura . . . Duisburgi*

¹ Some interesting letters regarding the globe manufacture of Mercator are published by F. van Raemdonck in his above mentioned paper: *Les sphères de Gerard Mercator*. The globes cost 10 to 12 florini Carolini. Such a florin contained the same quantity of silver as 4,22 francs (v. RAEMDONCK).

² Atlas carrying the earth on his shoulders is for the first time employed as an emblem of a collection of maps on the title-page of 'Lafrexi's atlas.' I have therefore employed a fac-simile of this engraving to ornament the title of the present work. Mercator gives an extremely confused explanation of the derivation of the name Atlas in the *praefatio in Atlantem*, which, besides his essay, *De mundi creatione et fabrica*, the biography of Ghymmius, a few Latin dedicatory poems, and *Epistulae duae duorum doctissimorum virorum in laudem Atlantis conscriptae*, form the introduction to the first edition of *Atlas*. The biography of Ghymmius is a *chef d'oeuvre*, unaffected, simple, and worthy of the great and learned man whose life and deeds it describes. Yet the letters of 'the two most learned men,' Mercator's *De Mundi creatione et fabrica*, and above all, his *Praefatio in Atlantem* are only a pious and benevolent, but incomprehensible nonsense. This did not prevent the name of Atlas from becoming naturalised from that time in all civilised languages, as signifying any collection of maps published in print.

Clivorum, the first incomplete edition of the whole work, evidently prepared for the press by his father. In 1602 a new edition was published at Duisburg, also in Latin, and later (1606—1636) several others much revised and augmented, in different languages, at Amsterdam by Hondius. As a practical manual of cartography they soon entirely supplanted the *Theatrum* by Ortelius, which was formerly so much praised. With respect to these editions the reader is referred to the often cited works of P. A. Tiele and Van Raemdonck. They do not belong to the early period of cartography.

The short review here given of Mercator's principal works may be sufficient to show what a conspicuous position he occupies in the history of cartographical science. A great part of his works belongs chronologically to the period of incunabula, — the main part, if we, like the majority of writers on the history of cartography, consider 1570 to be the

pared without disadvantage with the works of Mercator, e. g. several of the Italian maps, of which fac-similes are given above, the handsome map of the New World which was engraved on copper in Paris in 1587 for HAKLUYT's edition of Petrus Martyr (N. fig. 82), and several of Gastaldi's works. Neither, as far as I know, are any of Mercator's maps comparable with the *Bairische Landtafeln* as regards topographical accuracy. Fundamental errors also occur, as for instance his tendency, derived from medieval geographical drawings, to make rivers run right across continents from sea to sea—a *hydrographical blunder never met with on Ptolemy's maps of the second century*. He was scarcely an acute critic, and was often unlucky in the selection of his authorities, in the mapping of distant countries. His tendency to mysticism also sometimes exercised an unfortunate influence on his cartographical work. Yet with all these shortcomings



83. Hispaniola, from: CORN. WYTFLEET, *Descriptionis Ptolemaicae augmentum*, Lovanii 1597. (Orig. size 282 X 228 m. m.).

limit of this period. But by the comparative accuracy and richness of details, the finish of the copper engraving, the author's insight into the mathematical principles of the art of map-drawing and into the deficiencies and merits of the different methods of projections, most of Mercator's maps have a quite modern stamp. Justice requires the admission that several maps constructed by other geographers in the 16th century may as regards finish of engraving be com-

pared with a contemporary publisher of maps, when he characterizes Mercator as *in cosmographia longe primus*, and if the genius and greatness of a philosopher is to be measured by the importance of the new and fruitful ideas he suggested, and by the quantity of useful work honestly performed in the service of science, then the master of Rupelmonde stands unsurpassed in the history of cartography since the time of Ptolemy.

The T. I—XXVII of the plates in the present work are fac-similes of the first complete atlas of the Old World, which, as is shown by the fig. on p. 1, had for this purpose been systematically divided by Ptolemy into separate regions, each represented in the atlas by a separate map. About thirteen centuries later a somewhat similar work on the New World was published under the title: *Descriptionis Ptolemaicae Augmentum, sive Occidentis notitia brevi commentario illustrata, studio et opera CORNELII WYTFLEET, Lovaniensis*, Lovanii MDXCVII. Of this work seven editions

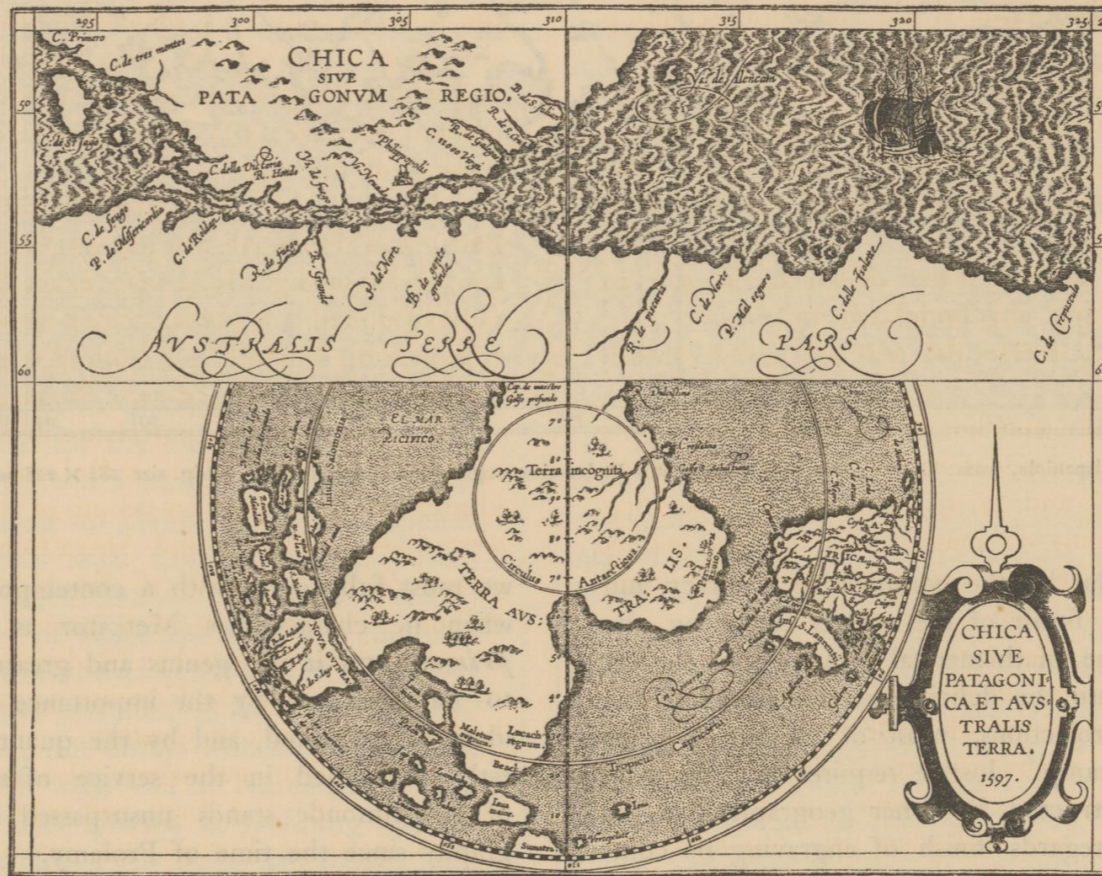
were, as above (p. 29) mentioned, published between 1597 and 1611. The book is dedicated to Philip III, *Hispaniarum et Indiarum princeps*, and contains a modern account, on about 200 printed pages, of the history of the discovery, the geography, the natural history and ethnology of the New World. It contains 19 maps handsomely engraved in copper, viz. 1. *Orbis terrarum*; 2. *Australis terra et Chica*; 3. *Chili*; 4. *Plata*; 5. *Brasilia*; 6. *Peruvia*; 7. *Castillia Aurifera*; 8. *Residuum terrae firmae sive Paria et Cubagua*; 9. *Hispaniola*; 10. *Cuba et Iamaica*; 11. *Incatana regio et Fondura*; 12. *Hi-*

spania Nova; 13. Nova Granata et California; 14. Anian et Quivira; 15. Conibas regio; 16. Florida; 17. Virginia; 18. Nova Francia et Canada; 19. Estotilandia et Laboratoris terra.

Space will not allow me to enter into any closer analysis of each of these maps. They do not contain any great amount of new and original material. But as the first general geography of America the text of Wytfliet's work may, at least in some degree, have contributed to dispel many of the errors regarding the New World which were adhered to in most parts of Europe at the end of the 16th century. It is still valuable as a summary of everything then known in the Spanish Netherlands about the regions to the west of the Atlantic. The following information (partly from GOMARA, *Historia general de las Indias*, French edition, Book 4 chap. 14) regarding a scheme discussed before Magellan's voyage, to dig through the Isthmus of Panama, may e. g. be of some interest at the present day: *Agitatum aliquando fuisse memoriae proditum est de Isthmo Darienis perfodiendo, ut Austro mixtus Septentrio, expedita utrinque navigatione, merces transveheret et commutaret suas, qua in re cum sententiis variatum esset, negantibus plerisque committendum esse, ut refractis naturae claustris, maria inter sese committerentur; quia ingruentibus Septentrionalibus undis metuendum esset, ne in adiacentia erumpens mare, totam regionem inundaret.* Others considered it to be impossible to force a way through the high mountains,

and raised warnings against any attempt to alter the arrangement of the Almighty. Such considerations delayed the commencement of the great work, until, after the discovery of the Straits of Magellan, it was altogether abandoned as useless.

In the history of early cartography the maps in Wytfliet's *Augmentum* play the same part for the New World as Ptolemy's maps do for the old hemisphere, and they give us, though chronologically belonging to a later period, a valuable summary of the early cartography of America. I shall therefore finish this fac-simile atlas with a reproduction of Wytfliet's maps. On T. LI sixteen of them are reproduced in a size reduced from about 0,290 x 0,263 to 0,135 x 0,107 m. Of the remainder the first map (*Orbis terrarum*) is a copy of RUMOLD MERCATOR's map of the world of 1584 (N. T. XLVII), too insignificant to be worth a new reproduction. Another, the map of *Hispaniola*, which want of space has obliged me to exclude from T. LI, is reproduced on the preceding page. The third is Wytfliet's handsome map of *Australis terra et Chica*, and forms the last illustration of this work. Though long ago partly dissolved into Australian islands, and partly removed within the south polar-circle by the geographical discoveries of the last century, the large south-polar continent, laid down here, still forms a *Terra Australis incognita*, where many a problem, important to the geography and the natural history of the earth, is waiting for its solution.



84. Australis Terra et Chica. According to WYTFLIET 1597. (Orig. size 290 x 229 m. m.)