

SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, APRIL 29, 1904.

CONTENTS:

The Northeast Coast of Brazil in Ancient Cartography: DR. ORVILLE A. DERBY..... 681

Scientific Books:—

Gould's Biographic Clinics: DR. SOLOMON SOLIS COHEN 694

Scientific Journals and Articles..... 697

Societies and Academies:—

The National Academy of Sciences; New York Section of the American Chemical Society: DR. H. C. SHERMAN. *The Anthropological Society of Washington:* DR. WALTER HOUGH. *The Biological Society of Washington:* WILFRED H. OSGOOD..... 698

Discussion and Correspondence:—

The Titles of Papers: PROFESSOR CHARLES BASKERVILLE, F. A. B. *Marginal and Ridge Scales in Cephalaspis and Drepanaspis:* DR. C. R. EASTMAN..... 702

Special Articles:—

On the Feasibility of measuring Tides and Currents at Sea: R. A. HARRIS. *Sea Differences in the Sense of Time:* PROFESSOR ROBERT MACDOUGALL..... 704

The National Physical Laboratory..... 708

The Bermuda Biological Station for Research: PROFESSOR E. L. MARK and PROFESSOR C. L. BRISTOL 709

Scientific Notes and News..... 711

University and Educational News..... 712

THE NORTHEAST COAST OF BRAZIL IN ANCIENT CARTOGRAPHY.*

THE publication of the great atlas containing reproductions of almost all the known old maps of Brazil that accompanies the exposition of the Brazilian representative, Baron Rio Branco, to the arbitrator in the question of the limits of Guyana, makes possible, for the first time in Brazil, the study of the ancient cartography of that country. Having applied myself to this study in a recent paper entitled 'Os Mapas mais antigos do Brasil' published in Vol. VII. of the *Revista do Instituto Historico de São Paulo*, I verified the possibility of amplifying and correcting the scanty written documents relative to the first epoch of Brazilian history, and being invited by Baron Studart to contribute to the commemoration of the first settlement of the state of Ceará, it seemed to me that I could best respond to his intentions by making a similar study of the portion of the coast to which that state belongs. Both geographically and historically this portion is limited on the south by Cape Santo Agostinho and on the north by the mouth of the Amazonas, and to this section the present study will be exclusively devoted.

In the above-mentioned paper I treated summarily of this section in the analysis of the map of Juan de la Cosa of 1500 in which it was for the first time represented on the basis of the data furnished by the explorations of Vicente Yanez Pinzon and

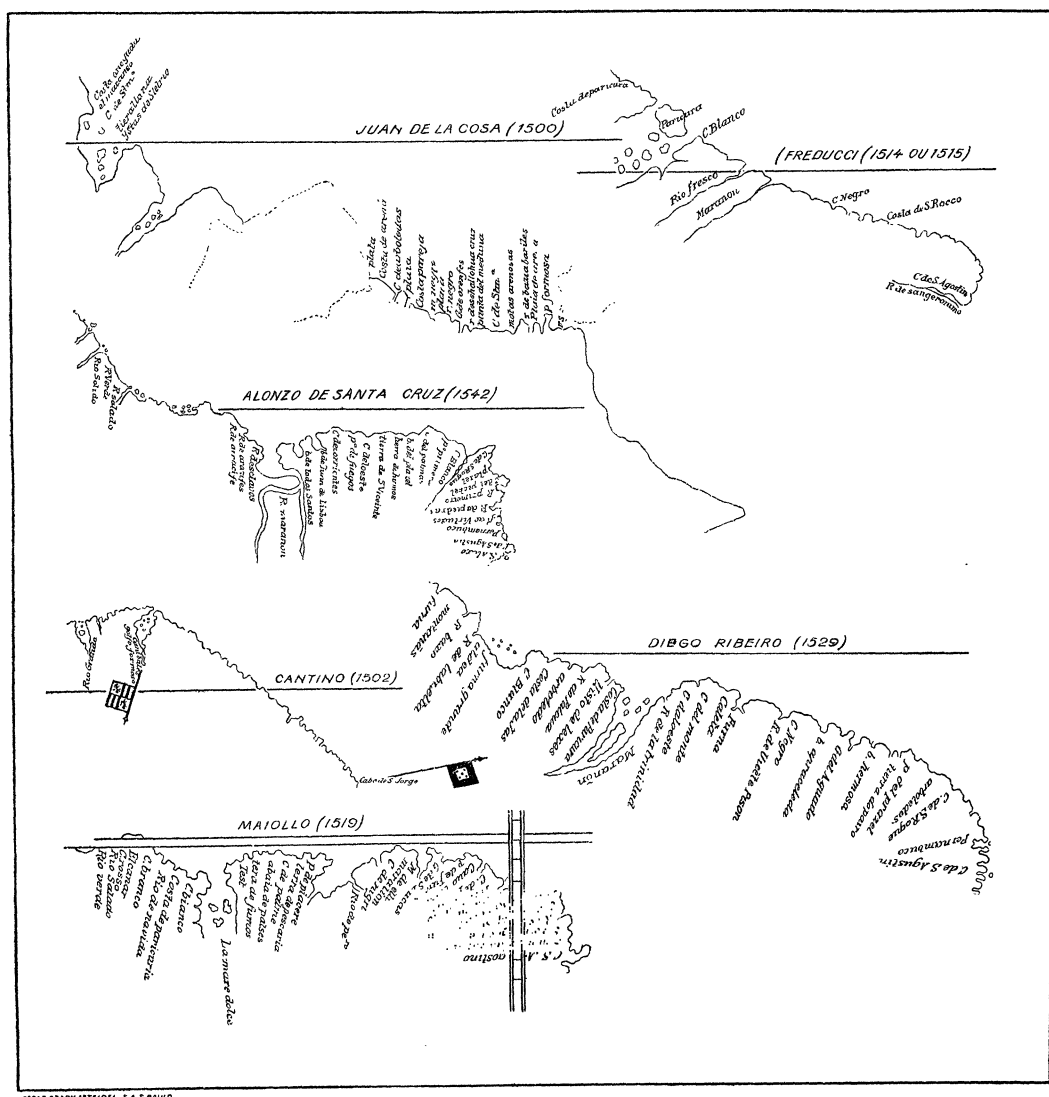
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* Translated from the memorial volume of the tricentennial of the state of Ceará, Brazil.

Diogo de Lepe, which were made in that same year. I now propose to make a more detailed study of this precious document and of the maps that followed it.

A careful examination of the map of Juan de la Cosa indicates that the author

Hojeda in 1499, commenced. The relatively accurate configuration of this section, the presence of names and the placing under the equator of the great indentation that undoubtedly represents the mouth of the Amazonas indicate with almost absolute



had detailed information regarding the section of the coast from a point a little to the west of Cape S. Roque to the mouth of the Orinoco, where his own observations, as a member of the expedition of

certainly that this part of the map was copied from an older map (a prototype in the phrase of Harris) based on the observations of one or more of the first navigators that had coasted along it. The

point where this prototype commenced is clearly indicated by the beginning of the nomenclature in front of the figure of a Spanish ship, by the inscription referring to Pinzon and by the perfunctory character of the drawing to the southward of the bend of the coast that represents Cape S. Roque.

Judging exclusively by the map, one would say that the characteristic configuration of the coast in the neighborhood of this cape was recognized by one of the first discoverers, but that he only landed to the west of this point at the mouth of a river of which the name has been destroyed by a rent in the paper of the map. The first letter of this name is an *S*, which seems to indicate a denomination taken from the saints' calendar. Following comes a series of sixteen names to another rent in the paper, indicative of a detailed examination of the coast, to which was applied denominations that for the most part are simply descriptive. Amongst these the most significant is 'rio de sefallohuacruz' (river where a cross was found), which indicates that the author of the name was preceded by another christian. The only name of this series that is not descriptive is 'C^o. de stm.' (Cape Santa Maria), taken from the calendar and probably indicative of a date, and with regard to which it should be noted (as HARRISSE has already observed) that it belongs to a group of names written in a different hand from that of the body of the map. Beyond this first series of names another rent in the paper, in a position that includes the gulf of Maranhão,* has perhaps destroyed some other names. Following comes a considerable stretch of coast without names but with a pronounced topographical feature in the drawing in the

strong indentation of the coast line, that presumably represents the southern mouth of the Amazonas, or Rio Pará. Another indentation with a group of six names and placed under the equator undoubtedly represents the main mouth of the Amazonas designated by the names of 'g^o. de Stm.' (Gulf of Santa Maria) and 'elmacareo' (pororóca or bore).

The conclusion to be drawn from the study of the map is that this part of the coast was explored by two discoverers and afterwards represented by Juan de la Cosa on the basis of a prototype embodying the observations of one or the other, or both, of whom the second registered the finding of a cross set up by the first. These explorers, or one of them, seem to have sighted the coast near Cape S. Roque, so as to have perceived its inflexion to the south, but to have only landed to the west of this cape, and to have followed the coast closely throughout a certain section, noting and naming all its details, to afterwards sail farther out before landing again at the mouth of the Amazonas.

Another map almost contemporary with that of Juan de la Cosa and presumably based on the results of the same explorations is the one organized in Lisbon in the year 1502 by order of Albert Cantino. In the above-mentioned paper, in which the South American part of this map is reproduced, I presented reasons for believing that it was in great part compiled from information gathered from sailors in the port of Lisbon rather than from preexisting maps. Thus for the southern coast of Brazil there are indications of slightly detailed information relative to the Portuguese expedition of 1501, the author, on his own account, substituting the name 'Cape São Roque,' given by that expedition by 'Cape St. George,' probably in commemoration of the date of discovery of Brazil at Porto Seguro by Cabral.

* Maranhão, and Maranham are different modes of writing the same Portuguese word, the first form being the one usually employed in modern writings.

In the section here considered the Cantino map is without details and names, with the exception of two great gulfs which seem to represent that of Maranhão and the mouth of the Amazonas. The first bears the inscription 'Canabales. Golfo hermoso' (Canabals. Gulf hermoso), and the second that of 'rio grande' and, in front, 'todo este mar é agua doce' (all this sea is fresh water). From this it may be concluded that one of the explorers of 1500 entered the gulf of Maranhão and had here an encounter with the Indians.

In the configuration of the coast the Cantino map gives an almost northeast direction to the section between Cape S. Roque and the mouth of the Amazonas, thus throwing the latter far to the north of the equator. This defect reappears in many of the early maps, especially those printed in Germany, which evidently took this Cantino map, or some of its derivatives, as a prototype.

A new exploration of this coast is apparently indicated by the map reproduced in the text (p. 84) of Rio Branco's second memoir where it is attributed to Count Ottomano Freducci and to the year 1514 or 1515. For the section to the south of Cape S. Roque the prototype of this map was evidently a simplified copy of the Portuguese map of 1502, or some other one similar to it; and for the section to the north of the Amazonas, a Spanish map similar to those mentioned below of Maiollo, the Turin map or that of Diego Ribeiro, and which was not that of Juan de la Cosa. The intermediate section, however, presents special characteristics which may be either Portuguese or Spanish. Among the four names of this section 'c. negro' recalls the 'r. negro' and 'm. negro' of the Juan de la Cosa map, but 'maranon,' 'rio fresco,' 'c. blanco' and 'parieura' are entirely new. It is worthy of note that the topographical drawing,

which is generally perfunctory, represents two rivers near the name Maranon and a large island dividing the mouth of the Amazonas, thus being in this respect remarkably accurate.

The Maiollo map of 1519 evidently had substantially the same prototypes as that of Freducci for the sections to the south of Cape S. Roque and to the north of the Amazonas, but another one for the section here considered. As its rich nomenclature is Italianized it is difficult to say if it was originally Portuguese or Spanish, but the use in two places of 'fumos' instead of 'humos' indicates the former. The extreme eastern point of the continent figures with the name of 'c. de spicell' (c. de S. Miguel?), S. Roque ('s. rom' on the map) being placed to the southward of a new name 'Rio de piedre' which is probably the Rio Goyana. These new names of 'Cape S. Miguel' and 'Rio das Pedras,' which appear to the south of Cape S. Roque (like 'Pernambuco' and 'Rio das Virtudes,' which appeared almost simultaneously in maps of 1518 and 1523), probably come from Portuguese navigators who explored the southern part of the continent, those of the new prototype beginning to the west of the Cape Spicell of the map. Amongst these last are 'c. denigri' and 'maralion' that are probably identical with the 'c. negro' and 'maranon' of the Freducci map, though the latter name is placed to the eastward of the feature in the drawing that undoubtedly represents the gulf of Maranhão. Discharging into the latter is a 'Rio de pe:' which like 'cauo corco' is a significative name to which we shall return later. It is to be noted that in his later map of 1527 Maiollo emended the nomenclature of the coast between Cape S. Roque and the mouth of the Orenoco making it correspond almost exactly with that of the Freducci map, with which he had evidently become acquainted in this interval of time.

been coasted along once or twice soon after the discovery of the Indias (America), no one returned to it. This declaration indicates that in the official Spanish department (Casa de la Contratacion of Seville) especially charged with the gathering of information regarding voyages and discoveries, maps already known in Italy, like those on which Freducci, Maiollo and the author of that of Turin based their work, were either unknown or overlooked. According to this declaration the prototype for the section here considered must have been a map representing the discoveries of Pinzon and Lepe, but differing in the drawing and in the nomenclature from that of Juan de la Cosa. On a comparison of the two it appears that Diego Ribeiro identified the Amazonas (with the name of Maranon) with the first great indentation, or Rio Pará (?) of the map of Juan de la Cosa, reducing the second to a bay full of islands, and with the name of 'furna grande.' Thus is explained the erroneous placing of the mouth of the great river to the southward of the equator, which persisted for a long time in the Spanish maps (or those derived from them) and introduced great confusion in geography. The gulf of Maranhão (with the name of 'furna') is of slight prominence in the Ribeiro map, but is well placed with reference to the southern mouth of the Amazonas, and is figured with the characteristic entrance of two rivers at the head. 'C. negro' is the only name that can be positively identified on any preceding map, including that of Juan de la Cosa. The name 'R. de uicête pison' appears to be an interpolation made by the cartographer in his prototype, in commemoration of the first discoverer. Other map-makers, commencing with Freducci, made a similar interpolation, but in the section to the north of the Amazonas, and this use prevailed, giving as a result the well-known complication of the Oyapock

question between Brazil and France. The absence in this map of characteristic Pinzonian names is a notable fact which perhaps indicates that its prototype was based principally on the voyage of Lepe.

The maps that succeeded that of Diego Ribeiro, commencing with one dated 1534, indicate the introduction, for the section in question, of a new prototype of Portuguese origin; and it is a notable fact that this served for many years as a prototype for maps of all origins, Portuguese, Spanish, French and Dutch. This new prototype must therefore have been based on a Portuguese exploration made between the years 1529 and 1534. The original maps based on this prototype are the Spanish ones of Alonzo de Chaves (Padron Real of 1536), Alonzo de Santa Cruz (1542), Sebastian Cabot (1544) and Diego Gutierrez (1550, 1562); the French ones of Nicolas Desliens (1541) and Pierre Desceliers (1550); the Portuguese ones of Gaspar Viegas (1534), Diogo Homen (1558, 1568), André Homen (1559), Lazaro Luiz (1563), Bartholemeu Velho (1564) and Fernão Vaz Dourado (1568, 1571 and 1580), and the Dutch maps in great number derived from one or another of the preceding, but for the most part from that of Gutierrez of 1562 and of Bartholemeu Velho of 1564.

The characteristic of this prototype by which it can be identified in all of its reproductions is the topographical design of the gulf of Maranhão and of the rivers that discharge into it. The nomenclature is characterized by the preservation of a good part of the names of the Maiollo map (probably indicating that the explorer followed the coast with this map, or a derivative from it, in hand) and by the introduction of many new Portuguese names, amongst which that of Diogo Leite is especially significant, as it may be presumed to be that of the explorer himself.

Not having at hand the oldest of these maps (that of Gaspar Viegas of 1534*), we take as presumably the most complete and accurate of the reproductions of this prototype, that of Diogo Homen for the nomenclature, and of Pierre Desceliers for the topographical design of the neighborhood of Maranhão. This last map is also interesting as showing that notwithstanding its date posterior to the voyage of Orellana down the Amazonas, the drawing was made before this event, the river being interpolated (and erroneously) in a design that figured a continuous coast line to the northward of the gulf of Maranhão. The same interpolation, but more artfully made, is to be noted in the Desliens map, while Alonzo de Santa Cruz (and undoubtedly also Alonzo de Chaves in his lost Padron Real), not knowing the Amazonas of Orellana, adjusted the new prototype to the old maps by suppressing the Amazonas and identifying the 'Rio de la Mar Dulce' of Pinzon (to which the Spaniards had applied the name of 'Maranon') with the gulf of Maranhão of the Italian cartographers and of the new Portuguese explorer. Other Spanish cartographers (Cabot and Gutierrez) resolved the difficulty by hashing the drawing and nomenclature of the new prototype to the west of Maranhão. From this resulted the confusion and discordance of the early maps that figured so largely in the discussion of the limits between Brazilian and French Guyana, with-

* This map preserved in the National Library of Paris is, according to the note by HARRISSE (*op. cit.*, p. 599), a nautical chart representing, in the Brazilian part, the coast from two or three degrees to the west of Maranhão to about two degrees to the south of the La Plata estuary. With reference to it Ferdinand DINIZ (cited by HARRISSE) says: "Captain Mouchez who had been charged by the French government with the continuation and improvement of the work of Admiral ROUSSIN (the marine chart of the coast of Brazil) was like myself astonished by the relative accuracy of this geographical monument."

out their origin being discovered on account of the loss of the Padron Real of Alonzo de Chaves from which they proceeded. The recent publication in Sweden of the map of Alonzo de Santa Cruz, which is essentially a reproduction of the Padron Real, clears up the matter perfectly, showing that in a group of maps antedating the voyage of Orellana there was a total suppression of the Amazonas, which had afterwards to be restored confusedly.

In view of the circumstances above indicated we have selected for reproduction the maps of Diogo Homen, Desceliers and Alonzo de Santa Cruz. The others give more or less diversified variances of the same theme.

In studying this prototype one is impressed with the relatively minute and accurate representation of the hydrography of the basin of the gulf of Maranhão (far superior, for example, to the representation given by the famous Sebastian Cabot to the River Plate basin where he had been for four years), and by the introduction of a group of Indian names of which some (Itapicurú and Pindaré) have been preserved to the present day. This seems to indicate that the explorer found here an European domiciled amongst the Indians and well acquainted with the topographical details of the region. This supposition is, to a certain extent, confirmed by the fact that the only other indigenous names are found grouped between Pernambuco and Cape S. Roque, where the Europeans had been for some years in contact with the Indians so as to have become somewhat acquainted with their language.

The topographic design of the reproductions of this prototype in the maps of Diogo Homen and Desceliers is sufficiently detailed to permit the identification of some of the more salient features, and, based upon these, we can attempt that of the names as follows, taking them from the

map of Diogo Homen which best preserves their original Portuguese form:

C. de S. Agostinho.—This name originated with the Portuguese expedition of 1501, which also used the name of 'C. da Santa Cruz' for the same feature.

Parcarohy.

R. do Extremo.—On the plausible hypothesis that the 'Pernambuco' of the map was situated to the north of the present city, this would be the river Capibaribe.

Pernambuquo.—This name in the form 'Pernambua' appeared for the first time in a Portuguese map referred to the year 1518.

R. das Virtudes.—Probably the canal of Itamaracá.

R. das Pedras.—Rio Goyana. This name appears for the first time in the Maiollo map of 1519, but dislocated to the north. Sebastian Cabot went, in 1526, from Pernambuco to the Rio das Pedras to take water, passing by the Rio das Virtudes, which apparently was not suitable for the purpose. This last name appears in the Turin map of 1523.

S. Miguel.—Another map by Diogo Homen, dated in the same year, has instead 'c. de spicell,' which had already appeared in the maps of Maiollo and of Turin. This seems to be Cape Branco to the south of Parahyba.

R. de S. Domingos.—Rio Parahyba.

B. de Pitiacua de treicam.—Bahia da Traição (Bay of the Ambuscade). The name probably refers to some historical event before 1534, as it appears in the Chaves map in the form of 'Epitiaca,' and in that of Viegas as 'b. da treicam.' The name is generally attributed to an event that took place in 1556, but erroneously, as these maps prove.

Orotapica, Orapi.—These two names in the vicinity of the city of Natal (Rio Grande do Norte) are the last of a group of Indian names that extend from the Cape

S. Agostinho, and probably indicate that to this point extended the more or less friendly relations of the whites with the Indians.

Tierra de S. Roque.—In the vicinity of the cape of the same name.

C. do Parcell.—Probably the Cape Calcanhar, the extreme point of the continent.

B. Apracelada.—(The bay of reefs.)

P^a. Primeira.—(The first point.)

B. de Tartarugas.—(Turtle Bay.) Bahia de Aguamaré (?) The Desceliers map has 'Grande baya' but before the Ponta Primeira.

R. de S. Domingos.—Rio Açú (?)

R. Dangra.—Rio Mossoró (?)

C. Corco.—This name appears first in the Maiollo map of 1519 and continues to that of Brué of 1834, where it is identified with the Ponta do Retiro Grande between the mouths of the Mossoró and Jaguaribe. The Desceliers map gives here 'Serres de S. Michel,' a name that persisted until after the Dutch invasion.

R. dos Arecifes.—(River of Reefs.)

R. dos Fumos.—(Smoke River.) This name appears in the Maiollo map. It is probably on the coast of Aracaty in Ceará.

C. Branco.—Ponta de Mucuripe (?)

Tierras de S. Lucas.—Vicinity of Fortaleza (or Ceará) (?) The name is applied to a gulf in the Maiollo map.

M. Feroso.

M. Delli.—The other map of the same year by Diogo Homen gives 'M. dely'; Maiollo, 'M. de elli.' It is probably the Serra de Mamanguape which, though situated in the interior, is an imposing feature of this part of the coast. Maiollo places close by the name 'Maralion.'

G. dos Negros.—Gulf of Ceará (?). This is in the region of the 'r. negro' and 'm. negro' of the Juan de la Cosa map. The 'C. Negri' of Maiollo and the 'c. negro' of the maps of Freducci, Turin and Diego

Ribeiro appear to be more to the west in the neighborhood of the river Parnahyba.

P. dos Prazeres.—(Point of Pleasures.)

Tierra da Pescaria.—(Fishing grounds.)

C. do Palmar.—(Cape of the Palm Groves.)

R. do Pracell.—(River of the Reef.) Rio Acaracú (?)

R. da Cruz.—(River of the Cross.) This name appears to be preserved to the present day for one of the rivers discharging into the bay of Camocim. It is probably the 'R. das 3 bras' of the Desceliers map, although this name comes before the 'R. do pracell.'

Tierra dos Fumos.—(Land of Smoke.)

C. da Loest.—(East (?) Cape.)

Tierra de S. Vte.—(S. Vincent's Land.)

R. Grande.—Rio Parnahyba.

C. Daviso.—(Advise Cape.)

B. da Coroa.—(Bay of the Sandbank.) Bahia de Tutoya (?)

Costa Brava.—(Wild Coast.) 'Coste blanche' on the Desceliers map. *Costa dos Lençoes*.

P. das Correntes.—(Point of the Currents.) Ponta Mangaes Verdes.

R. Danobom.—(Rio de Anno Bom = New Year's River.) The Desceliers map gives 'R. de vobom'; Chaves and other Spanish maps, 'R. de Naubom.'

R. do Meo.—(Middle River.)

R. dos Reis.—(River of the Kings.)

R. do João de Lis.—(John of Lisbon's River.) Rio Piria (?), or perhaps the Rio Monim.

G. de Todos os Sanctos.—(All Saints' Gulf.) Bahia de São José, southern part of the Gulf of Maranhão.

O. Maranham.—Almost all of the old maps employ the name in this manner with the article *o* or simply without any qualifying term.*

* This manner of using the name is very suggestive of a topographical term. The Portuguese language has in its marine topographical termi-

Abatimirim.—This and the four following names come in the Desceliers map, but not in that of Diogo Homen.

Tapicoram.—Itapicurú (river).

Abiunham.—This name also appears in the map of Bartholomeu Velho where it seems to be applied to the river Parnahyba.

Camicam.—The other Diogo Homen map gives 'Acencam' (Ascension).

Cabai.—On an affluent of a river without name that represents the Grajanú. This affluent represents very well the river Pinaré, and the name 'Pinare' appears in the Gaspar Viegas map of 1534 and in the anonymous map of the Riccardiana Library.

Baia.—(Bay.) On the northern margin of the Gulf of Maranhão. On the Diogo Homen map of 1568 the name is 'b. grelo' or 'b. grela.' In the same position Vaz Dourado has 'Almadias.' It is at present known as the Bay of Itacolumy.

Tierra dos Fumos.—(Land of Smokes.)

Costa Aparcellada.—(Coast full of reefs.)

R. de S. Miguel.—'R. de S. Paul' on the Desceliers map. Rio Turyassú.

B. de Diogo Leite.—Bay of Turyassú. It is probable that the name is that of the commander of the exploring expedition.

R. de S. Palos.—'R. S. Marcial' on the Desceliers map. Rio Maracassumé.

R. das Baixas.—(River of the Shoals.) Rio Gurupy.

Costa Apracellada.—The other map of Diogo Homen of 1558 has here 'p. da costa suja' (Point of the Dirty Coast), which comes from the Viegas map of 1534 and is reproduced in many of the old maps.

nology the term 'o marachão' (an artificial or natural barrier of sand or gravel) which would be very applicable to this section of the coast and which might readily be transformed into 'o maranhão.' In fact the dictionary of Moraes cites an old author who gives (by error, says the lexicographer) 'maranhões' for 'marachões.'

B. de Ilheu.—(Bay of the Islander, or native of the Azores.)

Costa Baixa.—(Low Coast.)

B. de S. Joan.—Bahia da Bragança (?).

Costa Descoberta.—(Open Coast.) This name, which comes on the other map of Diogo Homen, is given as 'Coste desconue' on that of Desceliers.

B. de S. Joan das Amazonas.—Rio Pará or southern mouth of the Amazonas. The last part of the name is evidently an interpolation after the voyage of Orellana. At this point the Desceliers map emends the new Portuguese prototype with an old Spanish map eliminating the Amazonas and the nomenclature of this prototype to the mountains to the north of the Oyapock. A similar elimination occurs in the maps of Alonzo de Chaves and Alonzo de Santa Cruz.

To the north of the mouth of the Amazonas the Diogo Homen map has the old nomenclature of the Spanish maps mixed with some new names (*B. de muchas ishas*, *R. de Nuno* and *R. del Casique*), which indicate a new exploration of this part of the coast. As these names appear in the map of the Riccardian Library this exploration must have been before the year 1543.

Combining the deductions that can be legitimately drawn from the study of these maps with the scanty data of the written history, we may now attempt a restoration of the story of the discovery and delineation of this portion of the coast. For this purpose we shall make use, as regards the historical data, principally of that carefully collected and verified by Harris in his great work entitled 'The Discovery of North America.'

Vicente Yanez Pinzon, setting out from Spain towards the end of 1499, sighted a cape, which he denominated 'Santa Maria de la Consolacion,' towards the end of January (20th or 26th, according to the chroniclers; 2d of February if the name

indicates a date) of 1500. A few days afterwards he landed and executed acts of possession, including the planting of a cross on a point that he denominated 'Rostro Hermoso,' perhaps for being on the 4th of February, feast of the Veronica which in an old Spanish calendar is denominated 'Rostro Hermoso.' Continuing his voyage, Pinzon entered the mouth of the Amazonas, which he called 'Santa Maria de la Mar Dulce,' probably on account of being here on the 25th of March, feast of the Annunciation. Entering a few leagues in the great river, which he called 'Marina tábalo,'* he had an encounter with the Indians. Continuing to the northward, he gave the name of 'S. Vicente' to a cape which he probably passed on the 4th of April, and arrived at Hespaniola on the 23d of June and at Palos in Spain on the 30th of September.

The Cape Santa Maria of Pinzon should be relatively well placed on the Juan de la Cosa map, and in this case it must be some promontory to the west of Cape S. Roque on the coast of the present states of Rio Grande do Norte or Ceará, his Rostro Hermoso being some leagues farther on. Varnhagen quite plausibly identified Cape Santa Maria with the Ponta do Mucoripe and the Rostro Hermoso with the Ponta Jericoá-coára.

Diego de Lepe, starting from Spain shortly after Pinzon, took the same course and sighted the land at about the same point, whence steering eastward, he coasted along until he perceived the southward bend of the coast in the vicinity of Cape S. Roque, but, notwithstanding the affirmation in 1513 of his companions to the contrary, did not double the cape. Turning about, he landed at the mouth of a river that he named 'S. Julian,' which is per-

* May not this be a reference to the pororóca (bore), Marina tábalo being a corruption of 'Marina-tambales' (Agitated sea)?

haps the partially destroyed name on the Juan de la Cosa map that commences with the letter *s*. Continuing westward, Lepe found the cross left by Pinzon, and entering the gulf of Maranhão, found the Indians there to be cannibals (see the Cantino map), perhaps through the loss of some companions, of whom one probably remained alive amongst the savages. Afterwards, leaving the coast so as no longer to be able to see and name its details, he entered the mouth of the Rio Pará and of the Amazonas proper, and, coasting northward, met Pinzon in the gulf of Paria. Before the 9th of November of 1500 Lepe had returned to Spain, but, as it appears, the greater part of his crew had returned some months before. Two of Lepe's companions, and perhaps the whole expedition, were in Hespánola in February or March of 1500, where they met Juan de la Cosa, who was in the expedition of Hojeda.

Juan de la Cosa, being in Spain between the months of June and October of 1500 in the interval of two voyages, organized his celebrated map, or more probably contributed the American part to a map already made (in another style and with more elaborate ornamentation) by others, in the parts relating to the other continents. As Pinzon only arrived in Spain towards the end of September, it is almost certain that the section of the coast to the south of the Orinoco was drawn from data furnished by the companions of Lepe who had arrived in June without their commander. Thus, as has already been deduced above from the internal evidence of the map itself, it is probable that this map represents essentially the configuration and nomenclature given by Lepe, and probably communicated by one of his companions. In this way is explained the absence in the map of the names 'Santa Maria de la Consolacion, Rostro Hermoso, Santa Maria de la Mar Dulce, Rio Marina-tâbalo and Cabo San

Vicente,' which in the following year were employed in the Capitulación Real to designate the concession given to Pinzon, and which, being undoubtedly furnished by him as characteristic of his discovery, should necessarily figure in any map directly inspired by him. It seems probable, however, that the two names of 'Santa Maria' indicate a revision of the map by some companion of Pinzon. In view of the abbreviated form of these two names and the complete lack of the others, it is hardly probable that their interpolation in the map, already almost completed, was due to Pinzon himself.

In 1508 Pinzon, in company with Juan de Solis, again ran over this same coast, or at least a part of it, but in the contrary direction. In the combined notes of the two voyages furnished to Peter Martyr de Anghiera and published by him in 1511 in the first edition of his *Decades*, a few Indian names appear, and amongst these, in the section here studied, those of 'Paricura'* and 'Camamóro' applied to the two margins of the Amazonas.

It is to be noted that Peter Martyr only employed the name 'Maranon' in his writings of 1516 after it had been pronounced by two of Lepe's companions in the Diego Columbus suit of 1513. Owing to the incomplete state of the Juan de la Cosa map, which has a large rent in the place where the gulf of Maranhão should appear, it is impossible to say whether this name originated with the expedition of Lepe, or

* Caetano da Silva ('L'Oyapoc et l'Amazonie,' Vol. II, p. 381, in the Rio Branco edition) cites Baena as authority for the existence of a tribe of Indians with this name to the north of the mouth of the Amazonas. Being published in 1511 and in a work that was doubtless eagerly consulted by all cartographers, the name Paracura appeared at once in the maps and became characteristic for the Amazonian region; it seems strange that its companion Camamóro should not have had the same good fortune.

if it was only current among sailors, having originated with some other expedition (presumably Portuguese) of which no historical notice has been preserved. The almost constant practice of the old map-makers of employing the name with the article, or without any qualifying term (*O Maranhão*, or simply *Maranhão* or *Maranon*) is very suggestive of a topographical term, such as, for example, 'O Porto,' 'El Farallan,' etc. The Portuguese marine terminology has 'O Marachão,' which would be very applicable to this part of the coast full of shoals and bars, and, as already noted, this name might easily be transformed into 'Maranhão' amongst people of slight literary culture.

The above-mentioned hypothesis of another expedition seems the most plausible one. The letter of Estevão Froes* written from San Domingoes on the 30th of July of 1514 after a year's imprisonment subsequent to a voyage along this coast, mentions João Coelho, 'he of the gate of the cross, residente of the city of Lisbon,' and Diego Ribeiro as his predecessors in this navigation. The name 'João de Lisboa' which appears in the second group of maps above analyzed seems to commemorate the first of these navigators, and in this case it may be presumed that it was furnished by some member of the expedition that had remained in the vicinity of Maranhão, and that another member of the same, passing to Italy, may have furnished the information on which the relatively detailed and accurate representation of this vicinity in the Freducci map of 1514 (?) was based.

In the suit of 1513 the pilot Andreas de

* Cited by Varnhagen and given in full by Capistrano de Abreu in the pamphlet entitled 'Descobrimento do Brazil e o seu desenvolvimento no seculo XVI' published in Rio de Janeiro in 1883. The name 'Fernão' given in this pamphlet was corrected to 'Estevão' in the recent work by the same author published in the volume of the fourteenth centennial of Brazil.

Morales declared that he had made a map of this coast based on the information of Pinzon and Lepe. It is probable that this map (or another organized in the same condition and preserved in the Casa de la Contratacion of Seville) served as a prototype for the Diego Ribeiro map of 1529, notwithstanding that this does not show evident signs of having proceeded directly from either of these first expeditions.

In the same suit Pinzon identified his Cabo Santa Maria de la Consolacion with the Cape Santo Agostinho of the Portuguese navigators, but it is evident that here he either deceived himself, or sought to deceive others. It is possible that through another error of identification on the part of other witnesses of the same suit, the name 'Maranon' was applied to the Mar de Agua Dulce (or Amazonas) of Pinzon, since, judging from the Freducci and Maiollo maps, this name seems to have an origin independent of the expeditions of Pinzon and Lepe.

According to the terms of the above mentioned letter of Estevão Froes, his voyage was made in the year 1513 and in company with Francisco and Pero Corso, and at some point of the coast there was a hostile encounter with the Indians with whom was a certain Pero Galego (Pedro de Galicia). The name 'Corso' given to a cape in the Maiollo map seems to indicate information obtained from some member of this expedition, and, this being the case, it may be presumed that the name 'Rio Pero' in the same map refers to the Pero Galego of the letter. On this hypothesis this person must have been located in the vicinity of the gulf of Maranhão, having probably been left there by some of the preceding expeditions.

Another Portuguese navigator skirting the coast some time before 1523 applied to it a great many new names which in some way came to the knowledge of an Italian cartographer, author of the so-called Turin

map. The fact is not referred to in the written history, and as the names remained limited to this map, which only became known within the last few years, this voyage did not constitute a notable permanent contribution to the knowledge of the geography of the region.

In 1527 an anonymous cartographer of the Casa de la Contratacion of Seville (probably Diego Ribeiro, author of the very similar map of 1529) organized a map in which the northeast coast was represented according to the data registered in that department, which, according to the express declaration of Diego Ribeiro in his map of 1529, was derived exclusively from the voyages of Pinzon and Lepe. In this map, as in that of 1529, the Amazonas is figured in a position that corresponds better with the southern mouth (or Rio Pará) than with the northern one, which is reduced to a simple bay with the name of 'Furna Grande,' although its proper position under the equator, as in the map of Juan de la Cosa, is preserved. To the great river thus dislocated to the southward was applied the name of 'Maranhom' in the 1527 map, and that of 'Maranon' in that of 1529, the first form being very suggestive of a Portuguese origin. In both these maps the gulf of Maranhão with its characteristic bifid inner-extremity is figured in its proper position with the name of 'Furna.'

In 1531, according to the investigations of Varnhagen ('*Historia geral do Brazil*,' 2d ed., I., p. 117) Diogo Leite, a Portuguese official, explored the coast between Pernambuco and the southern mouth of the Amazonas, and it is probable that to this explorer should be attributed the new type of map which, as we have already seen, appeared between the years of 1529 and 1534. Whoever may have been the author of this work, it is certain that between these dates an entirely new and very meritorious topographical survey of this part of the coast

was made, and by a person who from previous maps took only the nomenclature of that of Maiollo, or of some other one very similar to it. It is equally certain that this explorer remained long enough in the vicinity of Maranhão to recognize and represent in a truly admirable manner its leading topographical features and to learn various indigenous denominations; or, which is more probable, a person was here met with who through long residence was able to furnish this information. The 'Pero Galego' mentioned by Estevão Froes, if still alive, would be in these conditions, and the hypothesis is not a very risky one that he was the informant. Whoever it may have been, somebody before 1534 furnished the cartographers* with elements for representing the hydrographic basin of Maranhão in a manner that presents a notable contrast with the grotesque representations of those of the River Plate and Amazonas based on the exploration of a Sebastian Cabot and of an Orellana.

The unfortunate attempt of Ayres da Cunha in 1536-38 to found a colony in Maranhão left no traces in the cartography of the region, unless the name 'Ascençaõ' in the maps of Diogo Homen and Desceliers is an interpolation in their prototype of a denomination given by this expedition. In the written history, however, the name given to the ephemeral settlement is 'Nazareth.'

About 1560 the cartographers commenced to attempt a representation of the interior of the continent, supplying the lack of definite data by flights of the imagination. Diego Gutierrez figured a great river uniting, across the continent, Lake Titicaca with the gulf of Maranhão and thus duplicating the

* Some of the maps made after this expedition differ somewhat in the drawing and in some of the names, from the earliest one preserved (that of Gaspar Viegas of 1534), and it is probable that there was another Portuguese prototype that has not come down to us.

Amazonas of Orellana; Bartholemeu Velho, in his map of 1464, represented a great central lake (Eupana) from which flowed to the south the Paraguay, to the north and entering the Amazonas the 'Paraa' (thus representing quite well the Tocantins), and to the east two rivers entering the São Francisco (quite well figured but united to the Paraná) which bifurcated to the coast of Maranhão by the river 'Abiunhao' (Parnahyba) and to that of Sergipe by the river 'Real.' This last feature persisted in maps until 1700.

The Gutierrez map, printed in Amsterdam in 1562, had an enormous recuperation and served as a prototype for a flood of maps characterized by a double Amazonas, published by the great Dutch printing firms of Ortelius, Mercator, etc. The equally bold conception of Bartholemeu Velho (reproduced, as regards the hydrography, by Vaz Dourado) had a somewhat more delayed entrance in current cartography, in which it was introduced in 1585 by Jan van Doet, whose map is essentially a reproduction of that of Bartholemeu Velho, of which the original only recently became known. These two types of maps, reproduced and modified *ad infinitum*, dominated cartography until 1625, when Jean de Laet, in the first edition of his great work on the New World, made a radical reform, introducing, on the basis of Portuguese marine charts and of Dutch explorations, the configuration which, improved but not essentially modified, has persisted till to-day. This last group of maps offers an interesting subject for study, for which, however, I have not the elements at hand. ORVILLE A. DERBY.

SÃO PAULO, BRAZIL,
June, 1903.

SCIENTIFIC BOOKS.

GOULD'S BIOGRAPHIC CLINICS.

MEDICAL teaching has always been essentially demonstrative; and in modern days the

facilities for bedside or 'clinical' instruction have been enormously enlarged. No instructor, however, has ever before gathered so distinguished an array of 'subjects' as Dr. George M. Gould brings before his world-class to illustrate his lectures upon 'Eye-strain.*' For it is in the irritation of nerve centers as a result of the accommodational strain necessitated by the attempt to use faulty visual apparatus in work requiring delicate adjustment and continuous effort, that this eminent lexicographer and ophthalmologist finds the ready explanation of the physical miseries of the great students, artists and writers whose pathologic life-history he studies. Certain common factors are found in these histories, not the least important of which are the early development and long persistence of the symptoms, their recurrence whenever the sufferer used the eyes in work or study, their resistance to all sorts of treatment, their relief when enforced rest from work gave unwitting deliverance from their cause and, finally, in those who survived to that period of life, their sudden disappearance, when accommodational effort ceased to be possible. The 'mysteriousness' which the symptoms seemed to assume both to patients and to physicians, is also a point well worth noting. To quote Dr. Gould's own words: "This lack of cause or reason for their sufferings struck each one, and pages of excerpts might be gathered showing their wonder. An unseen malignant enemy or fatality seemed seated above them or at the very heart of their being, implacable and unexplainable. To their physicians they turned with beseeching question, and imploring aid. Some spent a great part of their lives in going from one doctor to another, or in testing quackery, in traveling for hoped relief anywhere, by

* 'Biographic Clinics: The Origin of the Ill Health of DeQuincey, Carlyle, Darwin, Huxley and Browning.' *Idem*, Volume II., George Eliot, George Henry Lewes, Wagner, Parkman, Jane Welch Carlyle, Spencer, Whittier, Margaret Fuller Ossoli and Nietzsche. By George M. Gould, M.D., Editor of *American Medicine*, Author of 'An Illustrated Dictionary of Medicine, Biology, etc.,' 'Borderland Studies,' 'The Meaning and Method of Life,' etc. Philadelphia, P. Blakiston's Son & Co., 1903, 1904.