

THE
PIRI
REIS'
MAPS

Paper written by one of Dr. J. Allen Hynek's students at
Northwestern University

Carrie S [REDACTED]
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THE PIRI REIS' MAP

INTRODUCTION

"A map dating from 1513, and by the Turkish Admiral Piri Reis is the seed from which the vine has grown."¹

The Piri Reis' Maps, presumed to have been made over 5,000 years ago, give startling evidence of a lost civilization that may have been more advanced than anyone could have imagined. There has been much controversy about them in recent years, and there is much more to be discovered.

In this paper, I am going to give a brief description of what these maps are and what they could mean, without, however, forming any absolute opinions. I have chosen to center on the part of the map showing Antartica for two reasons. First of all, I could not hope to describe the entire map in sufficient detail in one paper, and secondly, I feel that Antartica is both an interesting and representative part of a map which may change the thinking of many historians in future years.

C.A.S.

¹Hapgood, Charles H., F.R.G.S., Maps of the Ancient Sea Kings, Evidence of Advanced Civilizations in the Ice Age, Chilton Books, Publisher, Philadelphia and New York. p.vii.

BACKGROUND OF THE PIRI REIS' MAPS

The year was 1929 when B. Halil Etem Eldem, Director of National Museums first discovered the Piri Reis' Maps. It was during the time when the Palace of Topkapu was being turned into a museum of antiquities. The maps were examined by him and Professor Kahle, a German orientalist, and the results were disclosed by Professor Kahle at the XVIIIth Congress of Orientalists in September of 1931 at Lynden. These results aroused a great deal of interest, and the maps were translated and published in Italian and Spanish as well. The Turkish newspapers, however, named it "The Map of Christopher Columbus" and presented many misleading views. These errors were corrected by the Society for Turkish Historical Research (Türk Tarihi Tetkik Cemiyeti) who also sent the article and pictures to the Illustrated London News, which appeared in the issue of July 23, 1932.

Following others, Professor Kahle published an article in the year 1933 in a pamphlet entitled "Die verschollene Columbus-Karte von 1498 in einer Türkischen Weltkarte von 1513," containing a great deal of information on the Piri Reis' Maps.

The fact that the Piri Reis' Map has interested the geographers and that much work has been expended on it in a short time can be seen in this brief bibliography.

REIS' LIFE

Kemal Reis was a Turkish admiral in the Mediterranean during the last quarter of the fifteenth century. His nephew was Piri Reis, a distinguished geographer and admiral in the Red and Arabian Seas. Piri Reis was interested in the science of navigation, which took up much of his spare time. His book, "Bahriye," contains descriptions and drawings of the Mediterranean, including the cities and countries on its shore, as well as valuable information on the subject of navigation itself. In 1513, he drew up a map of the Mediterranean on parchment, and presented it to Selim I, Conqueror of Egypt.

Piri Reis had as a slave a pilot who had been with Columbus on three of his voyages. When captured, the pilot was found to possess maps used by Columbus. Piri Reis used this and eight other Greek maps, handed down from Alexander, the Great, to compile his world map. So far, however, only the 1513 map of the Atlantic is the only map found.

WHAT IS THE PIRI REIS' MAP AND HOW DID IT GET HERE?

The ancient map shows the coast of South America, Africa, and Antarctica...all remarkably true. (This is only, however, the western half of the map.) This leads to the fantastic suggestion that perhaps there were competent explorers and map makers along the coasts of the Southern Atlantic 2,000 years before Columbus!

For instance, the drawn coast line of the Antarctic shows the line which is now under the ice cap, but must have been surveyed twenty centuries ago.

It has been said that the cartographers who prepared these maps were members of survey teams who had visited almost the entire earth. They were not adventurers, but competent scientists skilled in the art of determining astro-positions and traverses.²

The Piri Reis' Maps were discovered in the Library of Congress. They had been there for some time, but no one had taken the time or the trouble to translate them. A Parish priest in the Parish of Staden, Iceland, named Father Thorsden, brought them there in 1568. It was deposited in the cathedral at Iceland. Somehow, they were brought eventually over to the United States. At an interview with Mr. Sherman Larsen, he said that it was his opinion that they may have been taken in World War I and brought here after the war was over.³

THE GRID SYSTEM OF THE PIRI REIS' MAPS

Charles H. Hapgood, F.R.G.S. and author of the book Maps of the Ancient Sea Kings, got interested in the Piri Reis' Maps and undertook a seven-year study in connection with his classes at college. This investigation convinced

²"New and Old Discoveries in Antarctica," A Broadcast from the Georgetown University Forum, Washington, D.C., August 26, 1956.p.2.

³Larsen, Sherman, Interviewed by Carrie Stowell, 2926 Applegate Road, Glenview, Ill., 7:30 PM, May 16, 1968.

him that these maps were derived from prototypes drawn in pre-Hellenic times (perhaps the last Ice Age) and were "older maps based on a sophisticated understanding of the spherical trigonometry, of map projections and upon a detailed and accurate knowledge of latitude and longitude of the coastal features in a large part of the world."⁴

Mr. Hapgood and his students first started out by comparing the Piri Reis' Map to various "portolan" maps, or maps that were used to guide navigators from port to port. When compared to the Dulcert Portolano Map of 1339, the two were very similar, although the Dulcert Portolano Map only covers the Black Sea while the Piri Reis' Map covers the Atlantic.

Next, the students found that the meridian on the modern maps seemed to coincide with the line of the Piri Reis' Map which ran north and south close to the African Coast, about 20° West Longitude, leaving the Cape Verde Islands and the Azores to the west and the Canaries to the east. They thought this might be the Prime Meridian. This was a line drawn on the True North, with all lines parallel to it being longitude and all lines at right angles being parallels of latitude. This formed a rectangular grid.

The only difference between the large rectangular grid of this map and that of the modern maps was that the latter all carry registers of degrees of latitude and longitude, with parallels and meridians at equal intervals of 5° or 10°, while

⁴Maps of the Ancient Sea Kings, p. ix.

the former does not.

The search for the center of the map, to find the mathematical basis for the portolanos, lasted for about three years. After much research and trial and error, the center was thought to be at Syene, on the Tropic of Cancer, at the longitude of $32\frac{1}{2}^{\circ}$ East. This seemed logical, since the poles, the tropics, and the equator can be exactly determined by celestial observation. Later on, however, they found the true center to be the intersection of the meridian of Alexandria at 30° East longitude with the Tropic. This too was reasonable, because it combines these two elements: the use of the Tropic, based on astronomy, and the use of the meridian of Alexandria, capital of the ancient maps.

The class finally made a grid system that worked (see page 14), and found some of the places were quite accurate in location while some of the places were far off. Because the map was a composite made up of piecing together many maps made by different people at different times, there were errors in combining the original maps, such as 900 miles of the South American coast missing as well as the Amazon River drawn twice.

The class also found that the Piri Reis' Maps were based on Eratosthenes' estimate of the size of the Earth, where in the 3rd century B.C. this Greek astronomer measured the circumference of the Earth by taking account of the angle seen at noon as simultaneously observed at Alexandria and Syene.

MARGINAL NOTES

According to a pamphlet from the Library of Congress, the marginal notes of the one edge of the Piri Reis' Map only, reveals that the map has been torn in two. This is but part of a large scale map of the world, and infers that the complete map showed the then known portions of the world that had been discovered.

In one of the marginal notes there is a detailed account of the maps and charts which Piri Reis consulted in drawing his own.

He states, in the marginal note describing the shores of the Antilles, that for these shores and islands, he has made use of Christopher Columbus' maps. As mentioned before, he quotes the story of a Spaniard who had been made prisoner by his uncle, and claimed to have been to America with Columbus three times.

About his use of Columbus' map, he refers that:

The names which mark places on the said islands and coasts were given by Columbus, and these places may be know by them. The coasts and islands on this map are taken from Colonbo's map. 5

In one of his notes, Piri Reis personally explains the exact manner in which his map can into existence:

This section shows in what way this map was drawn. In this century there is no other map like this in anyone's possession. The hand of this poor man has drawn it and now it is constructed. From about twenty charts and Mappae Mundi--these are maps drawn in the days of Alexander, Lord of Two Horns, which show inhabited quarter of the world; the Arabs name these charts Jaferiye-- from eight Jaferiyes of that

⁵"Piri Reis' Map," Maps Division, The Library of Congress, Washington, D.C., 1953, p. 2.

kind and one Arabic map of Hind, and from the maps just drawn by four Portuguese which show the countries of Sind, Hind and China geometrically drawn and also from a map drawn by Columbus in the western region, I have extracted it. By reducing these maps to one scale this final form was arrived at. So that the present map is as correct and reliable for the Seven Seas as the maps of these our countries are considered correct and reliable by Seamen. 6

The rest of the marginal notes are found starting on page 15. On the map, they are numbered beginning with the northwest corner of the map, coming down and around southward in a spiral direction towards the center.

ANTARCTICA

Approximately ten years ago, the Head Engineer of the Hydrographic Office of the United States Navy gave a Mr. Arlington H. Mallery, author of "Lost America" and a well-known authority on ancient maps, along with a Mr. M. I. Walters, a cartographer, formerly with the United States Hydrographic Office, a copy of the Piri Reis' Map. Through extensive checking, they found with amazing accuracy the various land and water areas in their exact location. The important thing they discovered about the maps was that they (the maps) "bring home to us the fact that the oldest human records that we have

⁶Ibid, p. 3.

that are absolutely authentic are the navigational charts."⁷

They found, after much intensive examination, that Columbus had a map with him that showed accurately the Palmer Peninsula in the Antarctic Continent. The problem of how they could have been so accurate so many thousands of years ago, when the scientific methods of mapping have just recently come to be known was puzzled over by them both. They said that there was very little ice then, but the map had a record of every mountain range in North America and Canada, some of which were not known to the Army Map Service. They have since found them. Mr. Mallery said: "Just how they were able to do it--you will probably recall the tradition of the Greeks of the airplane--maybe they had the airplane."⁸ (This idea could even be brought so far as to consider the idea of UFO's, or a superior being from another part of the universe, producing the maps, as well as an advanced civilization inhabiting our own Earth.) Also, they knew their longitude absolutely correctly--something that we did not know until about two centuries ago.

To further test the accuracy of the map, a seismic exploration was made, similar to a man-made earthquake. A charge of dynamite is set off, and the waves, velocity and time they are reflected from various discontinuities below the earth's surface are studied. From these studies, the depth of the reflections as well as the material which they are in can be determined. Checking these against the older maps, the results showed that the older maps were extremely correct.

⁷"New and Old Discoveries in Antarctica," p. 5.

⁸Ibid, p. 6.

Mr. Mallery feels that there were competent explorers and map makers before the time of Columbus, but that they were:

Not only explorers, but they must have had a very competent and far flung hydrographic organization, because you can't map as large a continent as Antarctica as they have, half of it, or as extensive an area as Greenland or half of the continent of North America, as we know they did do, probable 5,000 years ago, it can't be done by any single individual or small group of explorers. It means an aggregation of skilled scientists who are familiar with astronomy as well as the methods required for topographic surveying."⁹

Other than the fact that there were map makers 5,000 years ago, these maps mean that the ice age or an intermediate ice age took place at a much later time than thought previously. The ice glacier that was shown on the map of North America was in existence 15,000 years ago and disappeared...presumably. But this map shows that glacier only 5,000 years ago. Other maps indicate that the glaciers had disappeared or else had not appeared at the time these maps were made, or had only begun to appear.

In the map of Queen Maud Land, Antarctica, it is indicated that the glacier had just begun to appear in the middle, but on the map that Columbus had showed the bay still entirely uncovered, and now only the peaks of the mountains that were on the island show above the ice. The ice has added about a mile, at least, since that map was made.

⁹Ibid, p. 11.

Charles Hapgood and his class have also done research on the map showing Antarctica in the Piri Reis' Maps. He compared the south sector of the Piri Reis' Map with a map traced from a globe, and found a striking similarity between them--the Queen Maud Land coast and the coast line of the Piri Reis' Map. The Queen Maud Land coast was due south of the Guinea coast of Africa, on the modern maps, just as the coast line on the Piri Reis' Map is.

According to their grid, the Piri Reis' coast extends through 27° of longitude, compared with 24° on the modern map. This is itself a remarkable agreement. Since a degree of longitude is only about 20 miles, the error is not too great. The grid also shows the coast line in a good position-- 10° or 200 miles too far to the west.

Since part of the South American coast and the Drake Passage are omitted on the Piri Reis' Maps, this accounts for 25° of south latitude. When these degrees are added to those found by the grid for the Queen Maud Land coast, the coast appears to be correct in latitude.

Even the character of the Queen Maud Land coast is similar between ancient and modern. The modern maps show that it is rugged, with numerous mountain ranges, and indicate that these peaks show up above the present levels of ice. In the Piri Reis' Map, there is the same type of coast without the ice. The numerous mountains are shown by the heavy shading on the islands; typical of 16th century map-making.

Mr. Hapgood is in agreement with Mr. Malery's chief argument--the striking agreement of the map with the "seismic

profile" across the Queen Maud Land. This profile shows it is a rugged terrain, having a coast line with mountains behind the coast and high islands in front. Points of profile below sea level coincide with the bays between the islands of the Piri Reis' Map, and the identification of specific features of the coast help to strengthen this particular argument on the validity of the Piri Reis' Map of Antarctica.

CONCLUSION

"But is this all? Is the process at an end? Are no more lost civilizations waiting to be discovered? It would be contrary to history itself if it were the case."¹⁰

There is a much greater wealth of information on the Piri Reis' Maps than I have been able to enclose in this one paper. Here, I have briefly stated facts, not answers. There are points to both sides, and the question of validity is a very difficult one. When the Library of Congress and the Hydrographic Office of the United States Navy affirm something, there must be something to it. But then, when people such as Dr. Ishnk Wright, former Director of the American Geographical Society, feel that "Hapgood's ingenuity is good, but some of his hypothesis cry aloud for further testimony,"¹¹ the validity can be somewhat shaken. But this, as all the other questions, must be answered by the individual himself. But one thing is certain--something as important to history as the Piri Reis' Maps must not be ignored.

¹⁰Maps of the Ancient Sea Kings, p. 197.

¹¹Ibid, p. viii.

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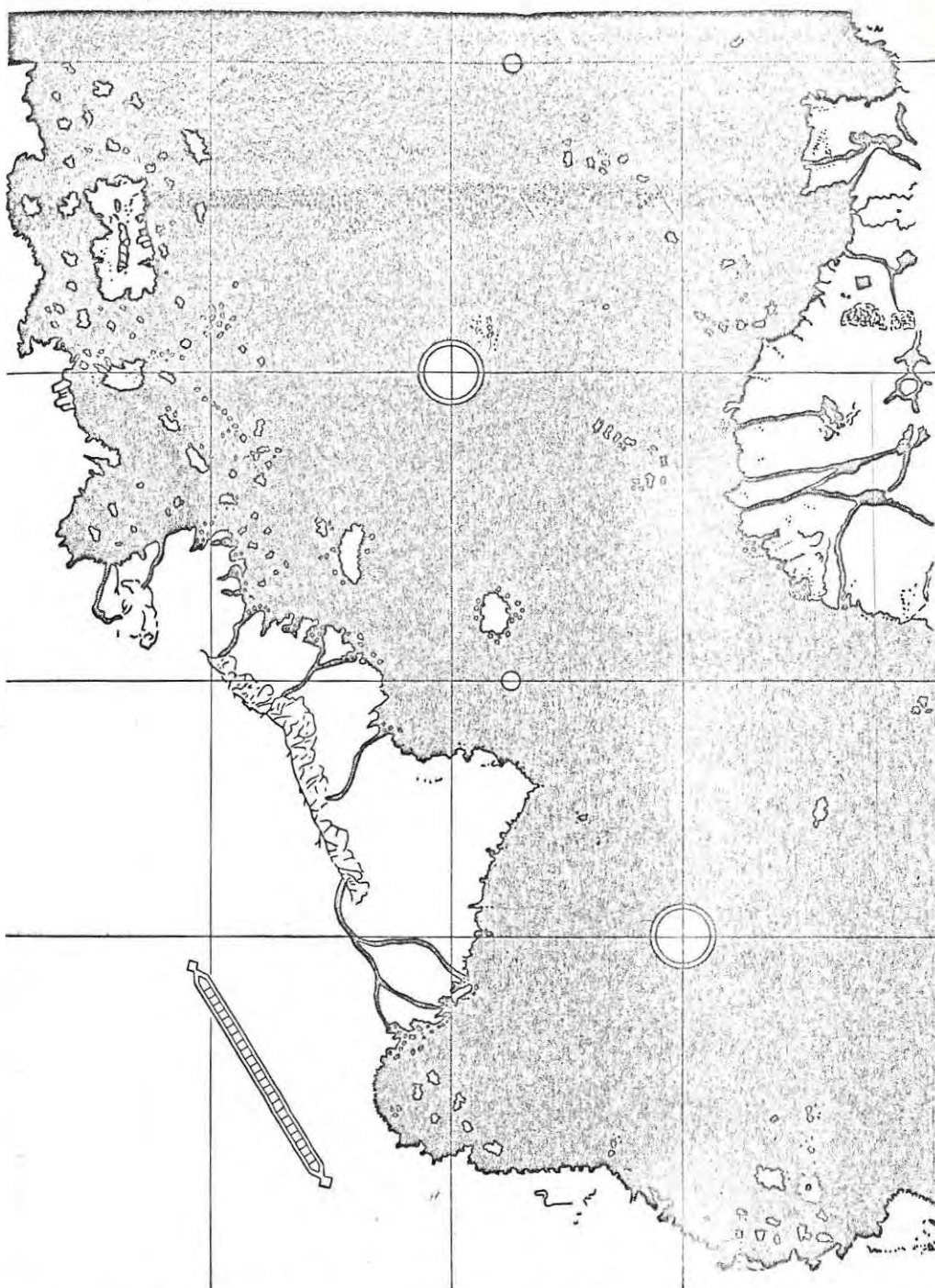


Figure 12. The Piri Re'is Map: the Main Grid of the Portoian Design traced from the facsimile.

the grid system for the Piri Reis' map according to Charles Hapgood

MARGINAL NOTES OF THE PIRI REIS MAP.

I. Illegible

II. This country is inhabited. The entire population goes naked.

III. This region is known as the vilayet of Antilia. It is on the side where the sun sets. They say that there are four kinds of parrots, white, red, green and black. The people eat the flesh of parrots and their headdress is made entirely of parrots' feathers. There is a stone here. It resembles black touchstone. The people use it instead of the ax. That it is very hard...(illegible). We saw that stone.

Note: Piri Reis writes in the "Bahriye": «In the enemy ships which we captured in the Mediterranean, we found a headdress made of these parrot feathers, and also a stone resembling touchstone.»)

IV. This map was drawn by Piri Ibn Haji Mehmed, known as the nephew of Kemal Reis, in Gallipoli, in the month of muharrem of the year 919 (that is, between the 9th of March and the 7th of April of the year 1513.)

V. THIS SECTION TELLS HOW THESE SHORES AND ALSO THESE ISLANDS WERE FOUND.

These coasts are named the shores of Antilia. They were discovered in the year 896 of the Arab calendar. But it is reported thus, that a Genoese infidel, his name was Colombo, he it was who discovered these places. For instance, a book fell in to the hands of the said Colombo, and he found it said in this book that at the end of the Western Sea (Atlantic) that is, on its western side, there were coasts and islands and all kinds of metals and also precious stones. The above-mentioned, having studied this book thoroughly, explained these matters one by one to the great of Genoa and said: "Come, give me two ships, let me go and find these places." They said: "O unprofitable man, can an end or a limit be found to the Western Sea? Its vapour is full of darkness." The above-mentioned Colombo saw that no help was forthcoming from the Genoese, he sped forth, went to the Bey of Spain (king), and told his tale in detail. They too answered like the Genoese, In brief Colombo petitioned these people for a long time, finally the Bey of Spain gave him two ships, saw that they were well equipped, and said: "O Colombo, if it happens as you say, let us make you kapudan (admiral) to that country. Having said which he sent the said Colombo to the Western Sea. The late Gazi Kemal had a Spanish slave. The above-mentioned slave said the Kemal Reis, he had been three times to that land with Colombo. He said: "First we reached the Strait of Gibraltar, then from there straight south and west between the two...(illegible). Having advanced straight four thousand miles, we saw an island facing us, but gradually the waves of the sea became foamless, that is the sea was becalmed and the North Star--the sea-men on their compasses still say star--little by little was veiled and became invisible, and he also said that the stars in that region are not arranged as here. They are seen in a different arrangement. They anchored at the island which they had seen earlier across the way the population of that island came, show arrows at them and did not allow them to land and ask for informations. The males and the female show hand arrows. The tips of these arrows were made of fish-bones, and the whole population went naked and also very...(illegible). Seeing that they could not land on that island they crossed to the

other side of the island, they saw a boat. On seeing them the boat fled and they (the people in the boat) dashed out on land. They (the Spaniards) took the boat. They saw that inside of it there was human flesh. It happened that these people were of that nation which went from island to island hunting men and eating them. The said Colombo saw yet another island, they neared it, they saw that on that island there were great snakes. They avoided landing on this island and remained there seventeen days. The people of this island saw that no harm came to them from this boat, they caught fish and brought it to them in their small ship's boat. (Pilika). These (Spaniards) always gave them glass beads. It appears that he (Colombus) had read it in the book that in that region glass beads were valued. Seeing the beads, they brought still more fish. These (Spaniards) always gave them glass beads. One day they saw gold around the arm of a woman, they took the gold and gave her beads. They said to them, to bring more gold, we will give you more beads (they said). They went and brought them much gold. It appears that in their mountains there were gold mines. One day, also, they saw pearls in the hands of one person. They saw that when they gave beads many more pearls were brought to them. Pearls were found on the shore of this island, in a spot one or two fathoms deep. And also loading their ship with many logwood trees and taking two natives along they carried them within that year to the Bey of Spain. But the said Colombo not knowing the language of these people, they traded by signs, and after this trip the Bey of Spain sent priests and barley, taught the natives how to sow and reap and converted them to his own religion. They had no religion of any sort. They walked naked and lay there like animals. Now these regions have been opened to all and have become famous. The names which mark the places on the said islands and coasts were given by Colombo, that these places may be known by them. And also Colombo was a great astronomer. The coasts and islands on this map are taken from Colombo's map.

VI. This section shows in what way this map was drawn. In this century there is no map like this map in anyone's possession. The hand of this poor man has drawn it and now it is constructed. From about twenty charts and Mappae Munde--these are charts drawn in the days of Alexander, Lord of the Two Horns, which show the inhabited quarter of the world; the Arabs name these charts Jaferiye--from eight Jaferiyes of that kind and one Arabic map of Hind, and from the maps just drawn by four Portuguese which show the countries of Hind, Sind and China geometrically drawn and also from a map drawn by Colombo in the western region I have extracted it. By reducing all these maps to one scale this final form was arrived at. So that the present map is as correct and reliable for the Seven Seas as the map of these our countries is considered correct and reliable by seamen.

VII. It is related by the Portuguese infidel that in this spot night and day are at their shortest of two hours, at their longest of twenty two hours. But the day is very warm and in the night there is much dew.

VIII. On the way to the vilayet of Hind a Portuguese ship encountered a contrary wind (blowing) from the shore. The wind from the shore... (illegible) They saw that these places are good anchorages. They threw anchor and went to the shore in boats. They saw people walking, all of them naked. But they shot arrows, their tips made of fishbone. They stayed there eight days. They traded with these people by signs. That barca saw these lands and wrote about them which... The said barca without going to Hind, returned to

Portugal, where, upon arrival it gave information... They described these shores in detail... They have discovered them.

IX. And in this country it seems that there are white-haired monsters in this shape, and also six-horned oxen. The Portuguese infidels have written it in their maps...

X.. This country is a waste. Everything is in ruin and it is said that the large snakes are found here. For this reason the Portuguese infidels did not land on these shores and these are also said to be very hot.

XI. And these four ships are Portuguese ships. Their shape is written down. They travelled from the western land to the point of Abyssinia (Habesh) in order to reach India. They said towards Shuluk. The distance across this gulf is 420Q miles.

XII.on this shore a tower
.....is however
.....in this climate gold
.....taking a rope
.....is said they measured
(Note: The fact that half of each of these lines is missing is the clearest proof of the map's having been torn in two.)

XIII. And a Genoese kuke coming from Flanders was caught in a storm. Impelled by the storm it came upon these islands, and in this manner these islands became known.

XIV. It is said th t is ancient times a priest by the name of Sanvolrandan (Santo Brandan) travelled on the Seven Seas, so they say. The above-mentioned landed on this fish. They thought it day land and lit a fire upon this fish. When the fish's back began to burn it plunged into the sea, they reembarked in their boats and fled to the ship. This event is not mentioned by the Portuguese infidels. It is taken from the ancient Mappae Mundā.

XV. To these small islands they have given the name of Undizi Vergine. That is to say the Eleven Virgins.

XVI. And this island they call the Island of Antilia. There are many monsters and parrots and much logwood. It is not inhabited.

XVII. This barca was driven upon these shores by a storr and remained where it fell... Its name was Nicola di Giuvan. On his map it is written that these rivers which can be seen have for the most part gold (in their beds). When the water had gone they collected much gold (dust) from the sand. On their map...

XVIII. This is the barca from Portugal which encountered a storm and came to this land. The details are written on the edge of this map.

(Note: See VIII)

XIX. The Portuguese infidels do not go west of here. All that side belongs entirely to Spain. They have made an agreement that (a line) two thousand miles to the western side of the Strait of Gibraltar should be taken as a boundary. The Portuguese do not cross to that side but the Hind side and the southern side belong to

the Portuguese.

XX. And this caravel having encountered a storm was driven upon this island. Its name was Nicola Giuvan. And on this island there were many oxen with one horn. For this reason they call this island Ise De Vacca, which means, Ox Island.

XXI. The admiral of this caravel is named Messir Anton the Genoese, but he grew up in Portugal. One day the above-mentioned caravel encountered a storm, it was driven upon this island. He found much ginger here and has written about these islands.

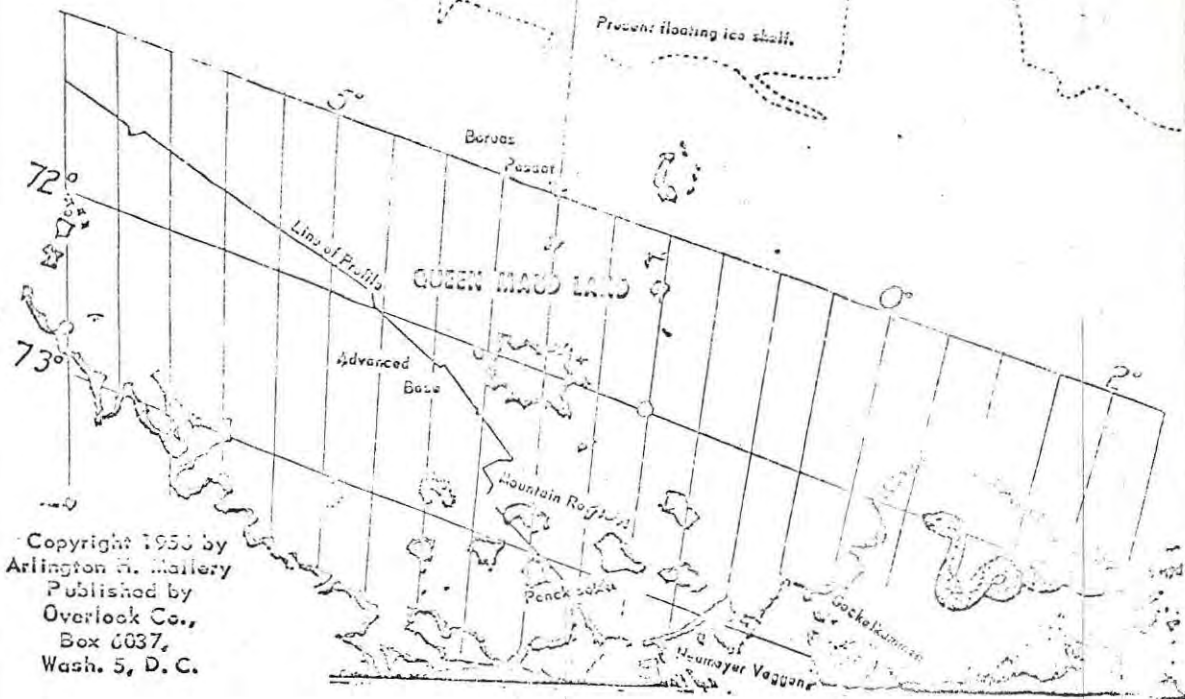
XXII. This sea is called the Western Sea, but the Frank sailors call it the Mare d'Espagna. Which means the Sea of Spain. Up to now it was known by the names, but Colombo, who has opened up this sea and made these islands known, and also the Portuguese infidels who have opened up the region of Hind have agreed together to give this sea a new name. They have given it the name of Ovo Sano (Oceano) that is to say, sound egg. Before this it was thought that the sea had no end or limit, that at its other end was darkness. Now they have seen that this sea is girded by a coast, because it is like a lake, they have called it Ovo Sano.

XXIII. In this spot there are oxen with one horn, and also monsters in this shape.

XXIV. These monsters are seven spans long. Between their eyes there is a distance of one span. But they are harmless souls.

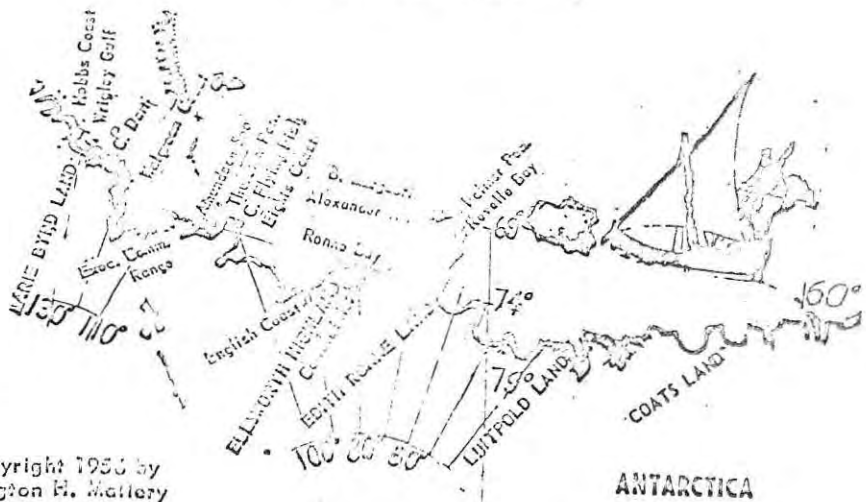
THE PIRI REIS MAP
OF
QUEEN MAUD LAND
ANTARCTICA

Page c.



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THE PIRI REIS MAP
OF THE
PACIFIC & ATLANTIC COAST OF
ANTARCTICA



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TWO ANTARCTIC MAPS BY PIRI REIS

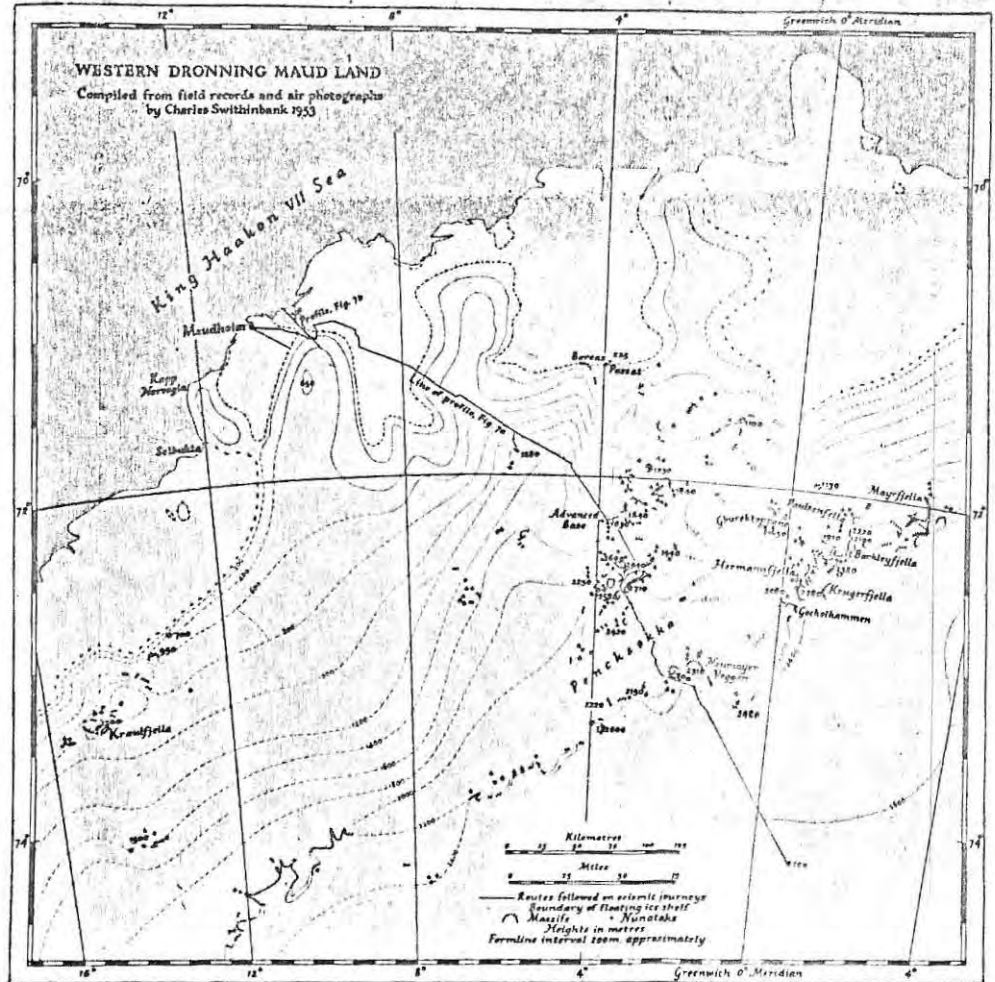


Figure 47. Route of the Norwegian-British-Swedish Seismic Survey Party across Queen Maud Land, 1949. (See Note 10)

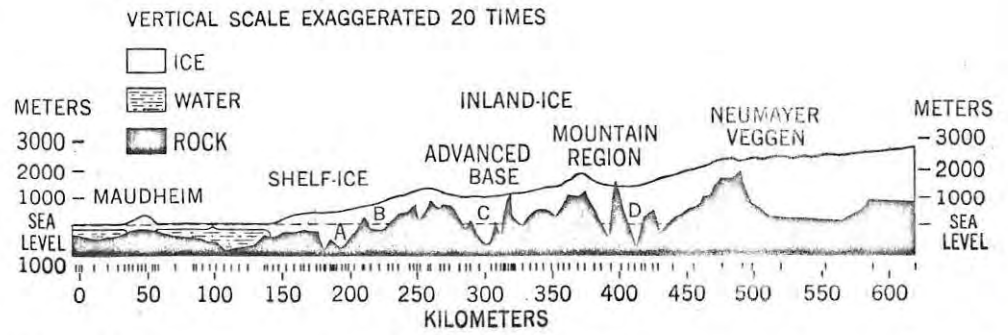


Figure 48. The profile of the Queen Maud Land ice cap: note the extensions of the ice cap below sea level, A, B, C, D. Compare with the islands and bays of the Antarctic sector of the Piri Ro'i's Map (Figure 18). (After Schytt)

PROFILE OF THE QUEEN MAUD LAND ICE CAP

Locality	True Position	Piri Re's Map	Errors
72. Gulf of San Gorge	47.0 S	27.5 S +16	3.5 N
	66.0 W	45.0 W +20	1.0 E
73. Bahia Grande	50-52 S	30.0 S +16	5.0 N
	69.0 W	47.0 W +20	2.0 E
74. Cape San Diego (near the Horn)	55.0 S	35.0 S +16	4.0 N
	65.0 W	46.5 W +20	1.5 W
75. Falkland Islands	52.0 S	30-32 S +16	5.0 N
	60.0 W	43-45 W +20	4.0 W

At this point there appears to be another break in the map, with the omission of Drake Passage. This involves a further loss of about 9° of latitude. The total latitude adjustment now amounts to 25°.

76. The South Shetlands	61.0 S	33-34 S +25	2.5 N
	60.0 W	40-43 W +20	0.0
77. South Georgia	Anomalous. See below.		

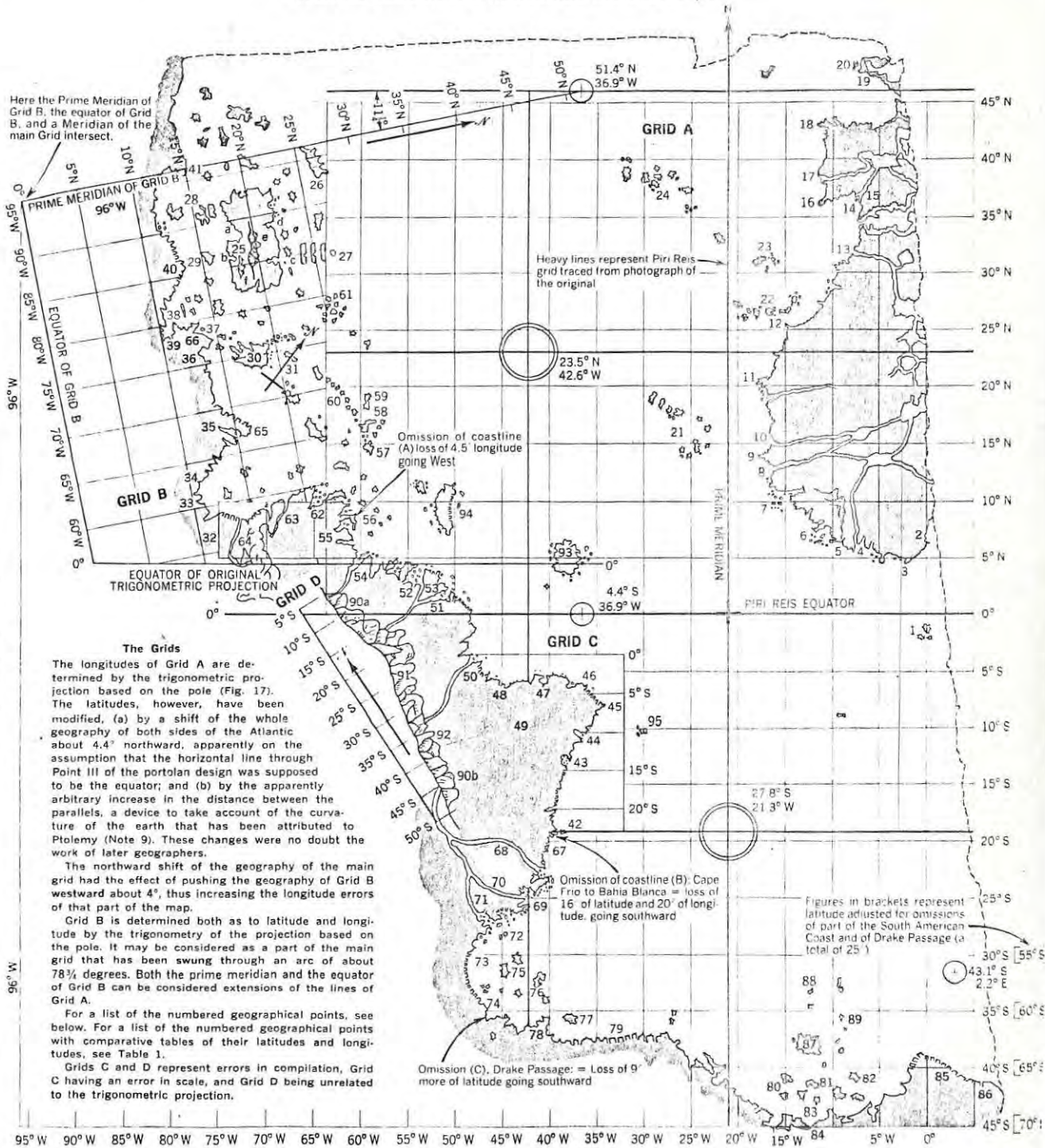
(j) ANTARCTICA

78. The Palmer Peninsula	65.0 S	36.0 S +25	4.0 N
	60.0 W	40.0 W +20	0.0
79. The Weddell Sea	67-75 S	37.0 S +25	c. 8.0 N
	20-60 W	30-40 W	

At this point the deficiency of west longitude is compensated for by a large error in the total longitude covered by the Weddell Sea. On the modern map this amounts to 40°; on the Piri Re's Map only to about 10°. We therefore now subtract 10° from the west longitude readings.

80. Mt. Ropke, Queen Maud Land	72.5 S	42.5 S +25	5.0 N
	4.0 W	15.0 W -10	1.0 W
81. The Regula Range	72.5 S	42.5 S +25	5.0 N
	2.5 W	12.5 W -10	0.0
82. Muhlig-Hofmann Mountains	71-73 S	41-43 S +25	4.0 N
	1-6 E	7-10 W -10	0.0
83. Penck Trough	73.0 S	44.0 S +25	4.0 N
	2.5 W	12.0 W -10	0.0
84. Neumeyer Escarpment	73.5 S	45.0 S +25	3.5 N
	2.0 W	12.0 W -10	0.0
85. Drygalski Mountains	71-73 S	40.0 S +25	7.0 N
	8-14 E	2.0 E +10	0.0
86. Vorposten Peak	71.5 S	42.5 S +25	3.0 N
	16.0 E	6.0 E +10	0.0
87. Boreas, Passat Nunataks	71.5 S	37-38 S +25	4.0 N
	4.0 W	11-14 W -10	0.0

THE PIRI REIS MAP OF 1513
 IN ALL THE WORLD THERE IS NO OTHER MAP LIKE THIS MAP—PIRI REIS



The Grids

The longitudes of Grid A are determined by the trigonometric projection based on the pole (Fig. 17). The latitudes, however, have been modified, (a) by a shift of the whole geography of both sides of the Atlantic about 4.4° northward, apparently on the assumption that the horizontal line through Point III of the portolan design was supposed to be the equator; and (b) by the apparently arbitrary increase in the distance between the parallels, a device to take account of the curvature of the earth that has been attributed to Ptolemy (Note 9). These changes were no doubt the work of later geographers.

The northward shift of the geography of the main grid had the effect of pushing the geography of Grid B westward about 4°, thus increasing the longitude errors of that part of the map.

Grid B is determined both as to latitude and longitude by the trigonometry of the projection based on the pole. It may be considered as a part of the main grid that has been swung through an arc of about 78 3/4 degrees. Both the prime meridian and the equator of Grid B can be considered extensions of the lines of Grid A.

For a list of the numbered geographical points, see below. For a list of the numbered geographical points with comparative tables of their latitudes and longitudes, see Table 1.

Grids C and D represent errors in compilation, Grid C having an error in scale, and Grid D being unrelated to the trigonometric projection.

- | | | | | |
|------------------------|------------------------------|---|------------------------------------|------------------------------------|
| 1. Annobon Islands | 21. Cape Verde Islands | 34. Essequibo River | 53. Island of Marajo | 71. Bahia Grande |
| 2. Cavalry River | 22. The Canary Islands | 35. Orinoco River | 54. Essequibo River | 74. Cape San Diego (near the Horn) |
| 3. Cape Palmas | 23. Madeira Islands | 36. Gulf of Venezuela | 55. Mouths of the Orinoco | 75. Falkland Islands |
| 4. St. Paul River | 24. The Azores | 37. Pt. Gallinas | 56. Peninsula of Paria | 76. The South Shetlands |
| 5. Mano River | 25. Cuba | 38. Magdalena River | 57. Martinique | 77. South Georgia |
| 6. Frestown | (a) Gulf of Guacanayabo | 39. Gulf of Uraba | 58. Guadaloupe | 78. The Palmer Peninsula |
| 7. Bijagos Islands | (b) Guantanamo Bay | 40. Honduras (Cape Gracias a Dios) | 59. Antigua | 79. The Weddell Sea |
| 8. Gambia River | (c) Bahia de Nipo | 41. Yucatan | 60. Leeward Islands | 80. Mt. Rook, Queen Maud Land |
| 9. Dakar | (d) Bahia de la Gloria | 42. Cape Frio | 61. Virgin Islands | 81. The Regula Range |
| 10. Senegal River | (e) Camaguey Mountains | 43. Salvador | 62. Gulf of Venezuela | 82. Muhlig-Hofmann Mountains |
| 11. Cape Blanc | (f) Sierra Maestra Mountains | 44. San Francisco River | 63. Magdalena River | 83. Penck Trough |
| 12. Cape Juby | 26. Andros Island | 45. Recife (Pernambuco) | 64. Atrato River | 84. Neumeyer Escarpment |
| 13. Sebu River | 27. San Salvador (Watling) | 46. Cape Sao Rocque | 65. Honduras (Cape Gracias a Dios) | 85. Drygalski Mountains |
| 14. Gibraltar | 28. Isle of Pines | 47. Rio Parahyba | 66. Yucatan | 86. Vorposten Peak |
| 15. Guadalquivir River | 29. Jamaica | 48. Bahia Sao Marcos | 67. Bahia Blanca | 87. Boreas, Passat Nunataka |
| 16. Capn St. Vincent | 30. Hispaniola | 49. Serras de Gurupi, de Desordam, do Negro | 68. Rio Colorado | 88. Tristan d'Acunha |
| 17. Tagus River | (Santo Domingo, Haiti) | 50. The Amazon (No. 1) Para River | 69. Gulf of San Mathias | 89. Gough Island |
| 18. Cabo Finisterre | 31. Puerto Rico | 51. The Amazon (No. 2) Para River | 70. Rio Negro (Argentina) | 77. South Georgia |
| 19. Gironda River | 32. Rio Moroni | 52. The Amazon (No. 2) western | 71. Rio Chubua | 95. Fernando da Naronha |
| 20. Brest | 33. Durantijn River | | 72. Gulf of San George | |

Figure 18

THE PIRI REIS' MAP OF 1513