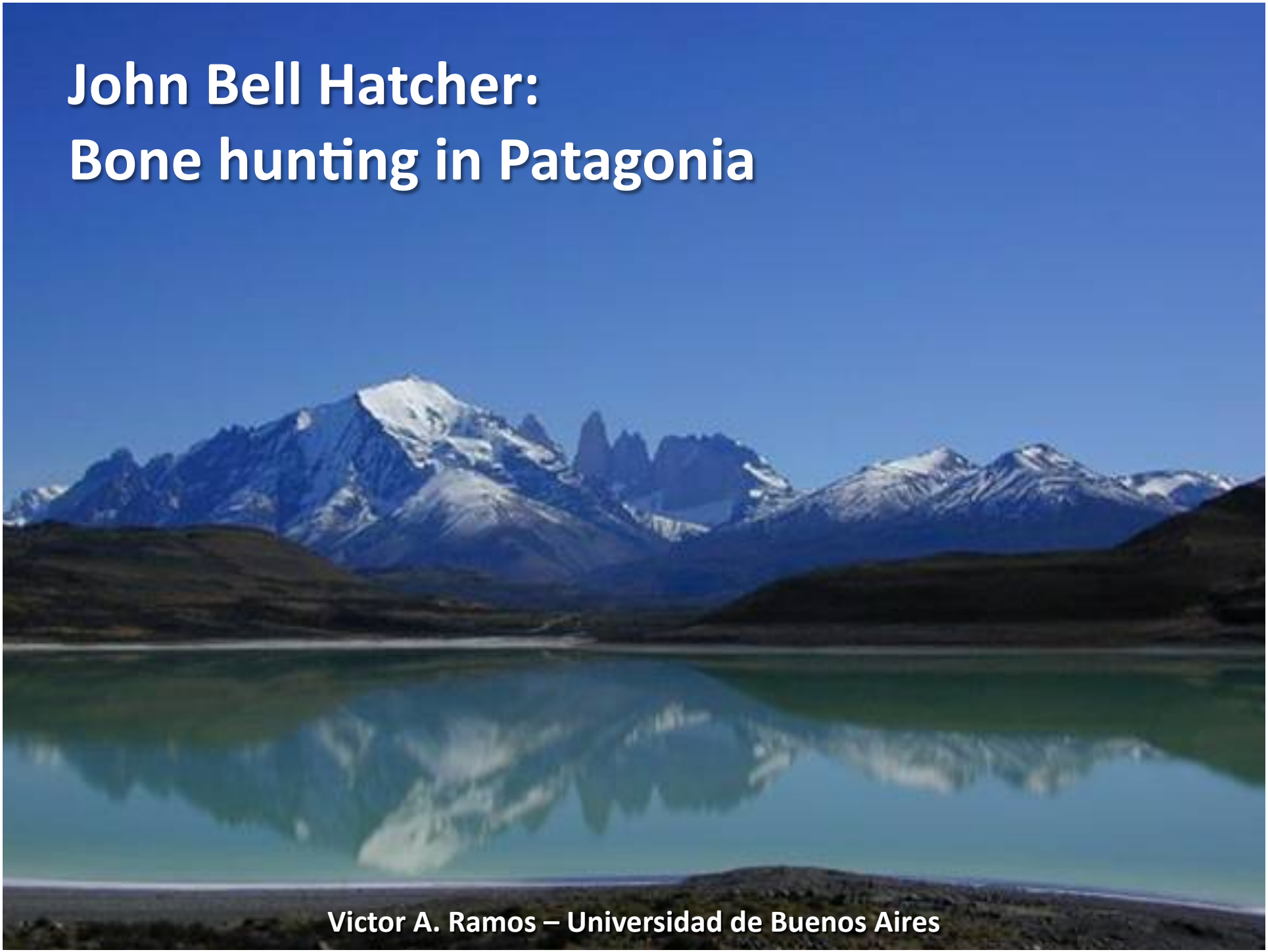
John Bell Hatcher: Bone hunting in Patagonia

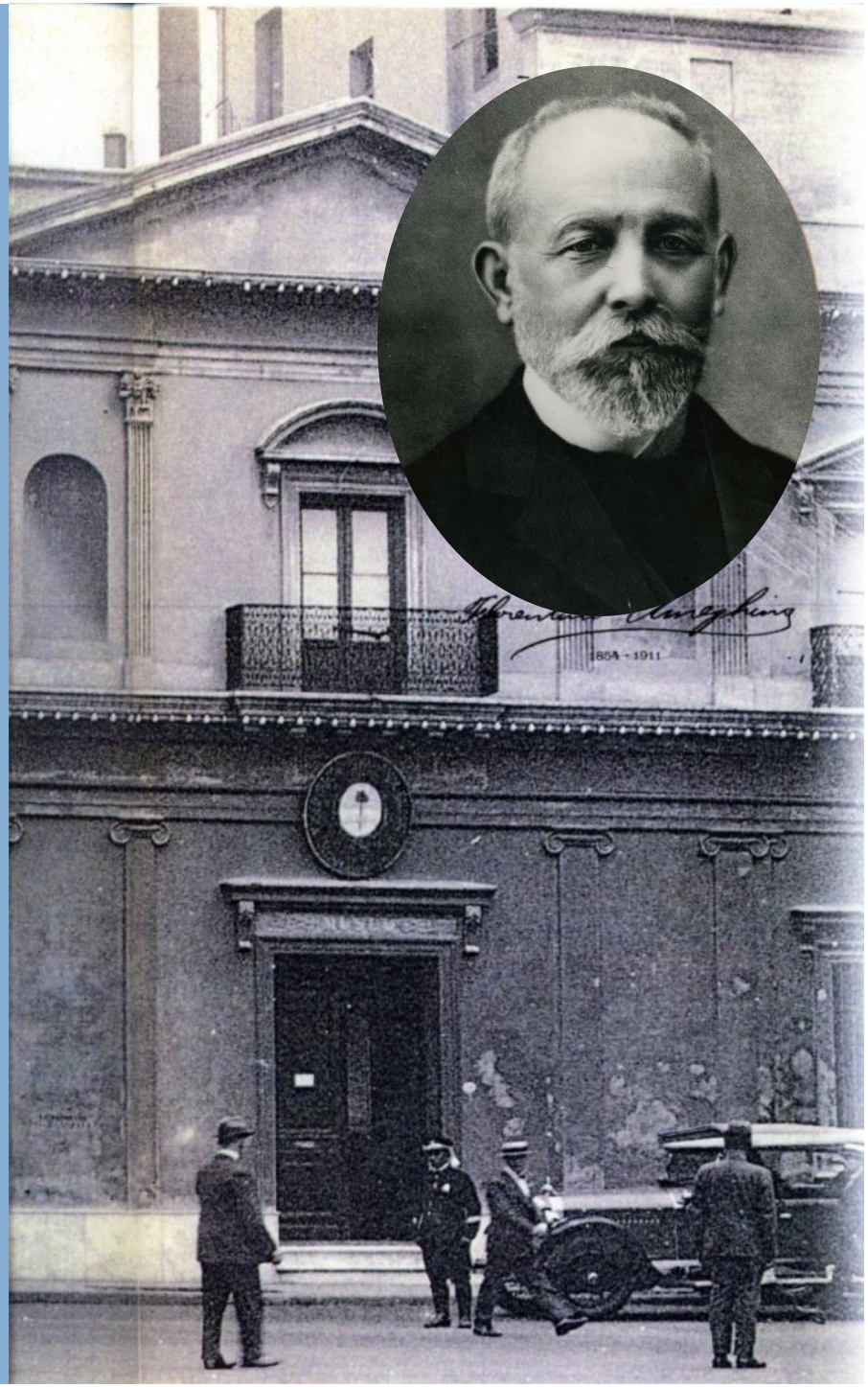


Victor A. Ramos – Universidad de Buenos Aires

FLORENTINO AMEGHINO

By the end of the XIX Century one of the most outstanding scientists of Argentina, Dr. Florentino Ameghino, Director of the Natural History Museum of Buenos Aires, has published several contributions describing the exceptional fossil mammals of Patagonia.

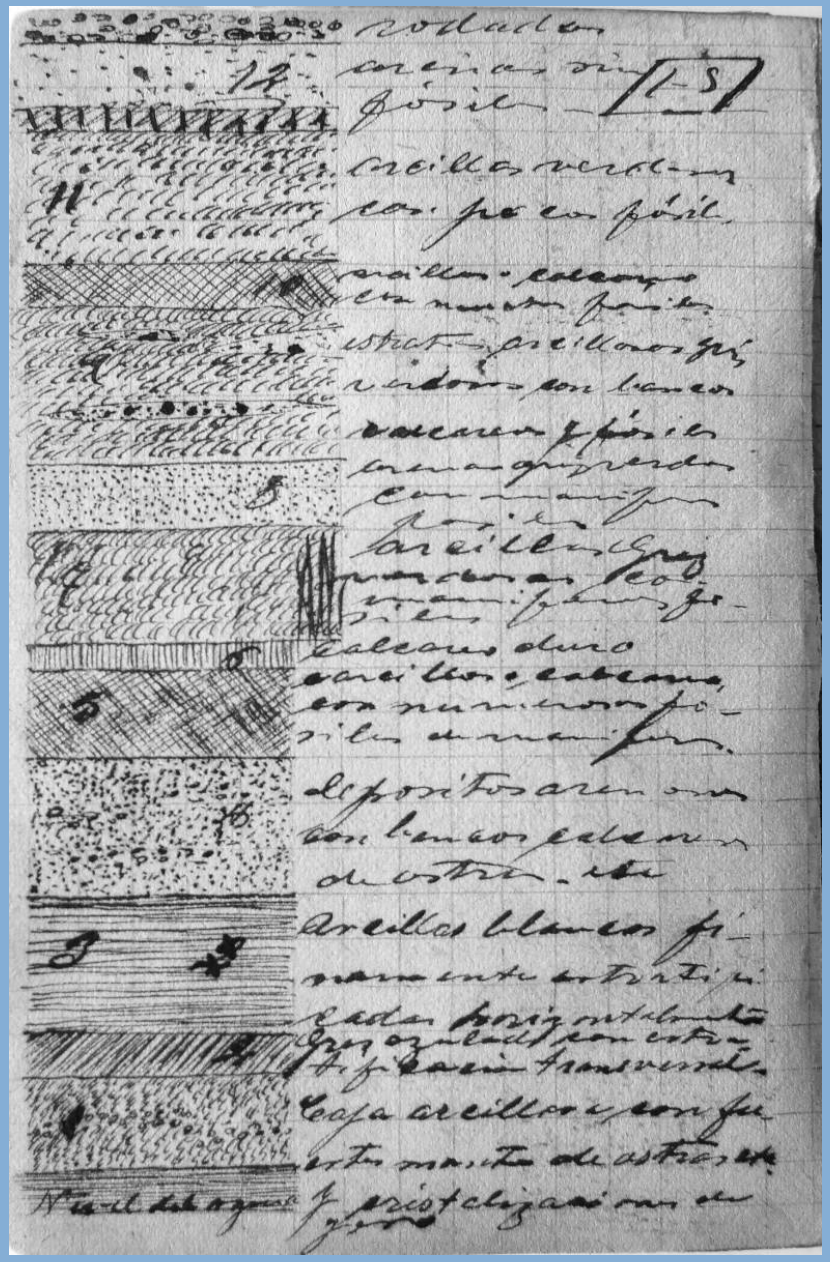
He was the first after Darwin to describe in a systematic way many mammal fossiliferous levels in Patagonia. He also found levels where dinosaurs lived together with early mammals in Central Patagonia.



PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA

Pyrotherium (Fire Beast), a large South American herbivore mammal found with dinosaurs

- Darwin made a collection of extraordinary fossil mammals in Southern Patagonia in 1835, later studied by Professor Owen, who realized how different were from the mammals of similar age of North America.
- Several years later, Carlos Ameghino made numerous expeditions to Central Patagonia between 1887 and 1896 collecting a large amount of fossil vertebrates.
- These fossils were studied by Dr. Florentino Ameghino , who described in the *"Pyrotherium Beds"* and in the *"Estratos Guaraníticos"* dinosaurs and mammals together.



LES FORMATIONS SEDIMENTAIRES

DU

CRÉTACÉ SUPÉRIEUR ET DU TERTIAIRE DE PATAGONIE

PAR

FLORENTINO AMEGHINO.

INTRODUCTION.

J'étais occupé à la préparation d'une monographie sur les Poissons fossiles du crétacé et du tertiaire de Patagonie quand une nouvelle publication sur la géologie de cette région est venue m'interrompre encore une fois dans mes recherches paléontologiques. Il s'agit du mémoire tout récent de M. Wilckens sur les dépôts sédimentaires marins du crétacé et du tertiaire de Patagonie[1]. Malgré son titre restreint le mémoire en question est un examen critique sur l'ensemble des formations sédimentaires de Patagonie, tant marines que terrestres ou sous-aériennes, fait dans le but d'en fixer l'âge géologique.

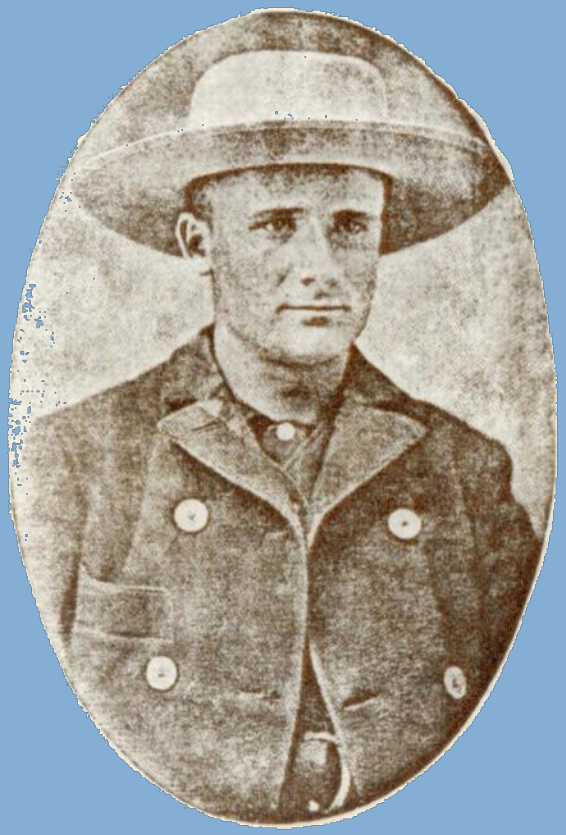
J'avais proposé de ne plus m'occuper de la question de l'âge crétacique des formations sédimentaires antérieures au patagonien. J'y reviens cependant, parce que le mémoire de M. Wilckens est inséré dans la plus importante peut-être des revues consacrées aux sciences géologiques et celle qui dans ces questions a plus d'autorité.

C'est un travail assez long, et il faut reconnaître que l'auteur a fait tous les efforts possibles pour dégager ce qu'il croit être la vérité; pourtant, en le parcourant, il paraît qu'il s'est attaché d'une manière spéciale à donner aux dépôts sédimentaires de Pata-

[1] Wilckens Otto. *Die Meeresablagerungen der Kreide-und Tertiarformation in Patagonia*, in *Neuen Jahrbuch für Mineralogie, Geologie und Palaeontologie*, Beilage-Band XXI, pp. 98-195, Stuttgart. Octubre 1905.

PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA

- John B. Hatcher, an already famous paleontologist, vertebrate curator in the Princeton Museum, who had conducted several expeditions to the far American west, was invited to organize and lead the Princeton Expeditions to Patagonia.



Triceratops horridus - 70 - 65 million years old, Late Cretaceous Period, Niobrara County, Wyoming
Original collected by John Bell Hatcher, 1891

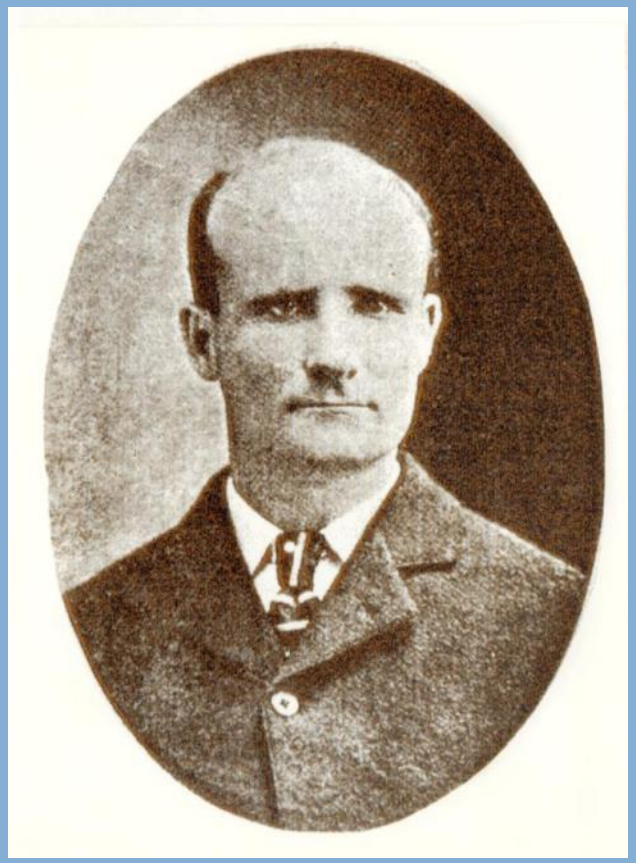
RESTORATION OF TRICERATOPS; TRACHODON IN THE DISTANCE.

From painting made under Mr. Hatcher's direction by Charles R. Knight.

Original in Carnegie Museum, Pittsburg, Pa.

PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA

John Bell Hatcher

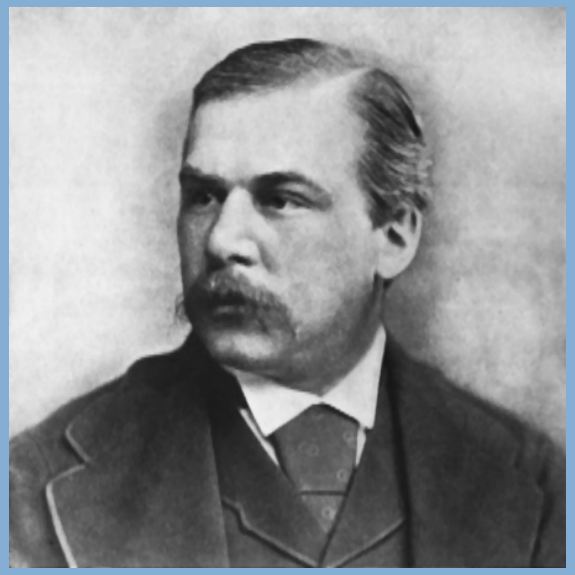


Paleontologist & Dinosaur Hunter
1861 – 1904

Three expeditions between 1896 and 1899

PRINCETON UNIVERSITY EXPEDITION TO PATAGONIA

The expeditions, but mainly their scientific results, were published with substancial funding by the famous banker J. Pierpont Morgan, one of the most powerful bussiness man of that epoch.



J. P. Morgan

Morgan's role in the U.S. economy was denounced in this political cartoon

John Bell Hatcher, 36 years old

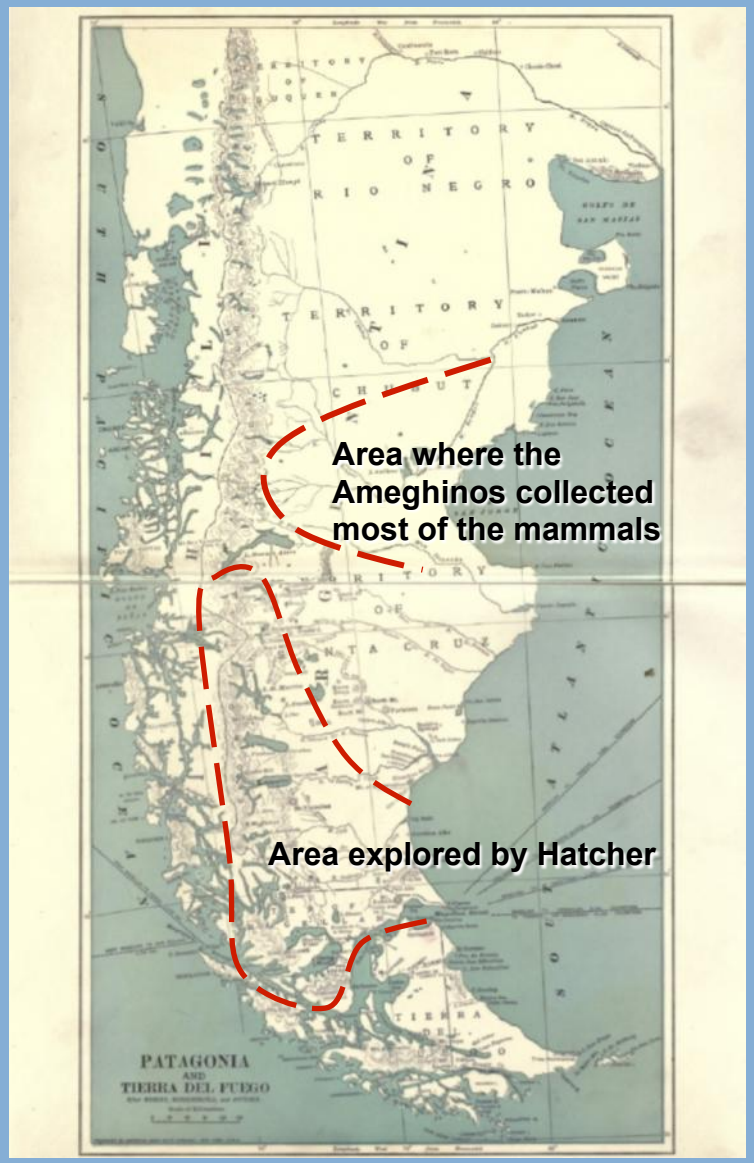
He organized three expeditions to Patagonia:

- 1 st of March of 1896 tp 17th of July of 1897.
- 7th of November of 1897 to 9th of November of 1898.
- 9th of December of 1898 to 7th of September of 1899.

Almost three years of continuous field work at Patagonia!!

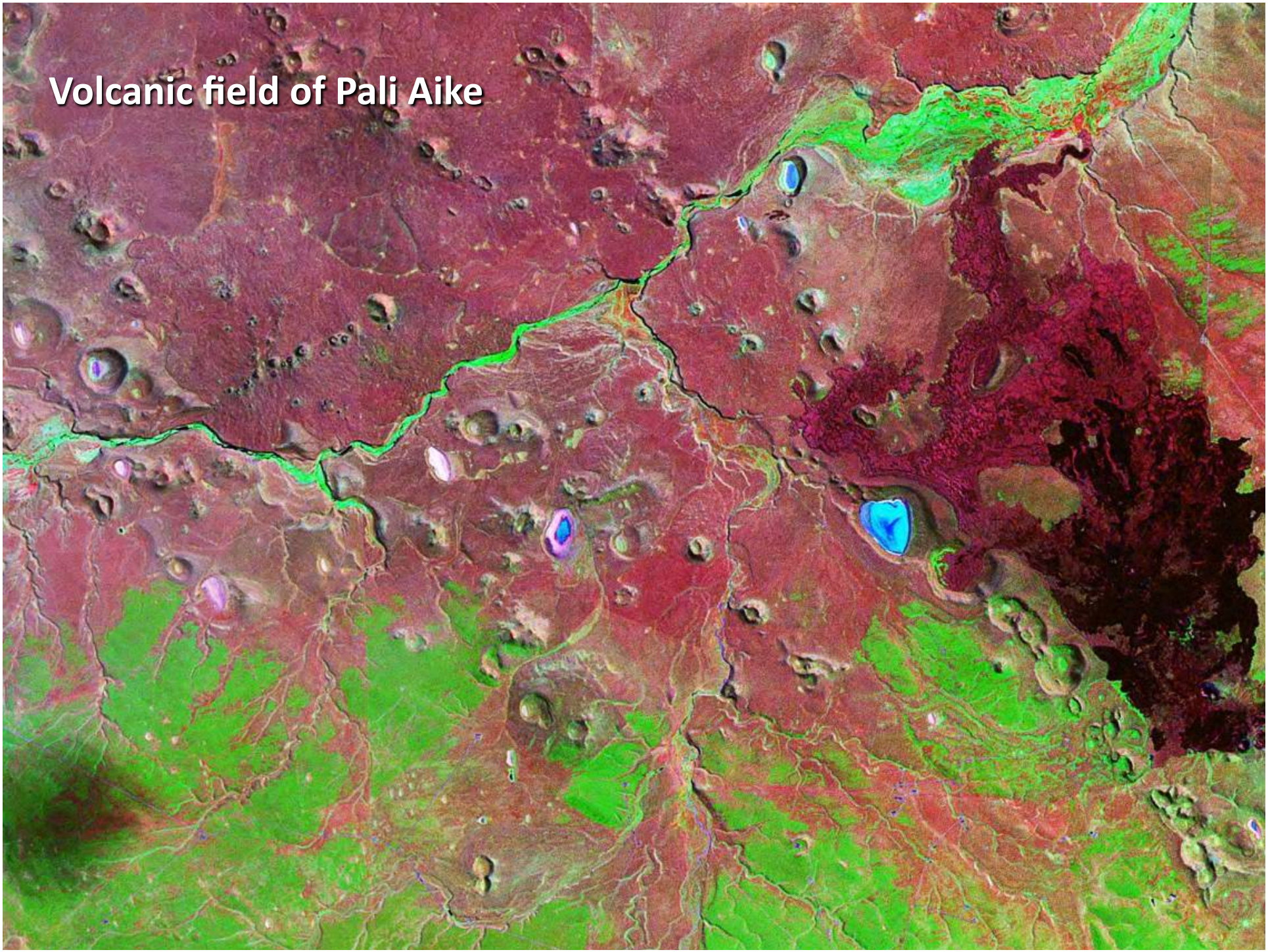
"driven beyond the limits of civilization to study nature in her true form."

PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA



- Hatcher in his first visit to Buenos Aires in 1896 wanted to know the localities where Ameghino found the *Pyrotherium beds*, but he did not receive any help from Florentino Ameghino.
- Later on in 1898 he was able to meet Carlos Ameghino, the brother of Florentino, who conducted most of the fieldwork and collected the fossils for him, but without results.
- Hatcher decided to work in the localities where Darwin found the excepcional mammal fossils, mainly the mouth of Santa Cruz River near the Atlantic coast..


PATAGONIA
AND
TIERRA DEL FUEGO
After MORENO, NORDENSKJÖLD, and HATCHER.
Scale of Kilometers.
0 30 60 90 120 150
HANOVER I.
Peel Inlet
L. Sarmiento
R. Coy
Corriken Aike
L. Tyndall
L. Maravilla
S. Br.
Ult. Esperanza Inlet
Ness
Laguna Loma
W. & R. Ranch
Killik Aike
C. Fairweather
Puerto Gallegos
GALLEGOS
Gner Aike
Los Frailes
R. Gallegos
Nelson Str.
QUEEN ADELAIDE ARCHIPELAGO
L. Balmacedo
L. Pinto
Palli Aike
Mt. Aymond
Ooshi Aike
1st. Narrows
C. Virgenes
Pta. Dungeness
Magellan Strait
Pta. Anegada
Pta. Catalina
C. Espiritu Santo
WEST MAGELLAN TO HAWAII 11,000 KM.
Magellan
Smyth Ch.
Obstruction Sd.
MAGELLAN
TERRA
L. Blanco
Posada de la Reina
Oazy Hd.
S. Philip Bay
Springhill
WEST MAGELLAN TO NEW ZEALAND 7,700 KM.
C. Deseado
C. Pillar
Strait
Skyring Water
Cabeza del Mar
KING WILLIAMS LAND
ELIZABETH I.
Otway Water
Viscos R.
PTA. ARENAS
C. St. Vincent
Gd. Narrows
El Paramo
Pta. de Arena
Bahia San Sebastian
C. San Sebastian
Churucca
Yaulegua
DESOLATION I.
Pta. Ancora
L. JACQUE
CORDOVA PEN.
Porvenir
Pantano
SIERRA DE CARMEN SYLVA
Useless Bay
C. Valentin
Pt. Famine
BRUNSWICK PENINSULA
C. Sunda
STA. INES I.
R. Grande
C. Froward
DAWSON I.
TIERRA DEL FUEGO
CLARENCE I.
GRAFTON IS.
Admiralty Sound
Mt. Hope
L. Solier
Lago Fagnano
Mt. Sarmiento
BRECKNOCK PEN.
CAMDEN I.
Darwin Mt.
Ushuaia
Lapataia
Beagle Ch.
STEWART I.
GORDON I.
NAVARIN I.
HOSTE I.
LONGONDERRY I.
CAPE HORN


Volcanic field of Pali Aike


Lavas in Pali Aike

FIRST EXPEDITION TO PATAGONIA (1896-1897)

MAP OF PATAGONIA. ILLUSTRATING EXPLORATIONS OF J. B. HATCHER, 1896-'97

General Edelmiro Mayer
Governor of Santa Cruz
(1836-1897)

General Edelmiro Mayer
Birth: May 28, 1836 Buenos Aires

Death: Jan. 4, 1897 Río Gallegos
Santa Cruz

General Edelmiro Mayer Governor of Santa Cruz (1836-1897)

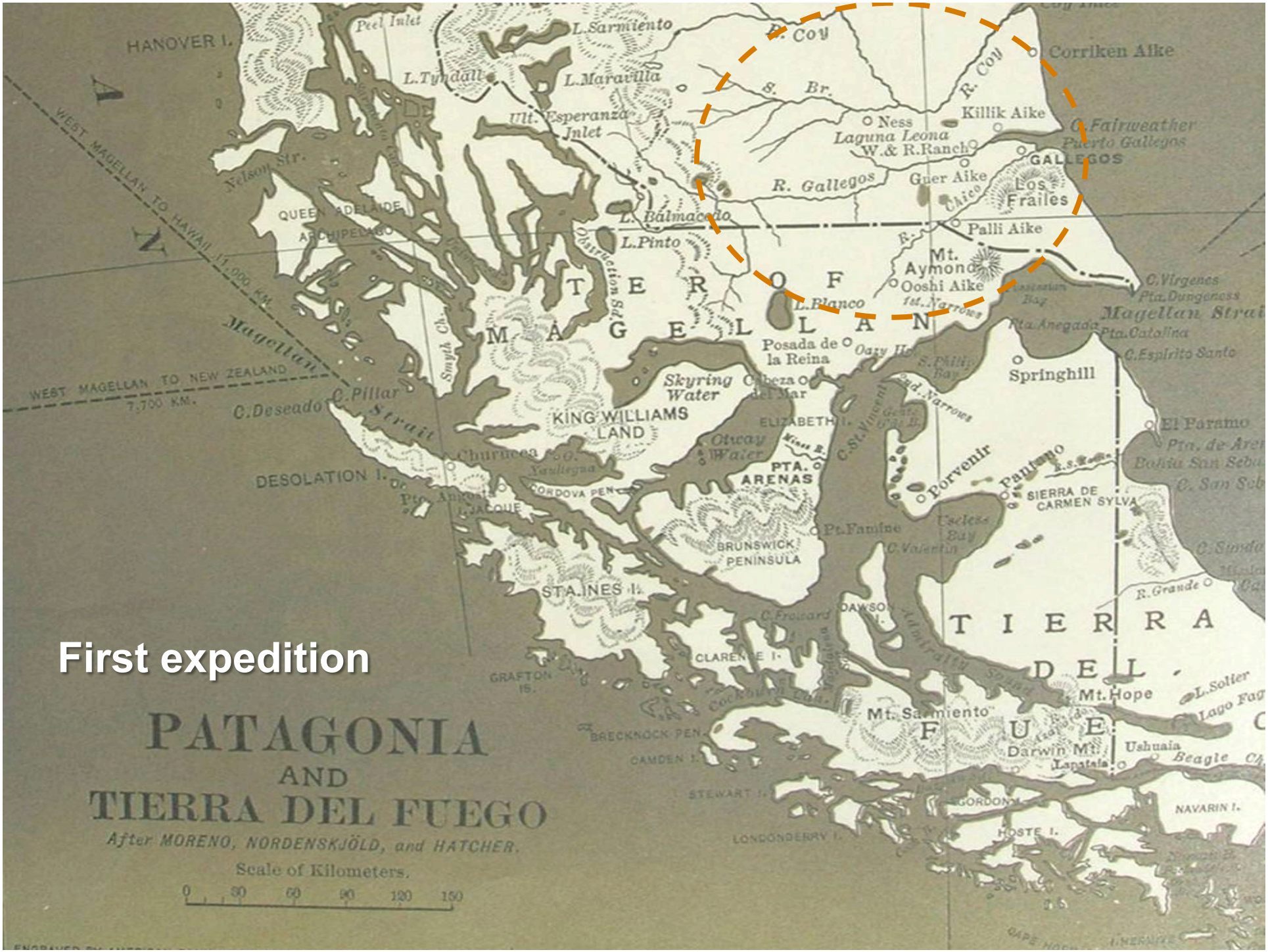
Military man. He participated in several battles in Argentina and also during the 1880's Revolution. He travelled to United States where he was instructing in West Point's Military Academy, and then Lincoln recognized him the General's degree. Little later, the Northern army enlisted the first black soldiers and was nominated a commander of a regiment under orders of Ulysses S. Grant. He took part in several battles, in the State of Florida. When finished the war, he was an eyewitness of the murder of the president Abraham Lincoln. With him he fought in Chattanooga, Knoxville, Olustee, and also during the site to Richmond. Then he travel towards Mexico and fought under Gen. Benito Juárez's orders. He was nominated General and directed the Site of the City of Mexico. To his return to Argentina he was designated Governor of the province of Santa Cruz.

Rìo Gallegos: The capital of Santa Cruz Territory

Cliffs along the northern side of the river studied by Darwin

Estancia Killik Aike (Antigua estancia Felton)

Remains of the first Hatcher's car in Estancia Felton, Santa Cruz


First expedition
PATAGONIA
AND
TIERRA DEL FUEGO
After MORENO, NORDENSKJÖLD, and HATCHER.
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L. Balmaceda
L. Pinto
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Posada de la Reina
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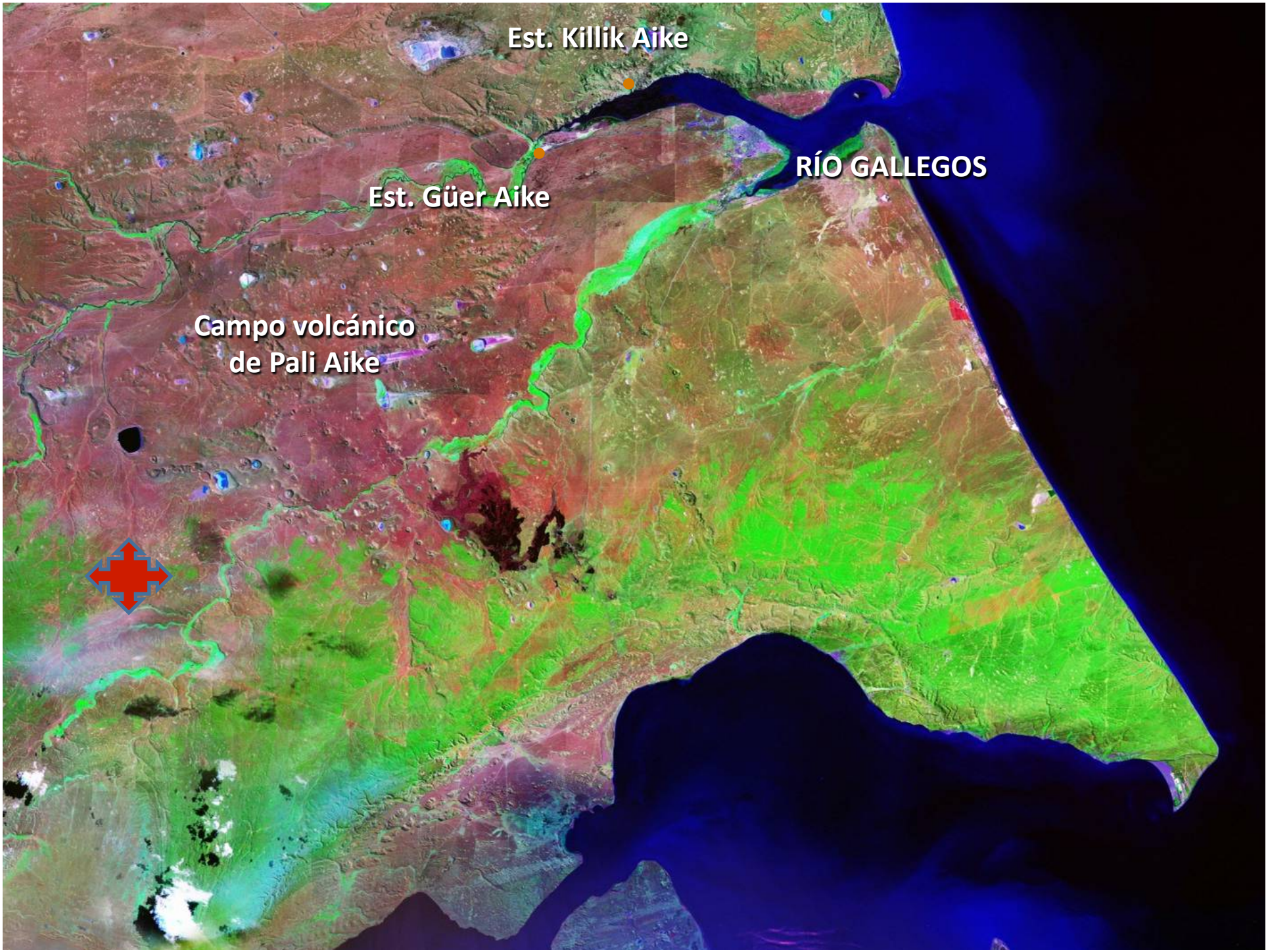
Pta. Anegada
Pta. Catalina
C. Esperito Santo
Bahia San Sebastian
C. San Sebastian
C. Sunda
Magellan Strait

“All we had collected, about four tons of fossils, were unloaded on the beach at North Gallegos in the wool shed belonging to Mr. Felton, who had generously granted us free storage. A small schooner, "La Patria," of about forty tons, came in and anchored in order to discharge some cargo. As she was going direct to Sandy Point, this seemed an excellent opportunity for making the shipment”.

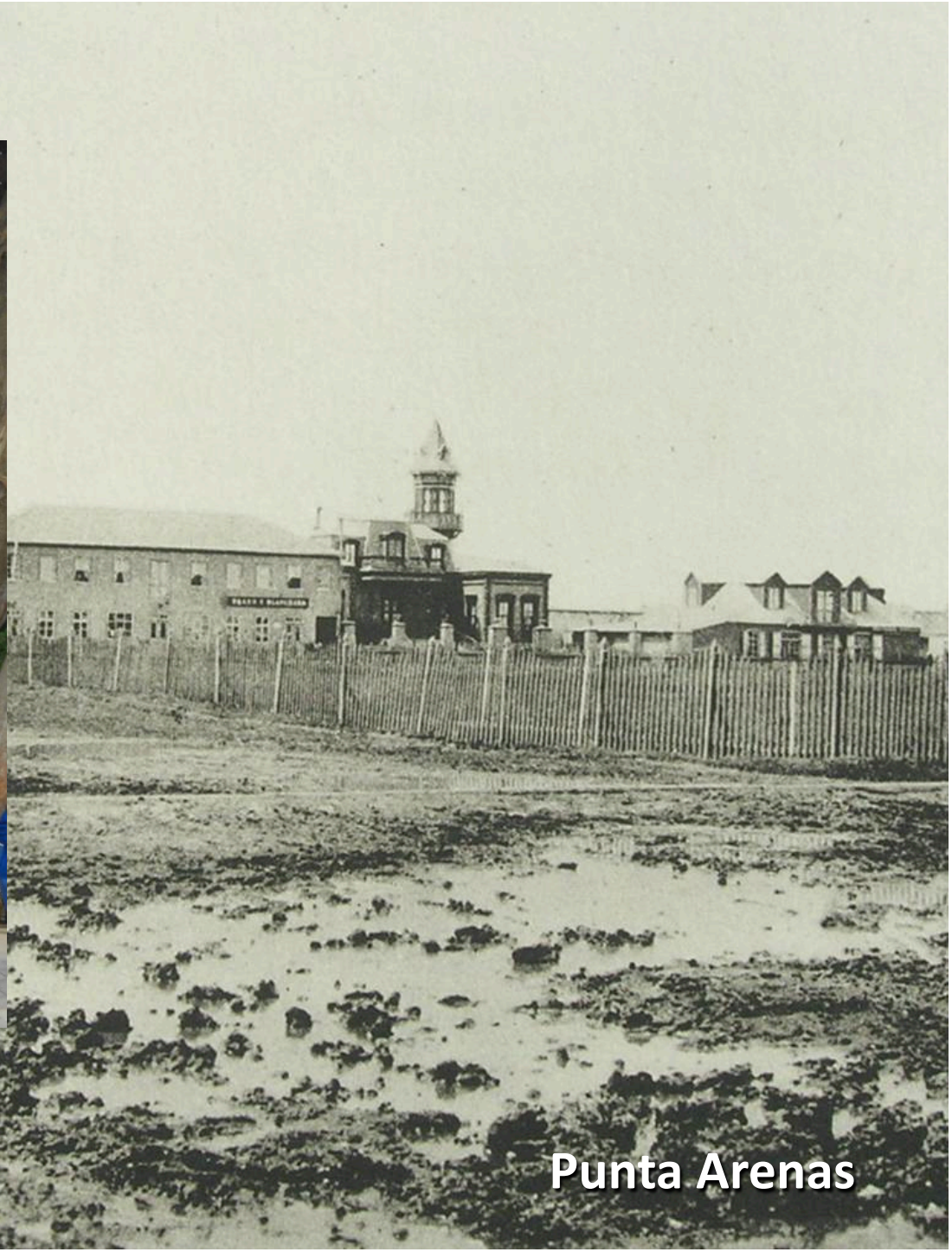
Gravel beach where was the old pier of Estancia Rimk Aike

Hatcher was worry about his fossils and decided to go and check personally their arrival at Punta Arenas.
He took his horse and rode by himself alone the 250 miles to Sandy Point.
He had an accident with the horse, half of the way, and stayed several hours bleeding in the ground.
After 2 or 3 days he finally arrived to Sandy Point with the wound on his head suppurating very badly, and with a severe cold after sleeping without any shelter in the cold pampas.
He needed to buy a second horse since the first was exhausted!


Est. Killik Aike
RÍO GALLEGOS
Est. Güer Aike
Campo volcánico
de Pali Aike


Punta Arenas

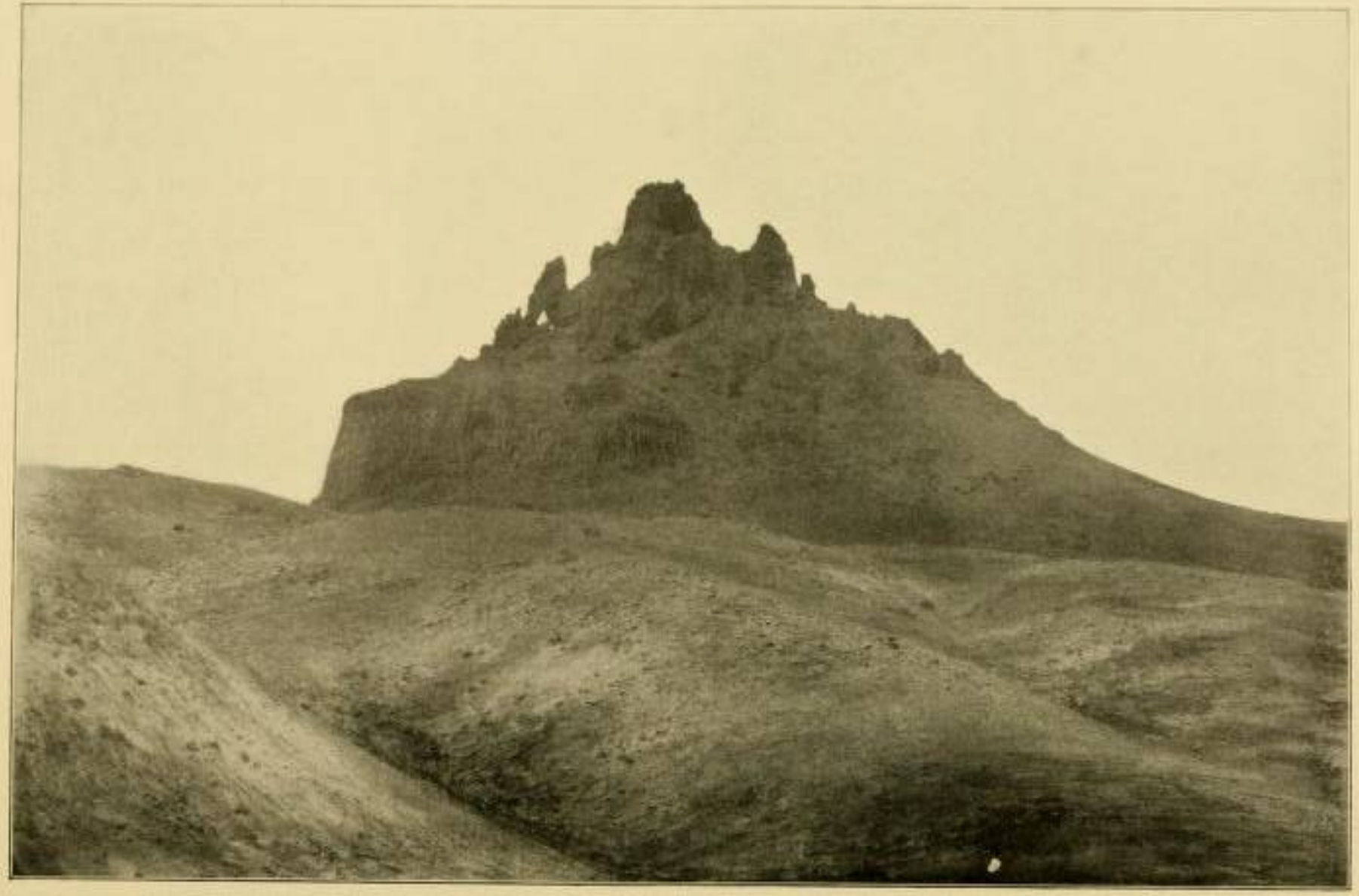

Sara Brown' Palace



Punta Arenas

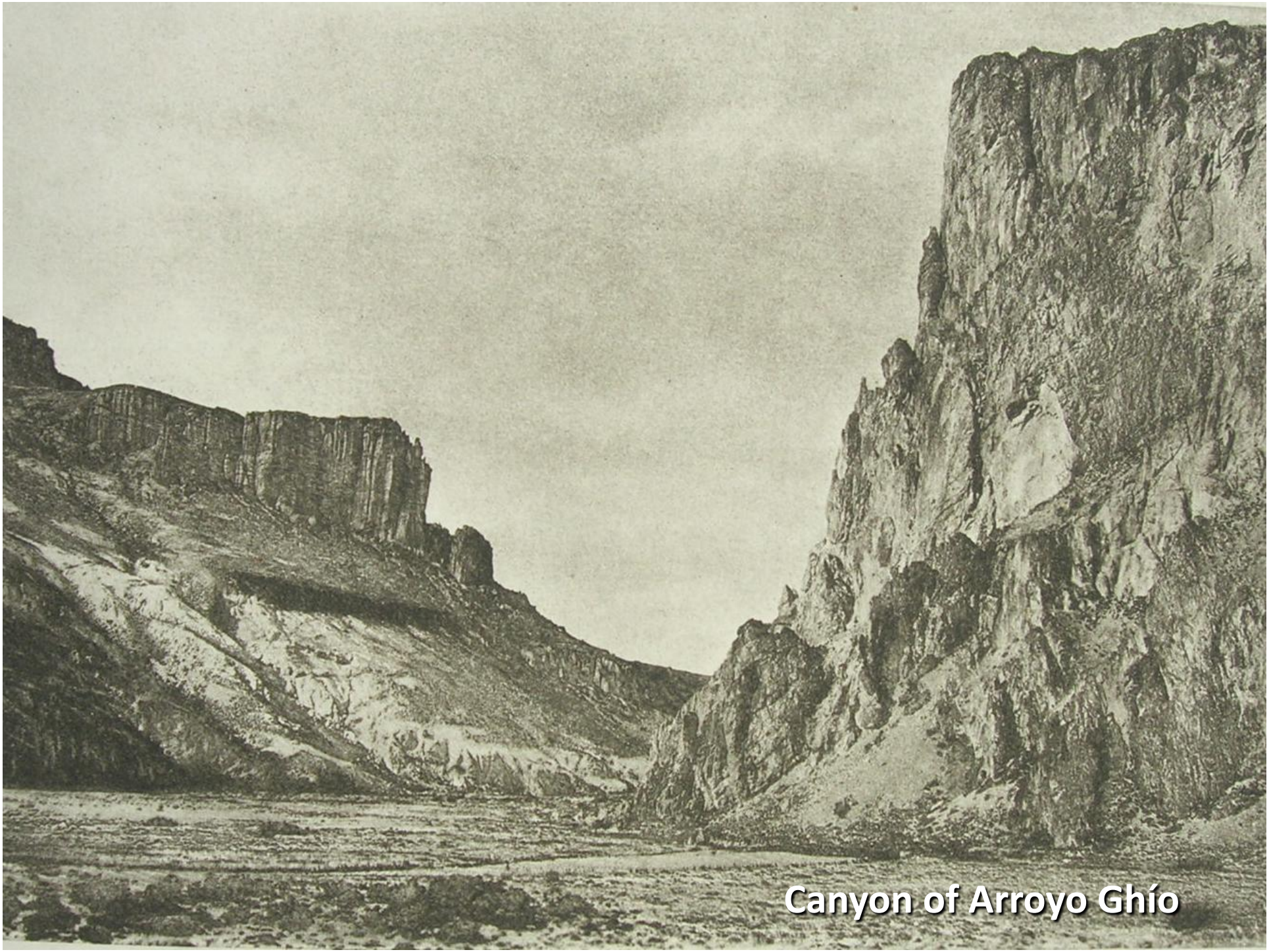
Second expedition

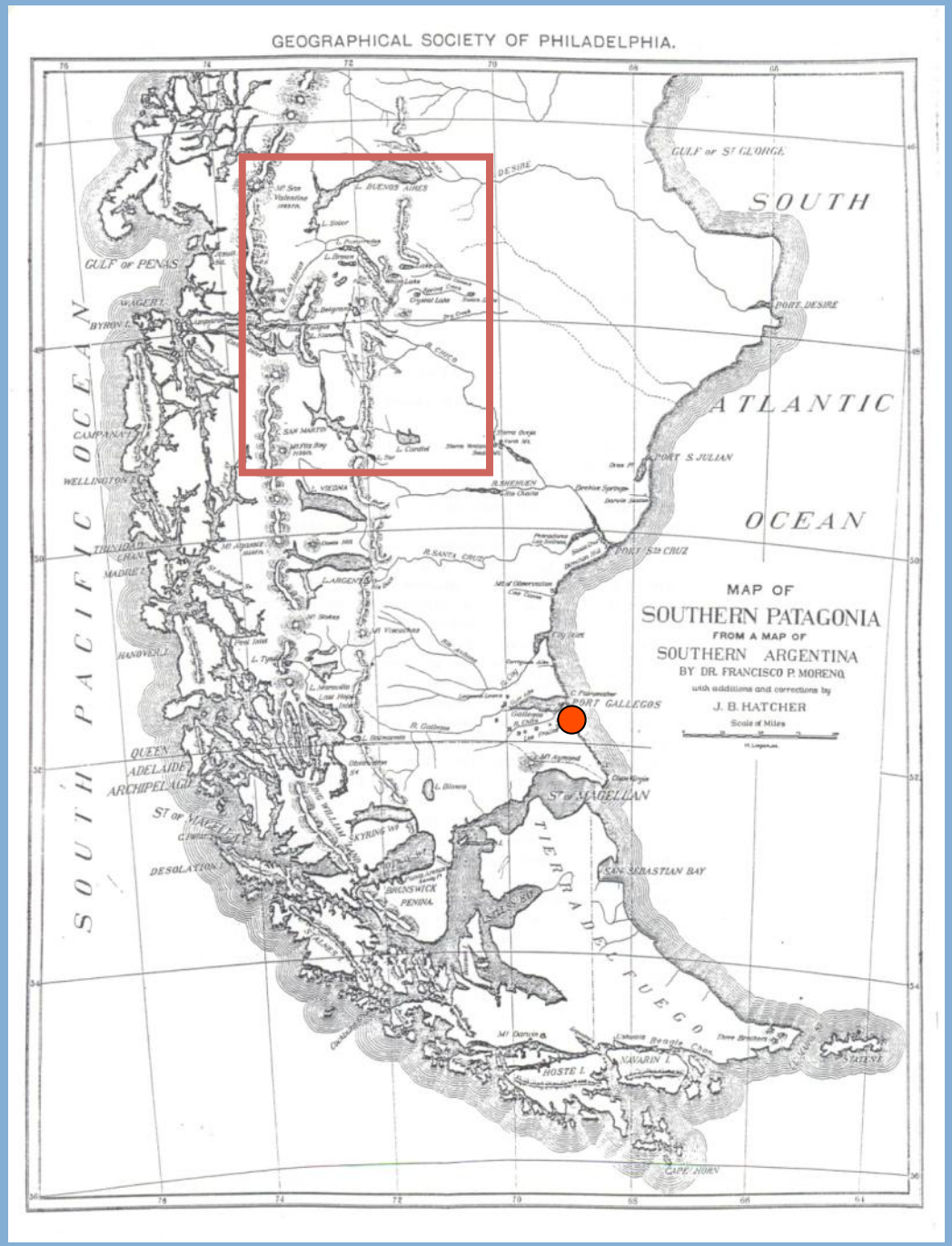
Erratic boulder 10 miles west of Río Gallegos



SIERRA VENTANA, SOUTH SIDE OF RIO CHICO DE SANTA CRUZ, PATAGONIA

From a Photograph by J. B. Hatcher


Canyon of Arroyo Ghío



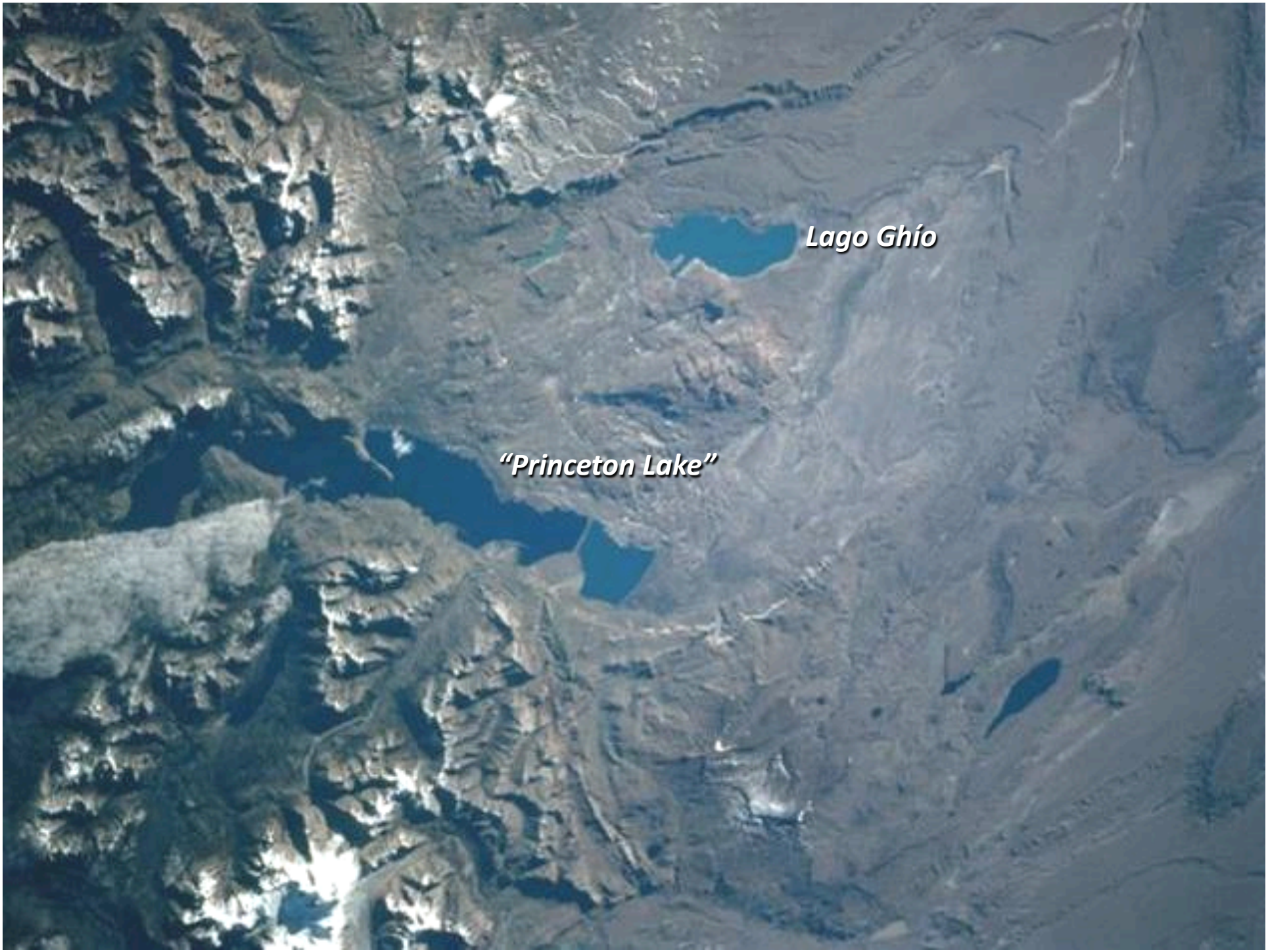
GEOGRAPHIC DISCOVERIES

- Discovered the Lake Princeton, but later on accept the name of Pueyrredón given by the Perito Moreno.

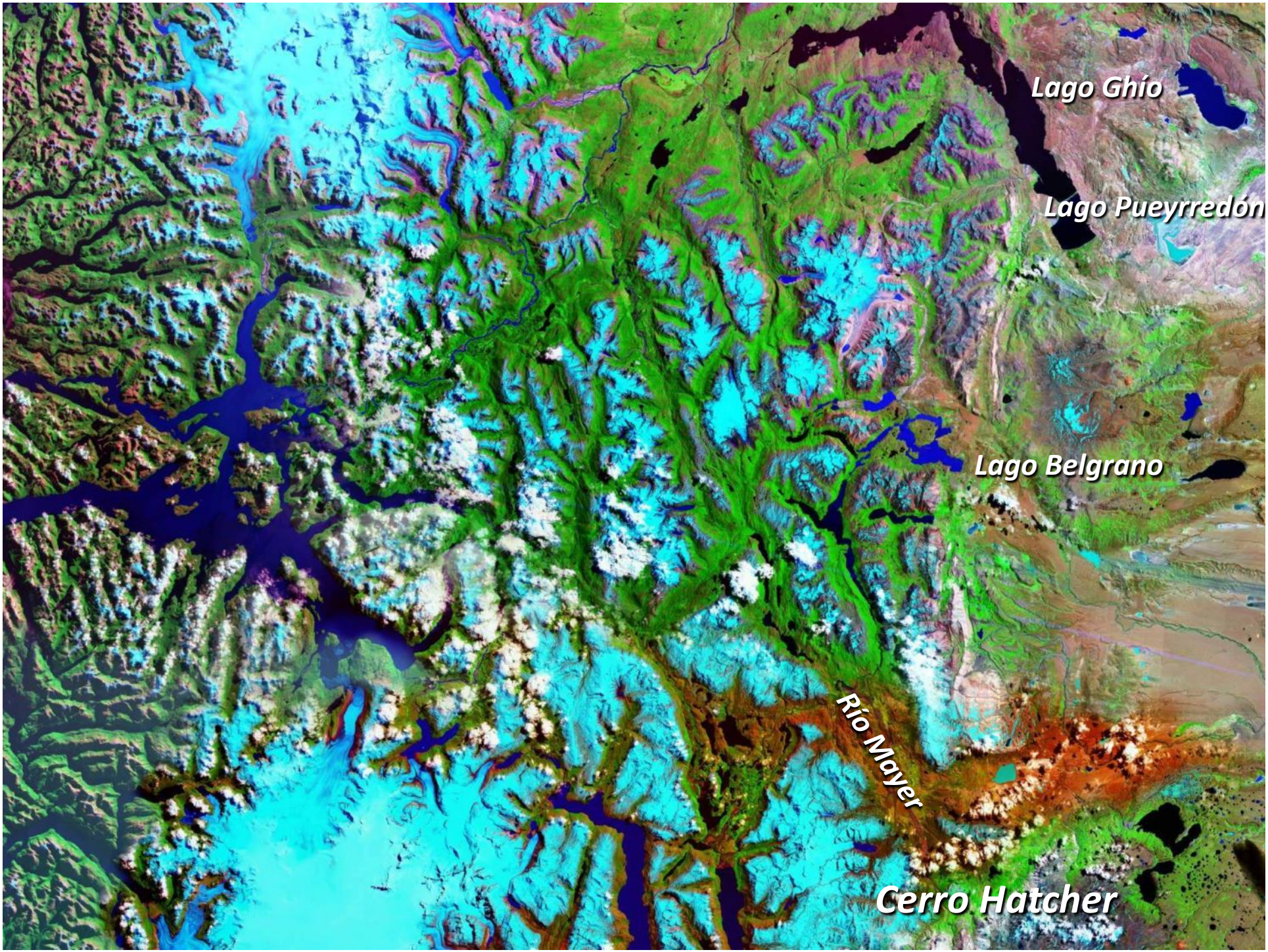
- Discovered two large river basins. The first, which flows to the Pacific Ocean, he named as the Río Mayer Basin.

- The second, which flowed to the Atlantic Ocean he named as the Río Tarde.

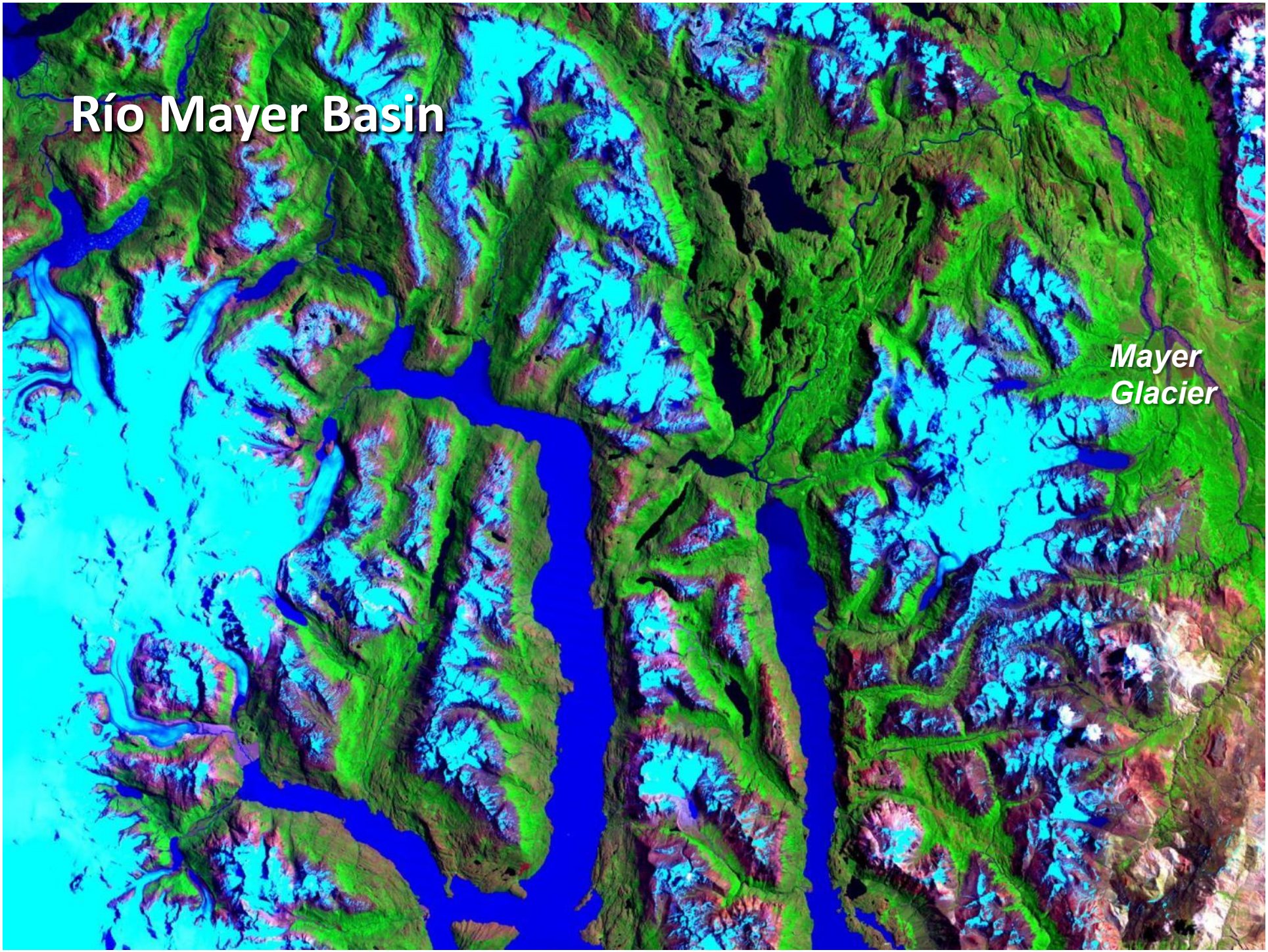
- He discovered many huge glaciers as the Mayer Glacier.


Lago Ghío
“Princeton Lake”

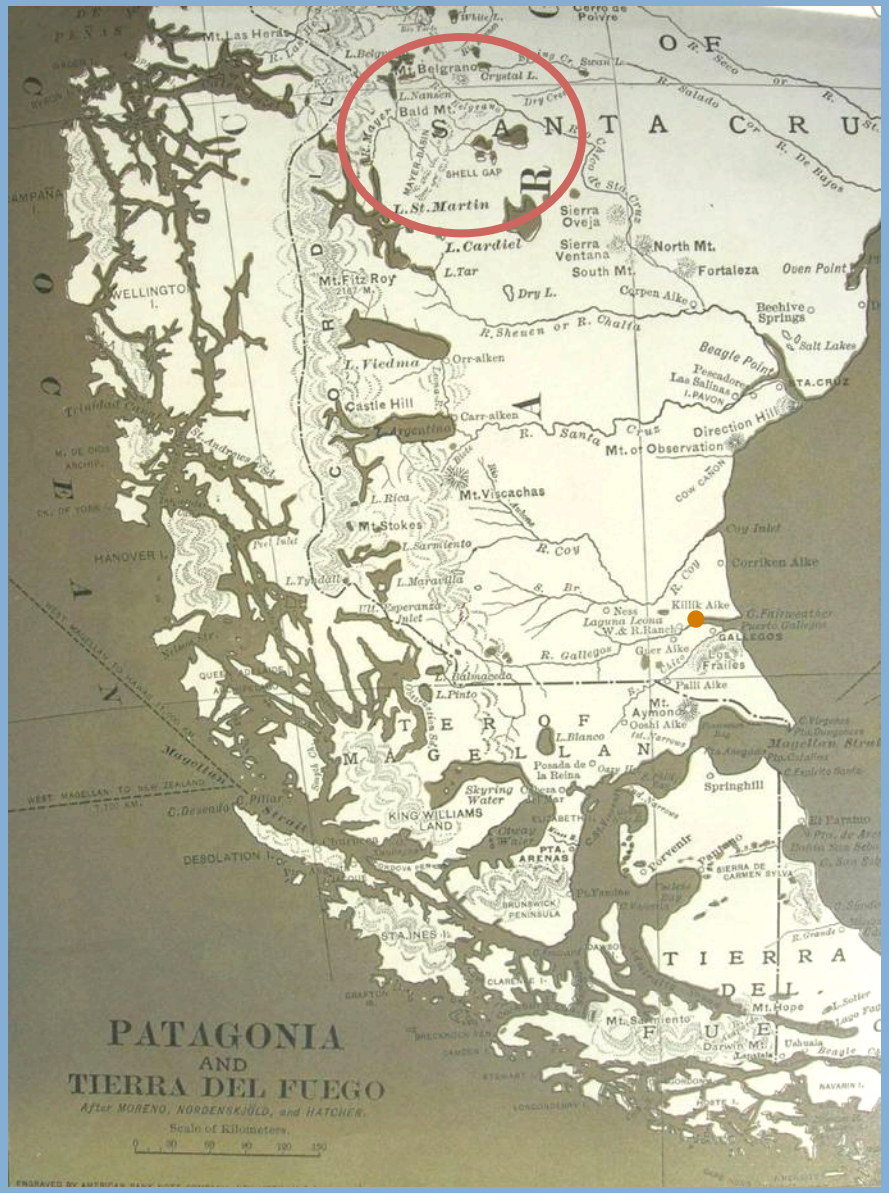

Pueyrredón Lake

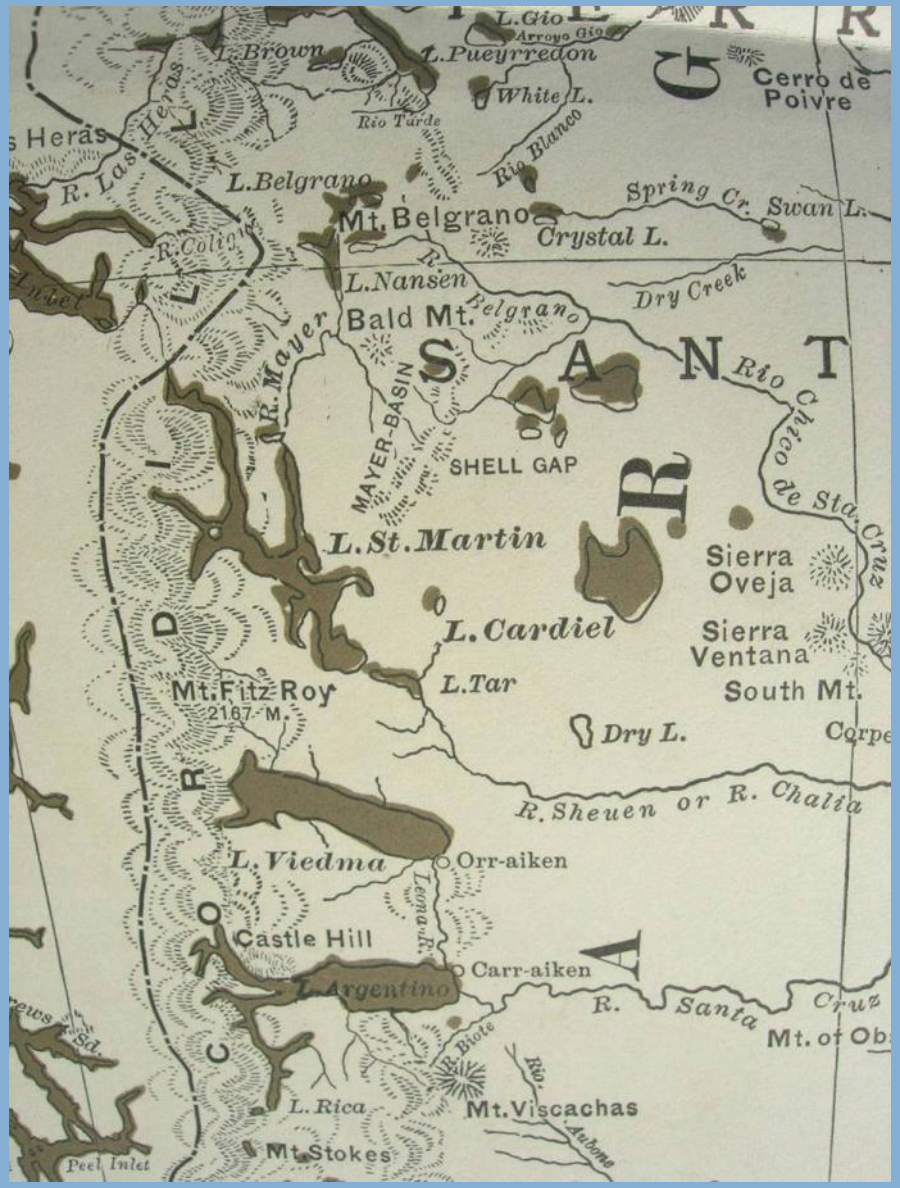

Lago Ghío
Lago Pueyrredón
Lago Belgrano
Río Mayer
Cerro Hatcher

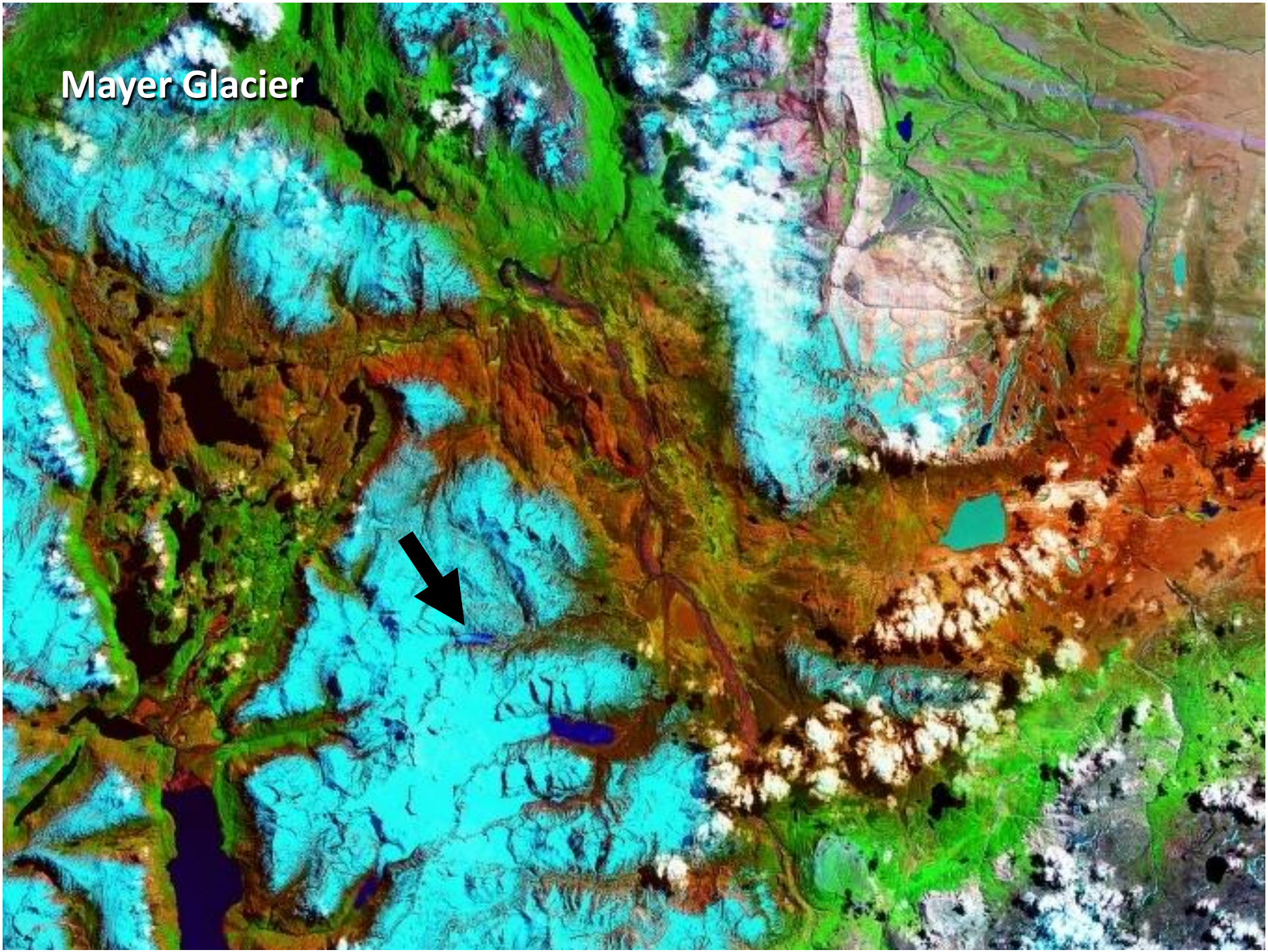

Cerro Hatcher
Sierra de Sangra

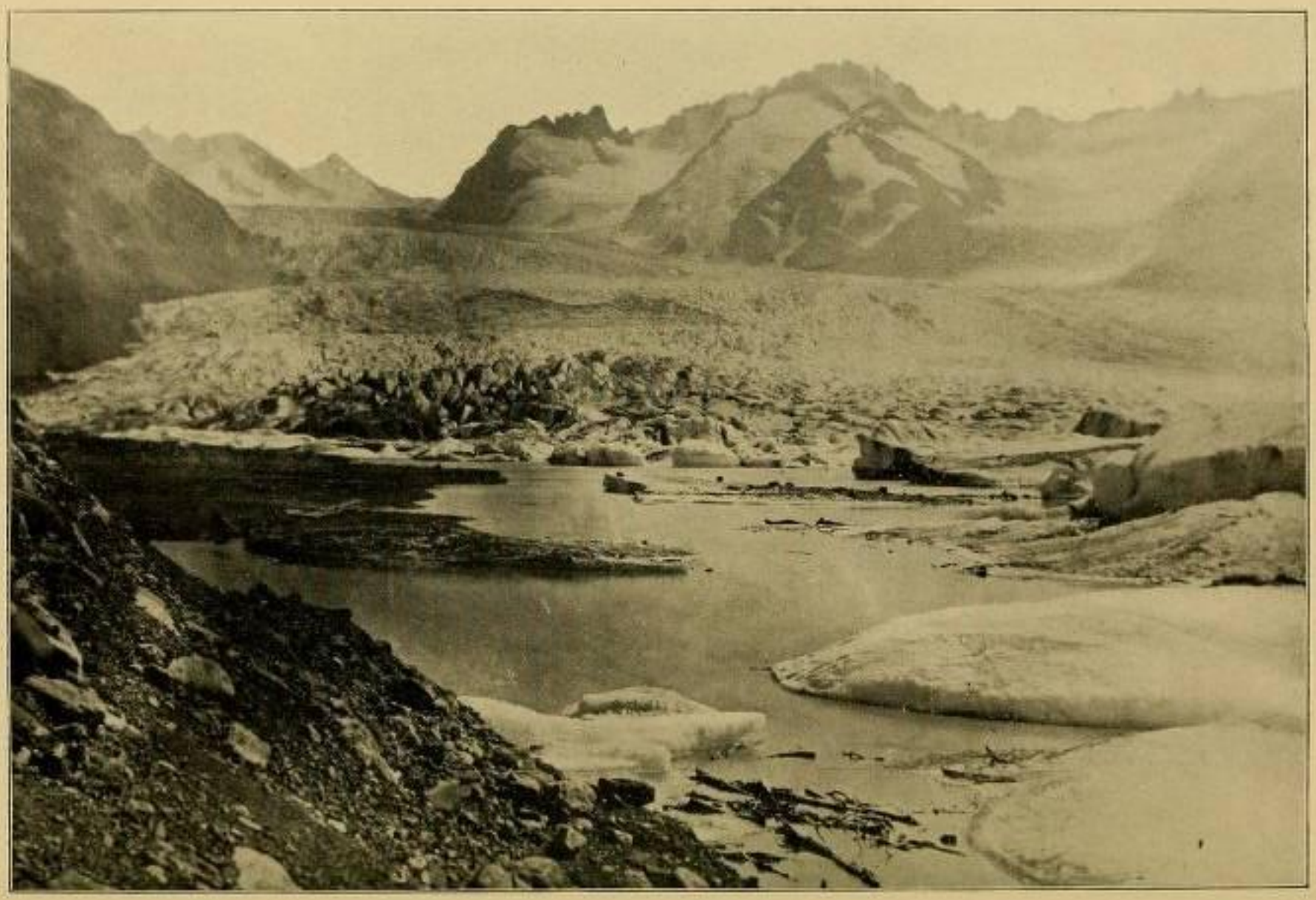

Río Mayer Basin
Mayer
Glacier

RíO MAYER BASIN






Mayer Glacier



MAYER GLACIER, HEAD OF MAYER RIVER, CORDILLERAS, PATAGONIA

From a Photograph by J. B. Hatcher


1897
1998
Río Mayer Glacier

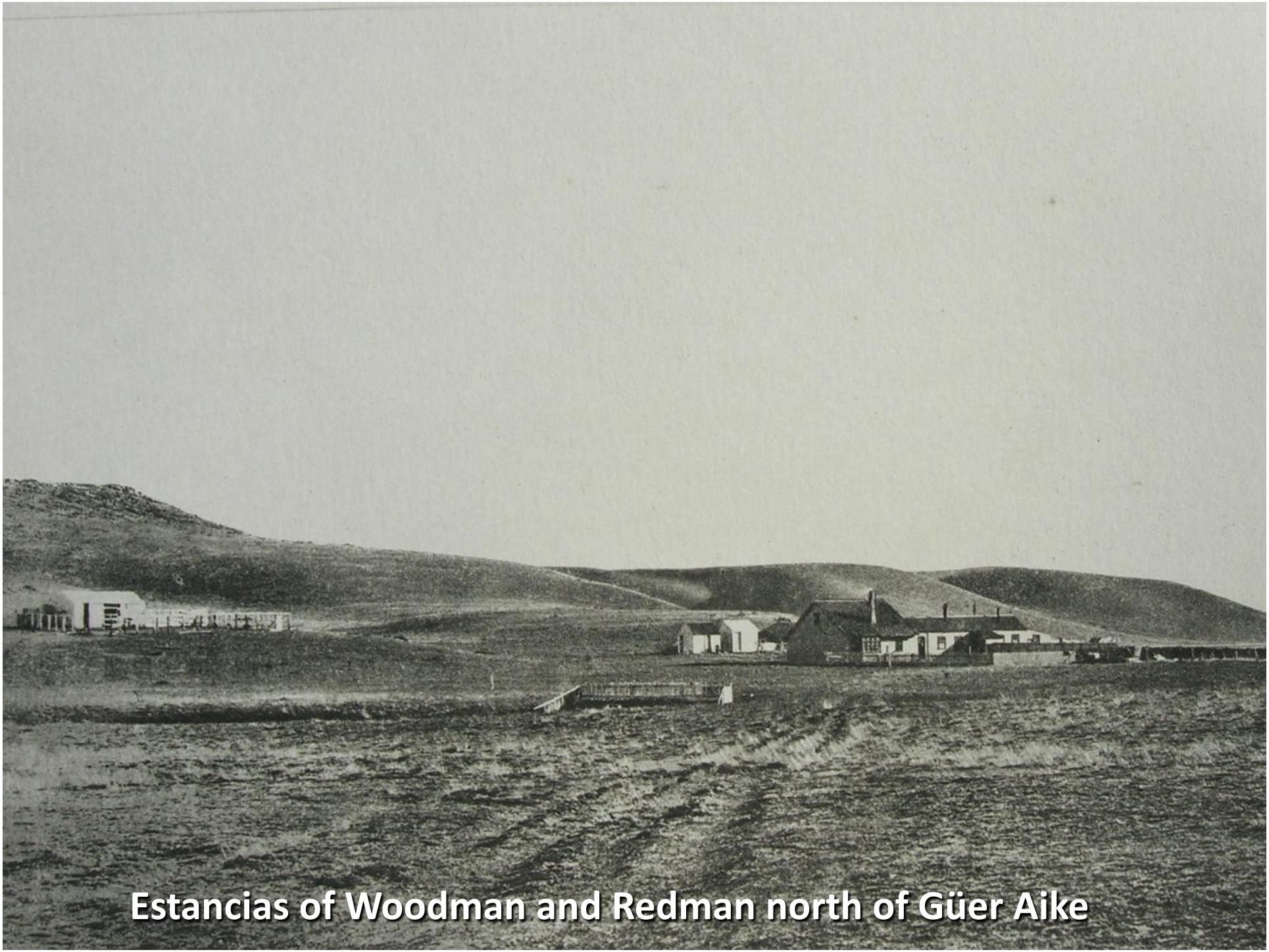

Sierra de Sangra

Our winter camp near Lago Buenos Aires

American mountain wagon in the 1898 winter

Remains of the mountain wagon he used in the Estancia Killik Aike, Santa Cruz

Third expedition



Estancias of Woodman and Redman north of Güer Aike

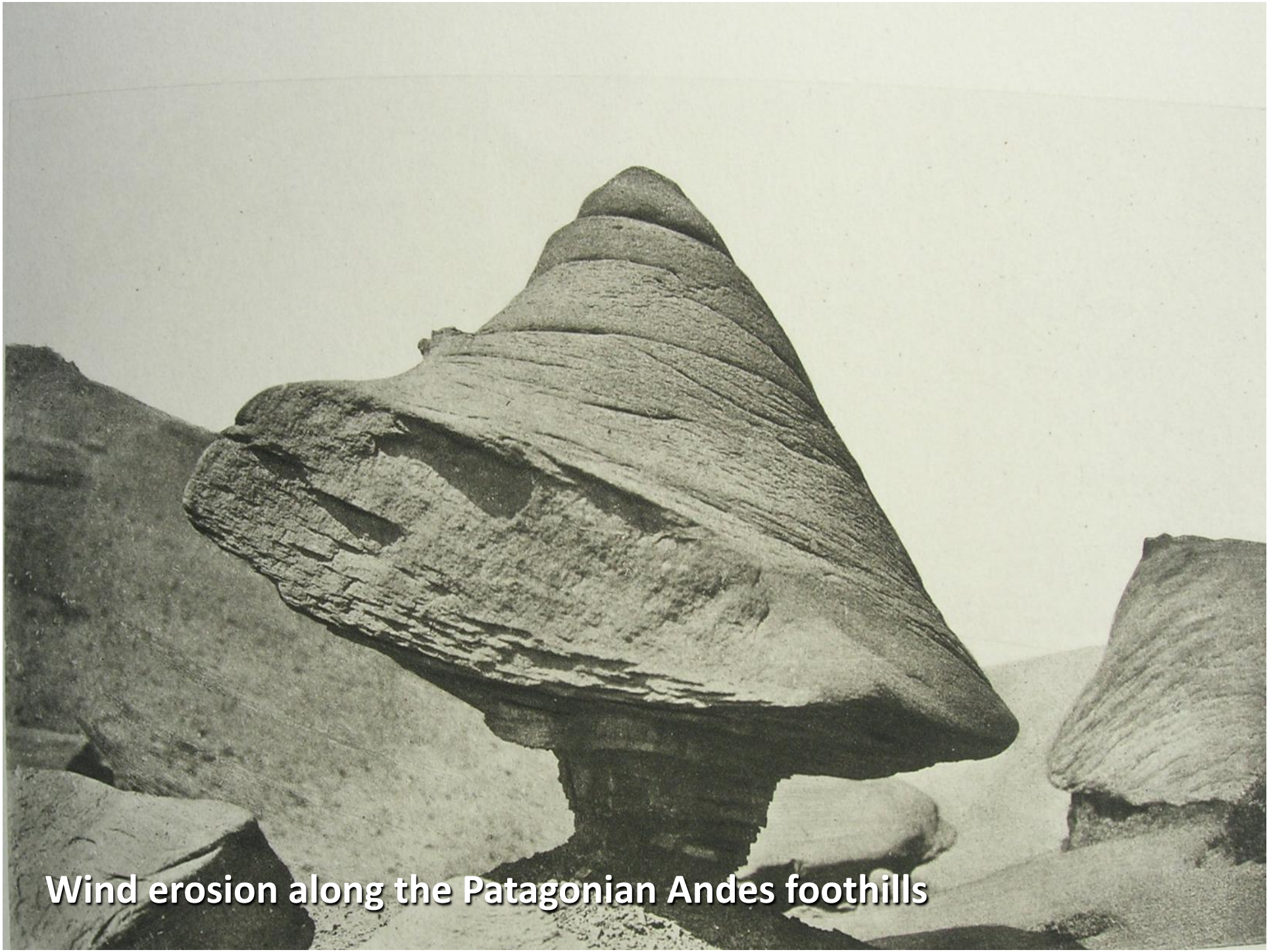
Old estancia along the the Magellan Strait

Old estancia along the the Magellan Strait

Old estancia Santa María in the middle of Patagonia

Old British estancia in Patagonia

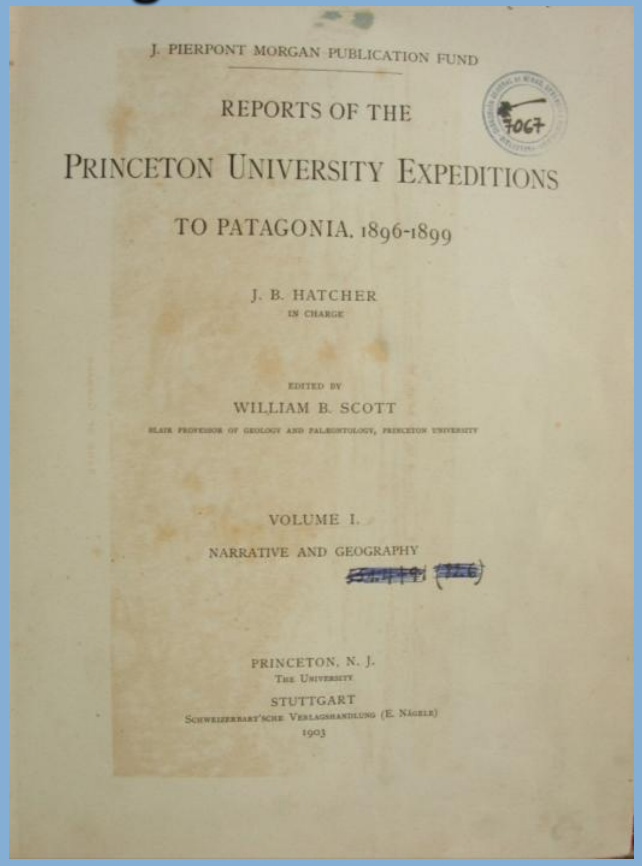

Veranada de Cárcamo



Wind erosion along the Patagonian Andes foothills

Old estancia in Patagonia's winter

26 Volumes printed in Stuttgart, Thousand of pages with photographs and plates with color gravures on the Geography, Geology, Ethnography, Botanic, Zoology, and Paleontology of Patagonia.



J. PIERPONT MORGAN PUBLICATION FUND

REPORTS OF THE

PRINCETON UNIVERSITY EXPEDITIONS

TO PATAGONIA. 1896-1899

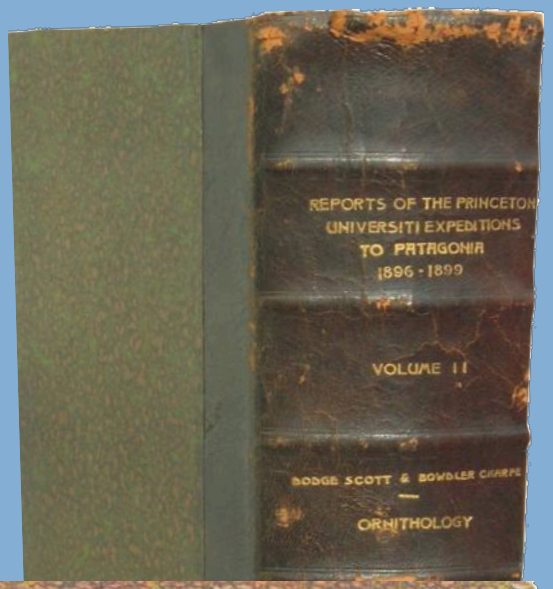
J. B. HATCHER
IN CHARGE

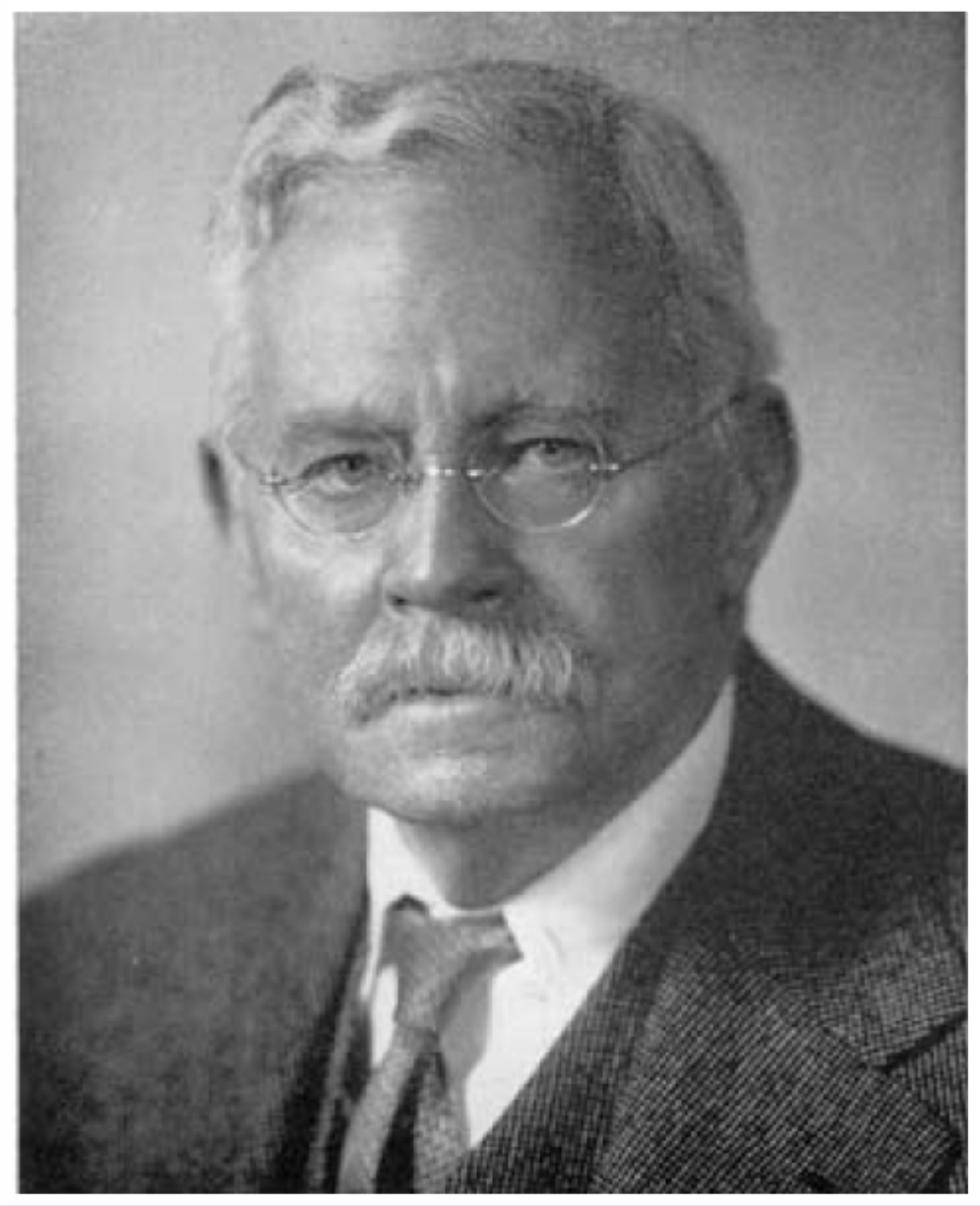
EDITED BY
WILLIAM B. SCOTT
BLAIR PROFESSOR OF GEOLOGY AND PALÆONTOLOGY, PRINCETON UNIVERSITY

VOLUME I.

NARRATIVE AND GEOGRAPHY

PRINCETON, N. J.
THE UNIVERSITY
STUTTGART
SCHWEIZERBART'SCHE VERLAGSHANDLUNG (E. NÄGELE)
1903





William B. Scott, Chief of the Geological Department at Princeton

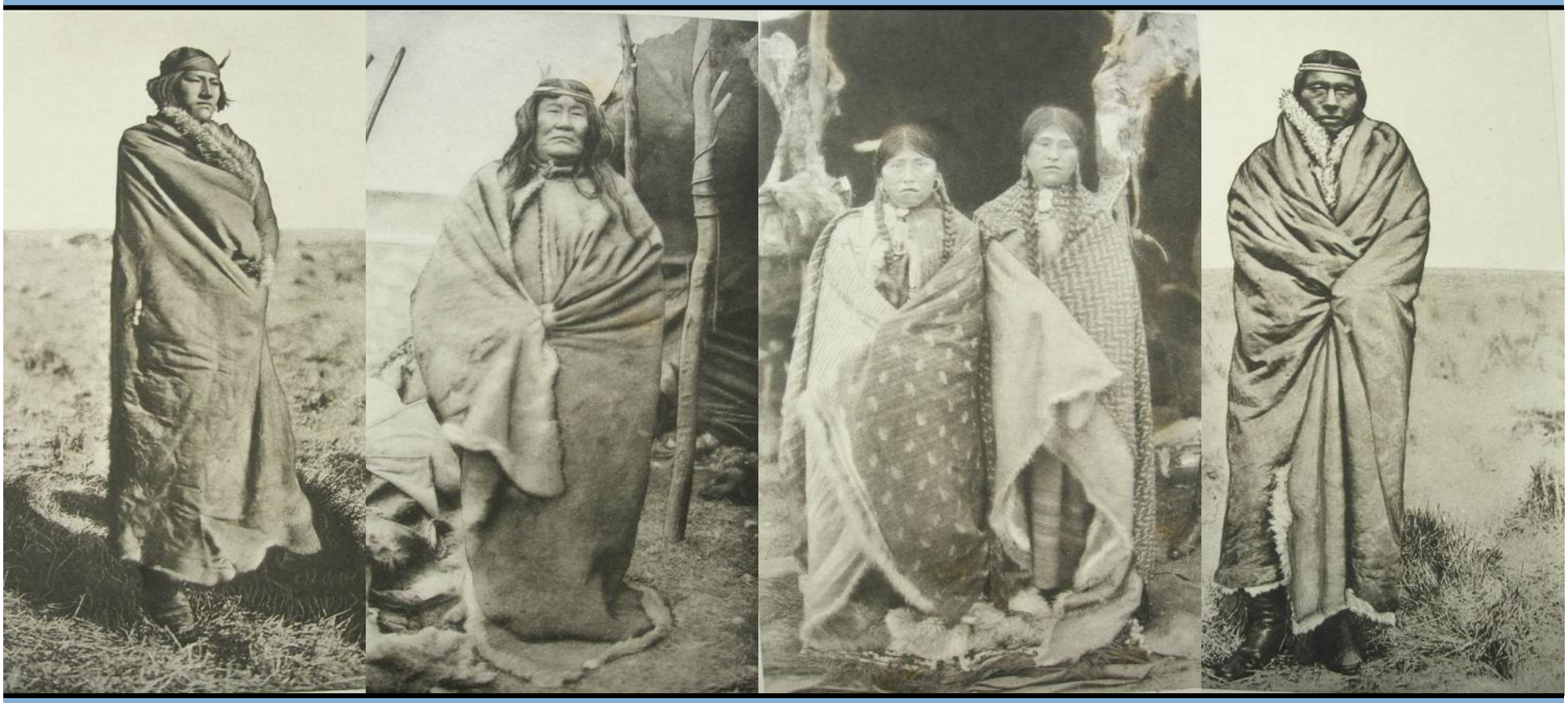
Toldería tehuelche *(Tehuelche village)*

Scientific American (November 18, 1899)

Tehuelche woman ready to travel…

Scientific American (November 18, 1899)

Tehuelche indians

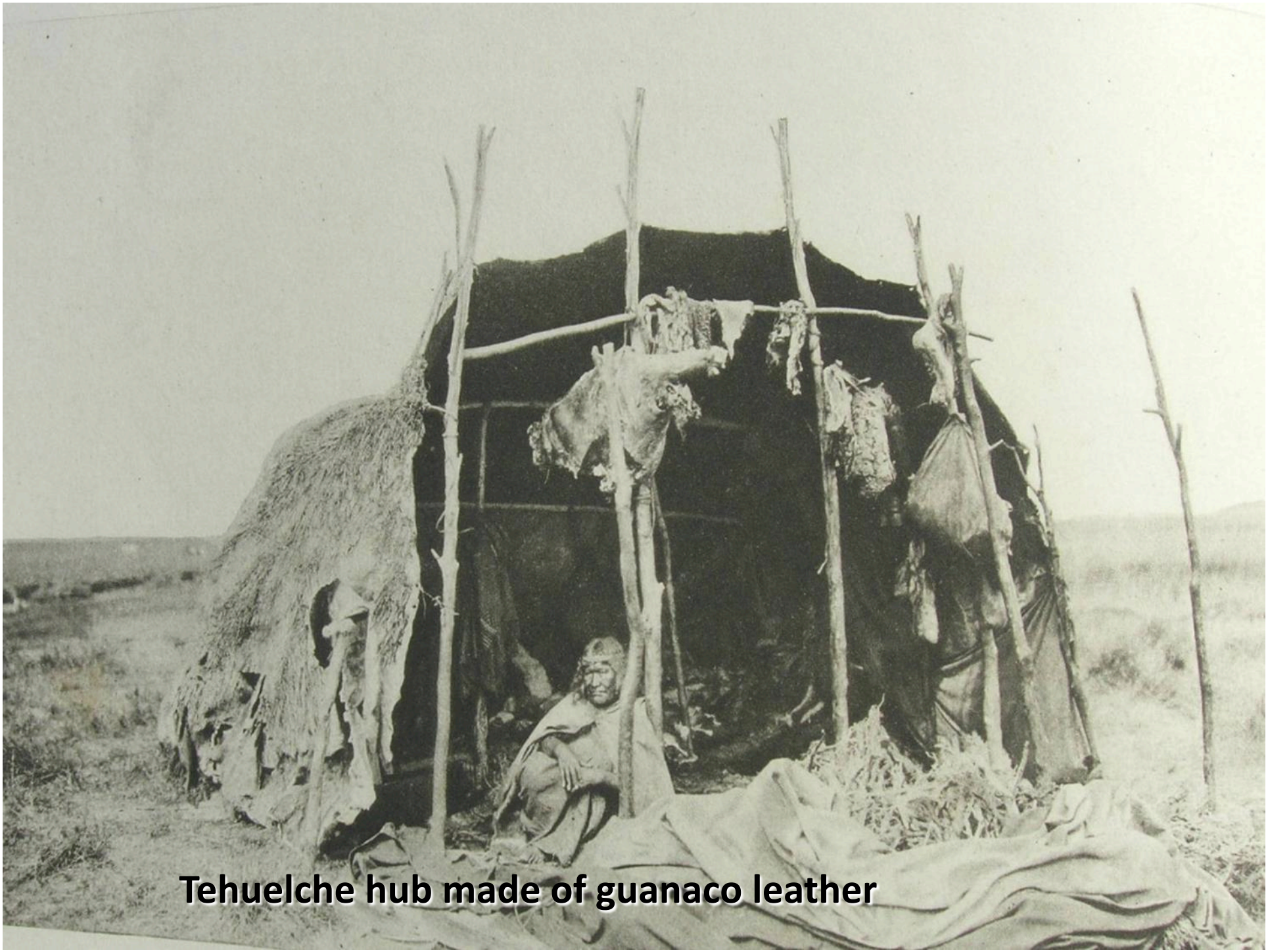


A young man, an old woman, girls, and the Cacique Mulato

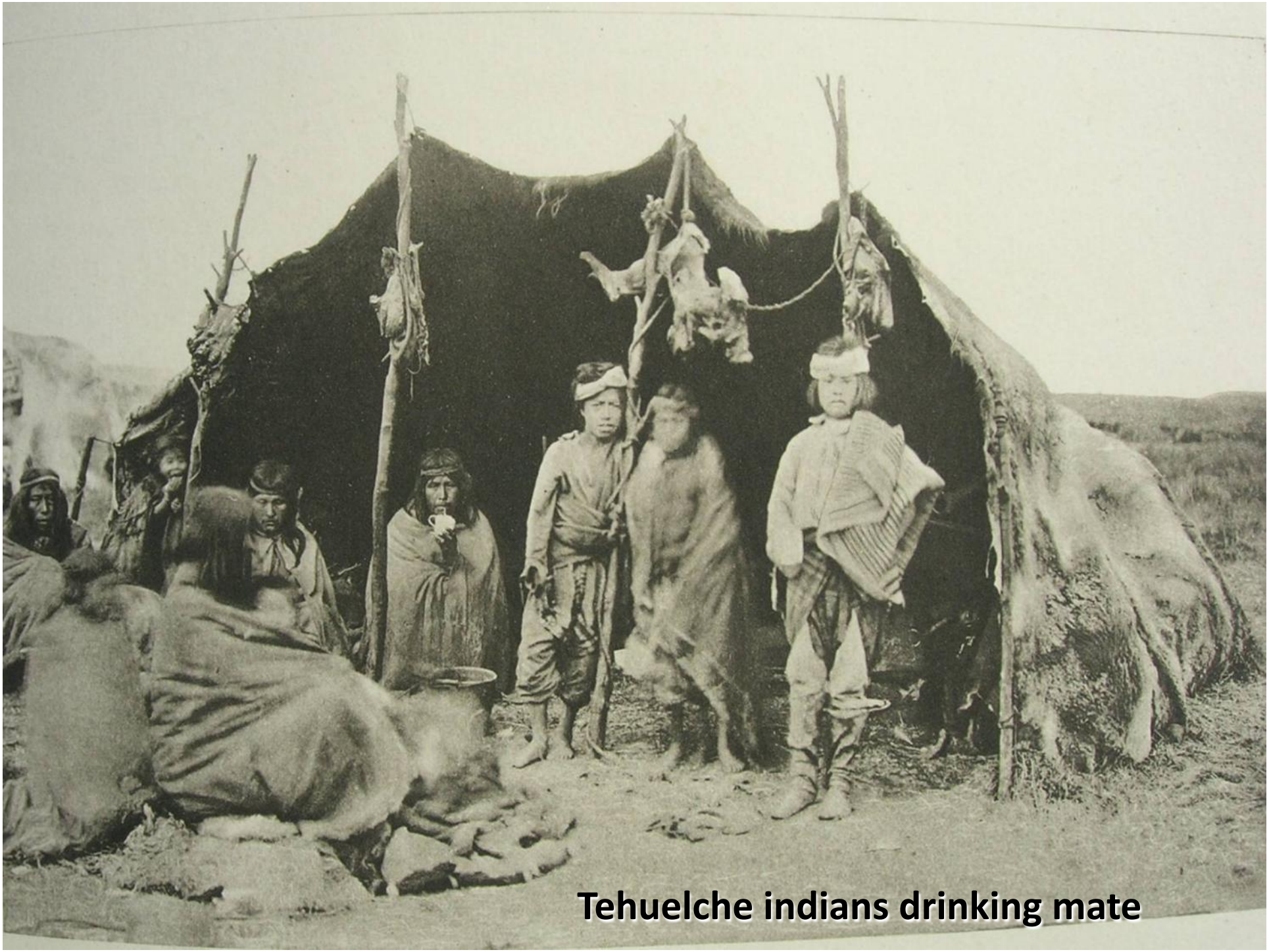
Scientific American (November 18, 1899)

Tehuelche craddle

Scientific American (November 18, 1899)

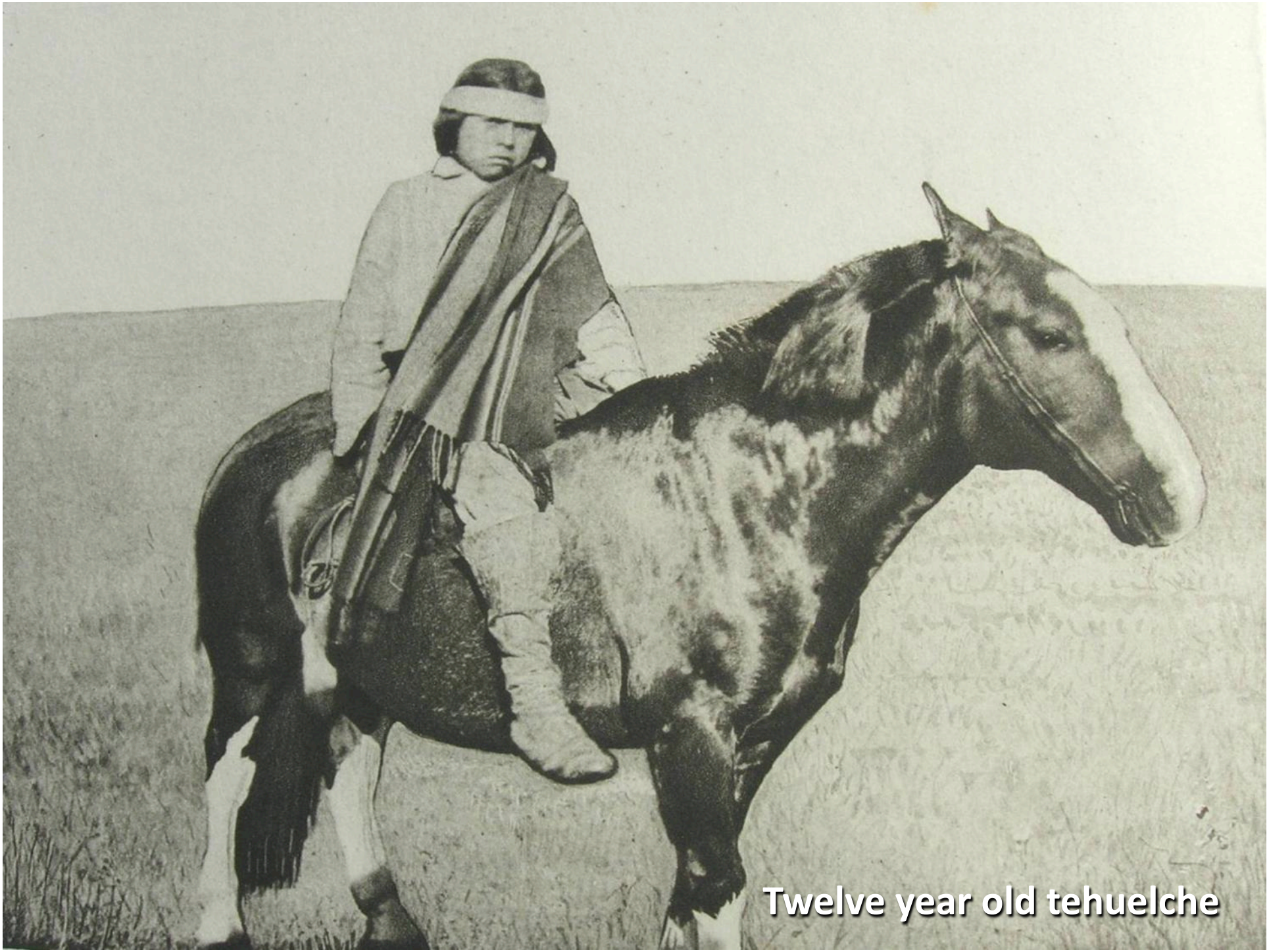


Tehuelche hub made of guanaco leather



Tehuelche indians drinking mate

Tehuelche woman painting a guanaco skin

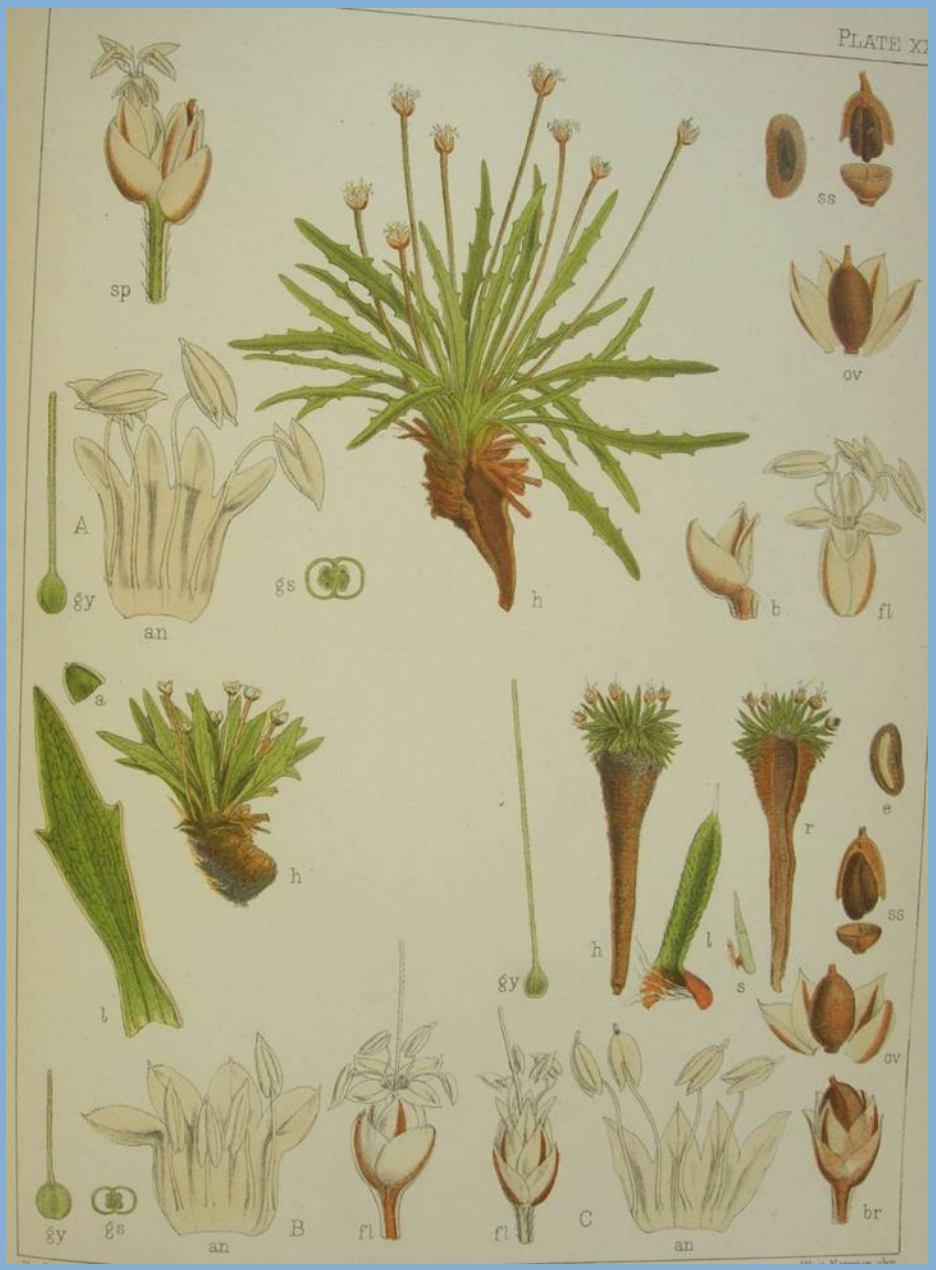

Twelve year old tehuelche

Old tehuelche women with a girl

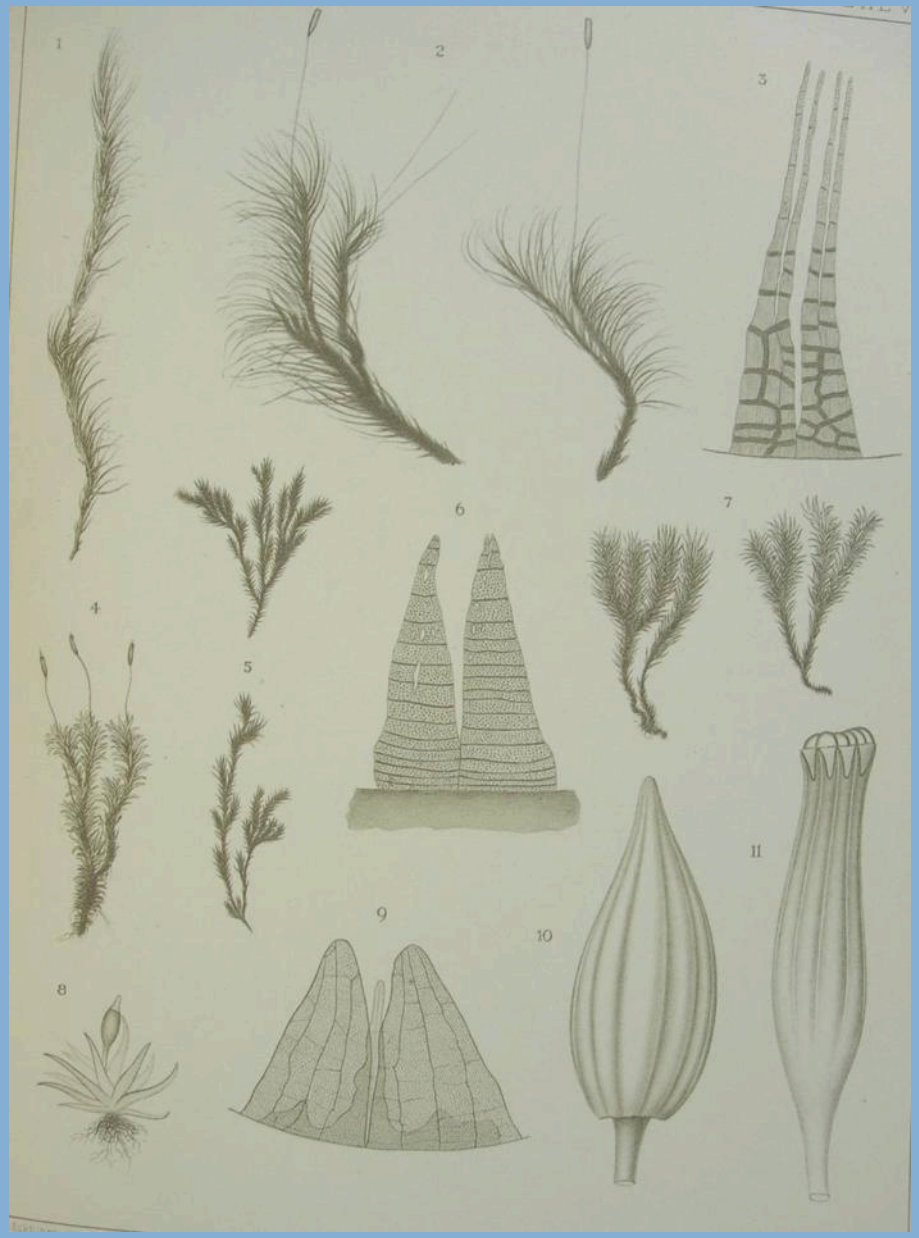
Living gastropods

Living gastropods


Nothofagus Forest



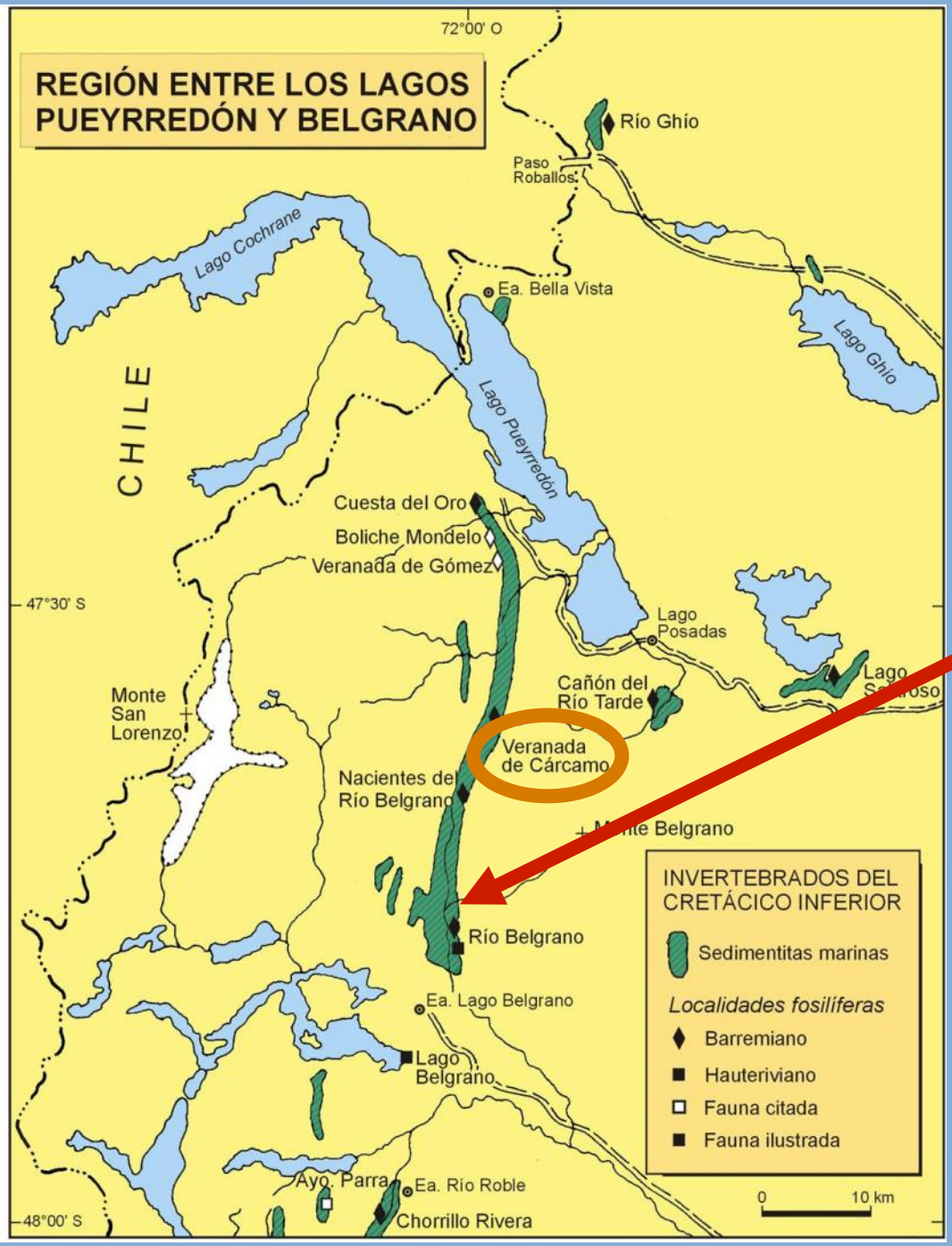
Living plants

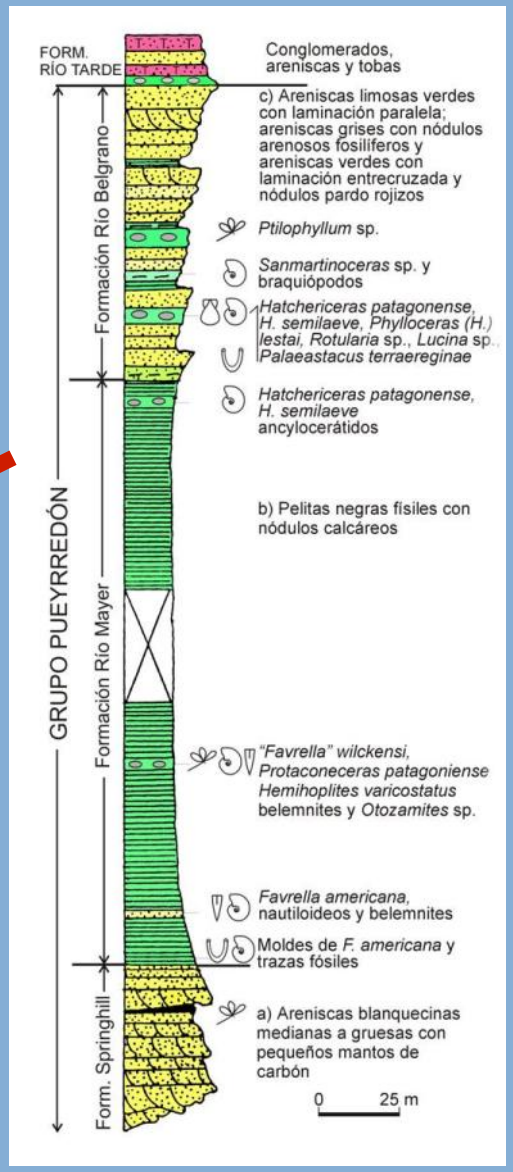


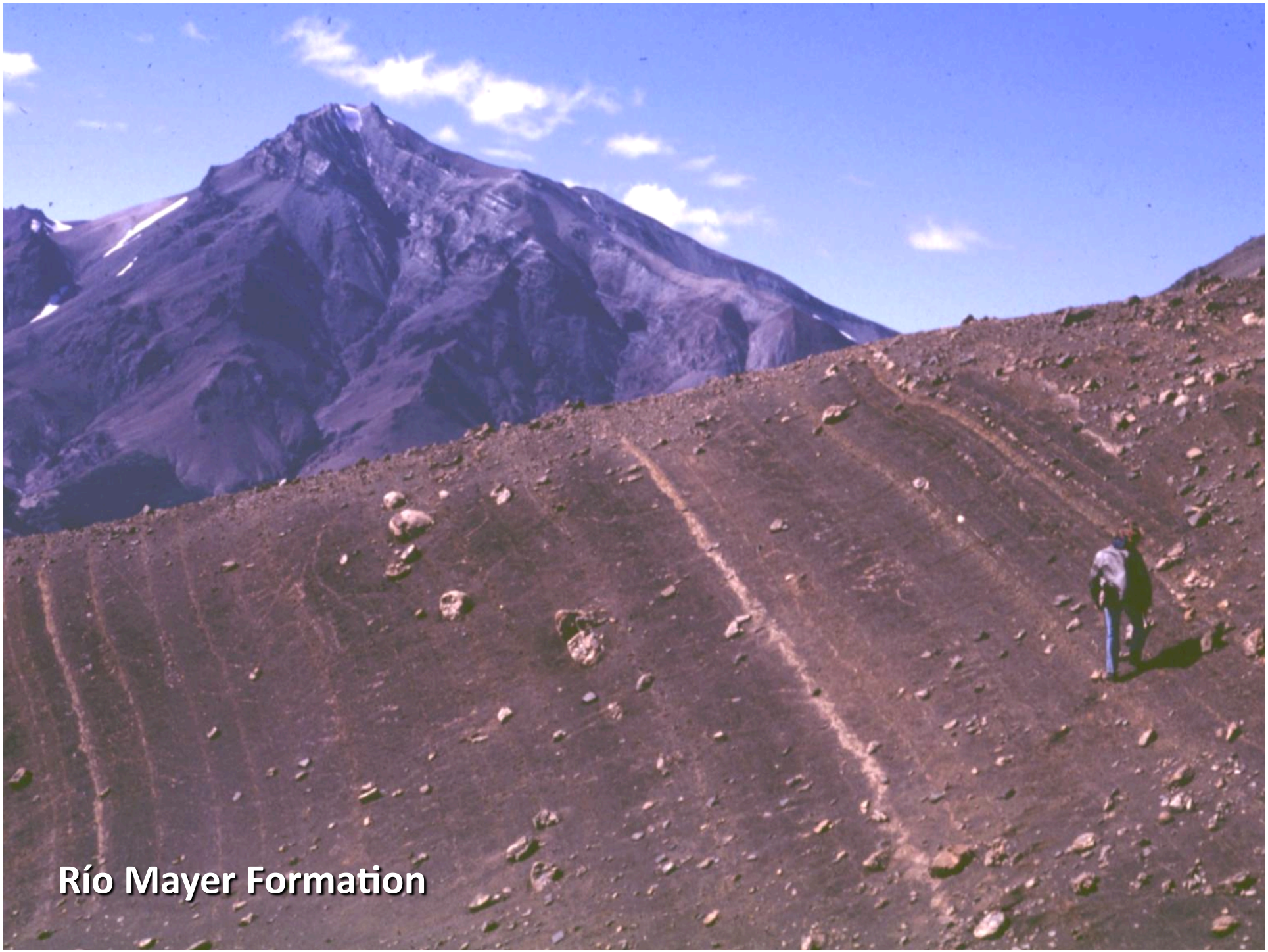
Living plants


Lago Belgrano

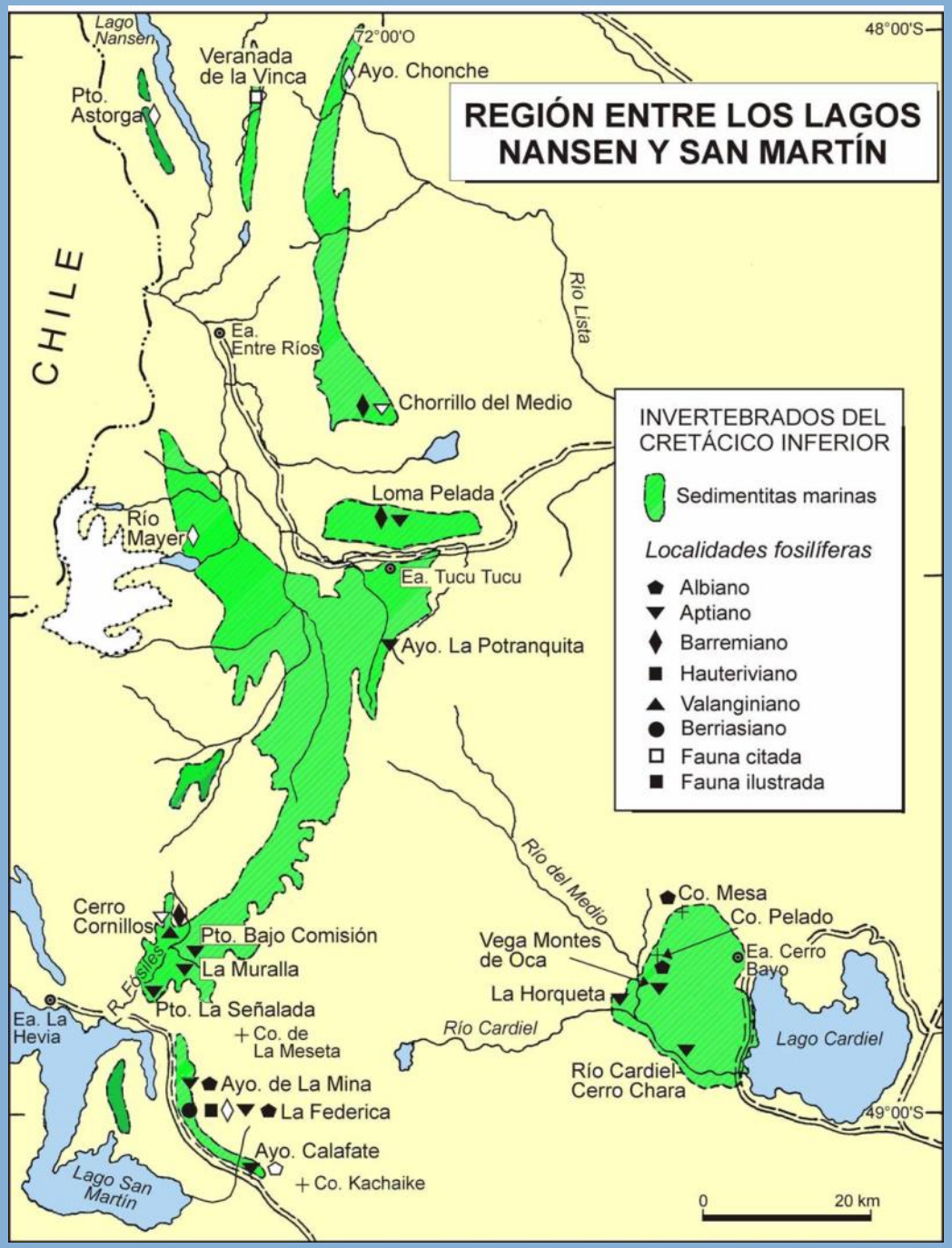
GEOLOGY


REGIÓN ENTRE LOS LAGOS PUEYRREDÓN Y BELGRANO
72°00' O
Río Ghío
Paso Roballos
Lago Cochrane
Ea. Bella Vista
Lago Ghío
CHILE
Lago Pueyrredón
Cuesta del Oro
Boliche Mondelo
Veranada de Gómez
47°30' S
Lago Posadas
Cañón del Río Tarde
Monte San Lorenzo
Veranada de Cárcamo
Nacientes del Río Belgrano
Monte Belgrano
Río Belgrano
Ea. Lago Belgrano
Lago Belgrano
Ayo. Parra
Ea. Río Roble
Chorrillo Rivera
48°00' S
0
10 km
INVERTEBRADOS DEL CRETÁCICO INFERIOR
Sedimentitas marinas
Localidades fosilíferas
Barremiano
Hauteriviano
Fauna citada
Fauna ilustrada


FORM. RÍO TARDE
Conglomerados, areniscas y tobas
c) Areniscas limosas verdes con laminación paralela; areniscas grises con nódulos arenosos fosilíferos y areniscas verdes con laminación entrecruzada y nódulos pardo rojizos
Ptilophyllum sp.
Sanmartinoceras sp. y braquiópodos
Hatchericeras patagonense, H. semilaeve, Phylloceras (H.) lestai, Rotularia sp., Lucina sp. Palaeastacus terraereginae
Hatchericeras patagonense, H. semilaeve ancylocerátidos
b) Pelitas negras fisiles con nódulos calcáreos
"Favrella" wilckensi, Protaconeceras patagoniense Hemihoplites varicostatus belemnites y Otozamites sp.
Favrella americana, nautiloideos y belemnites
Moldes de F. americana y trazas fósiles
a) Areniscas blanquecinas medianas a gruesas con pequeños mantos de carbón
0
25 m
GRUPO PUEYRREDÓN
Formación Río Belgrano
Formación Río Mayer
Form. Springhill


Río Mayer Formation


Río Belgrano Formation



Hatchericeras patagonense

Pseudohatchericeras argentinense

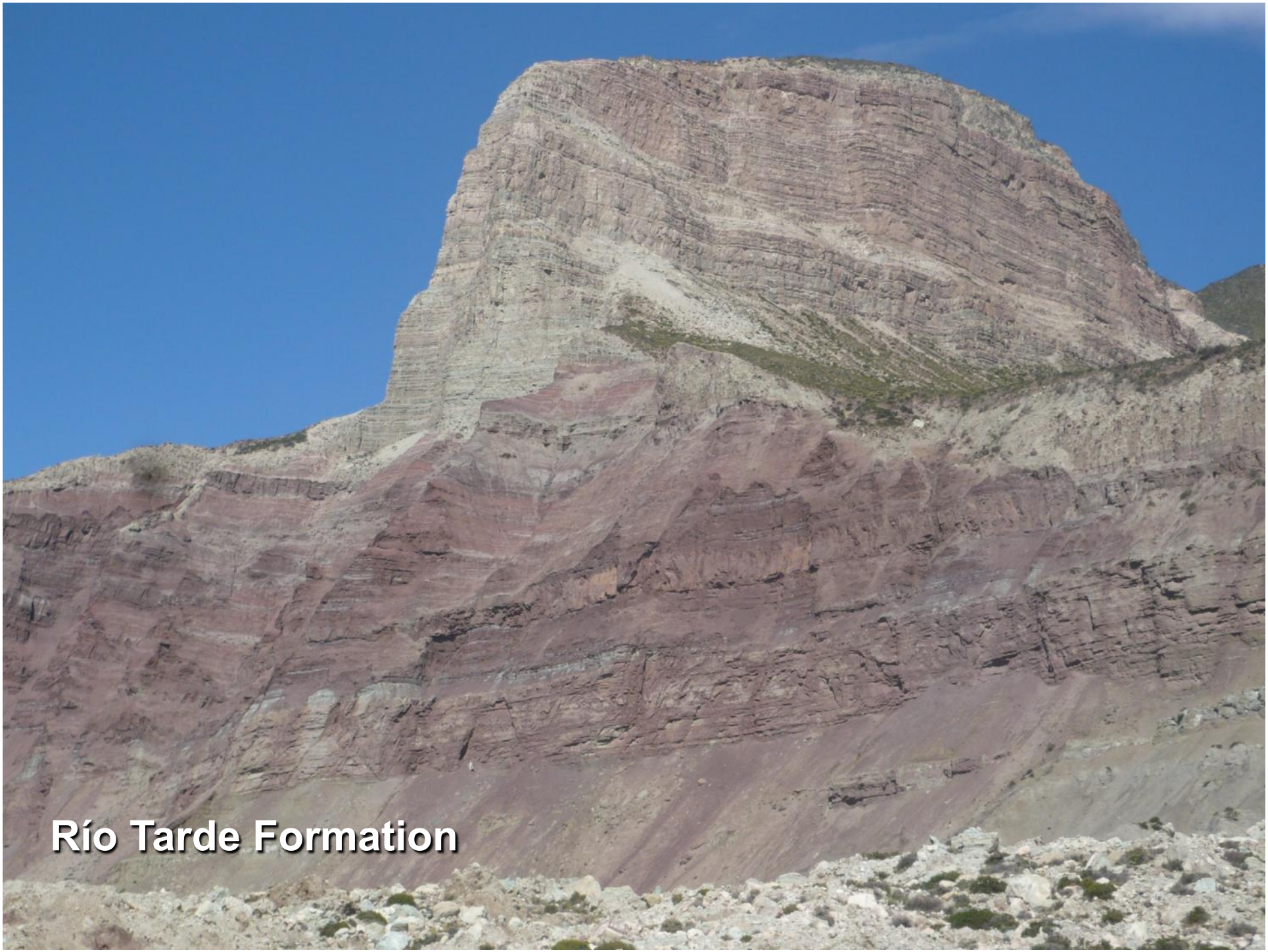

Silicified wood

Río Tarde Canyon

Type locality of the stratigraphic units found and described by Hatcher (1903)

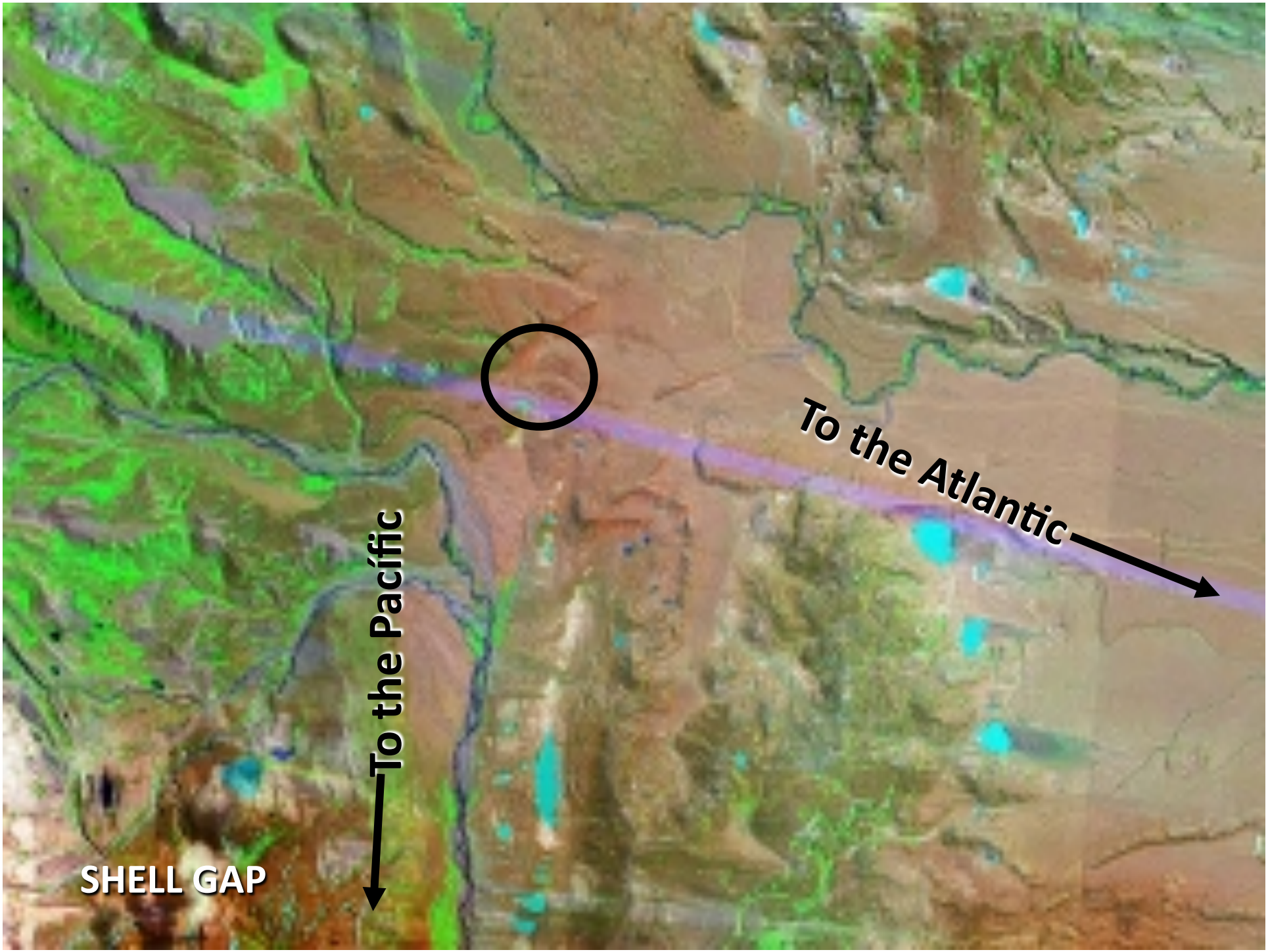

Río Tarde Formation


Río Tarde Formation


Río Tarde Formation


Pueyrredón Lake


Tucu Tucu River
Valle del Río Tucu-Tucu


To the Atlantic
To the Pacific
SHELL GAP


Shell Gap

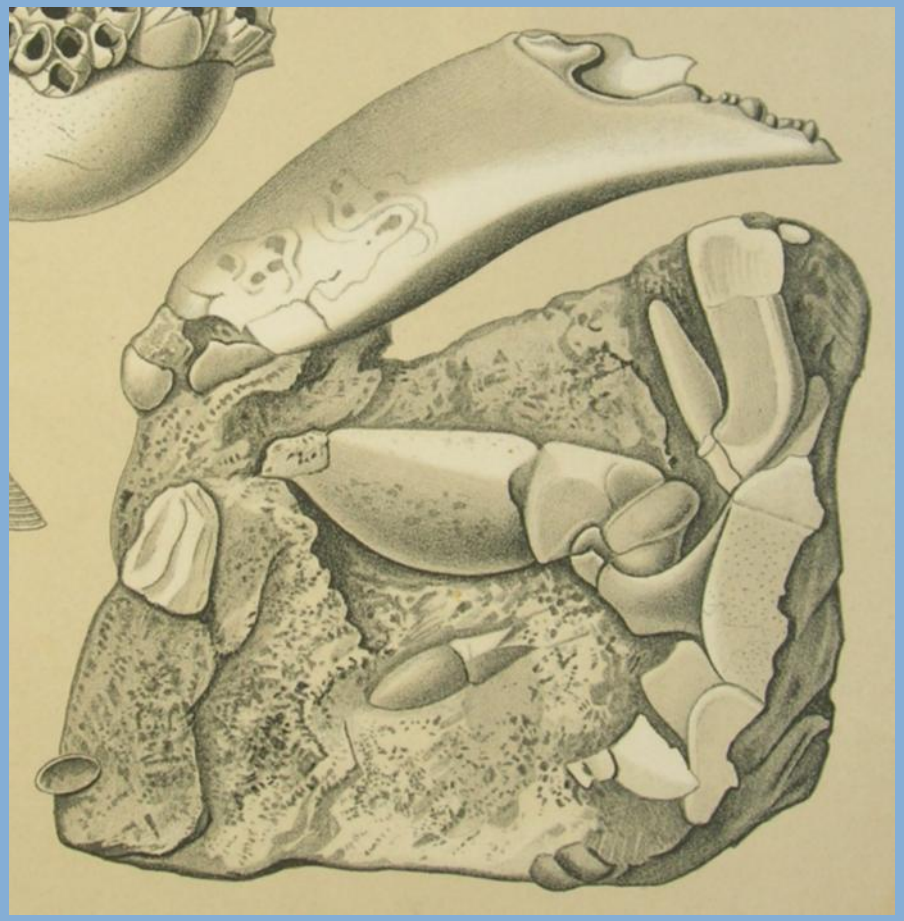
Patagonian and Santacrucian Beds in the Veranada de Cárcamo

PATAGONIA FORMATION

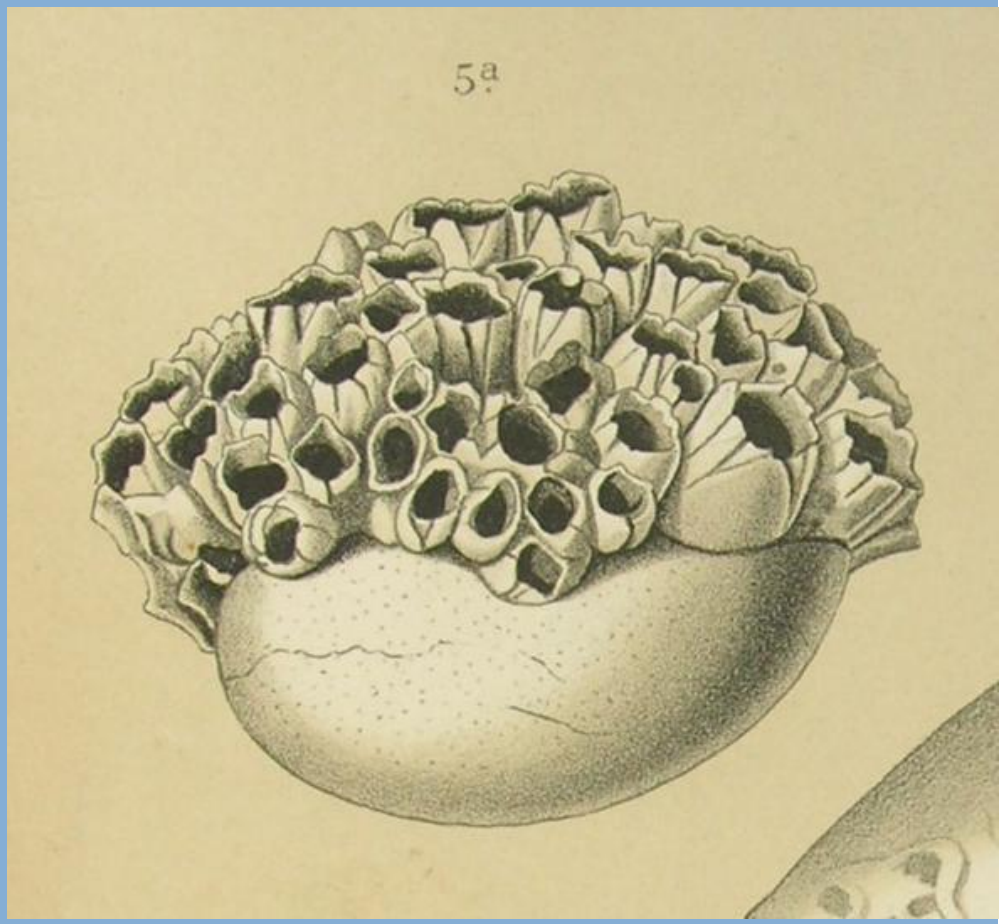
Patagonian beds with

Ostrea hatcheri

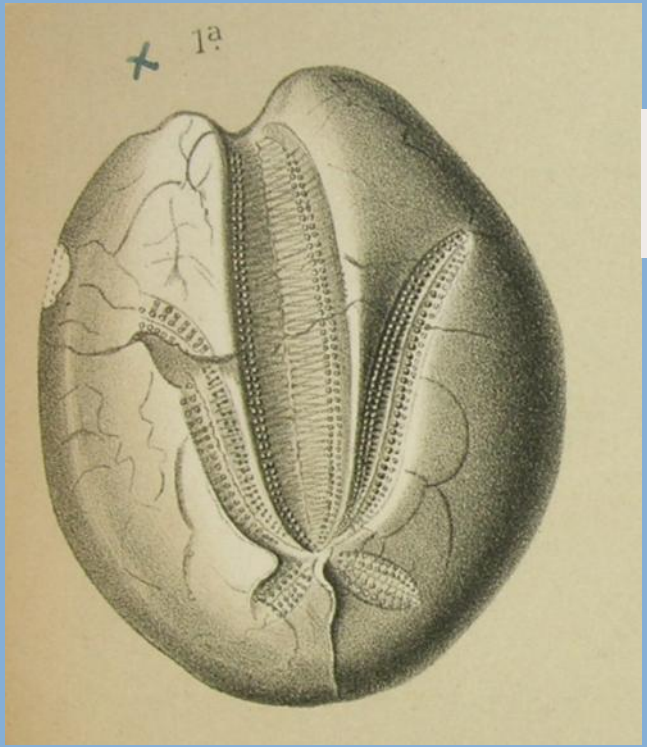
Fossil crustacean



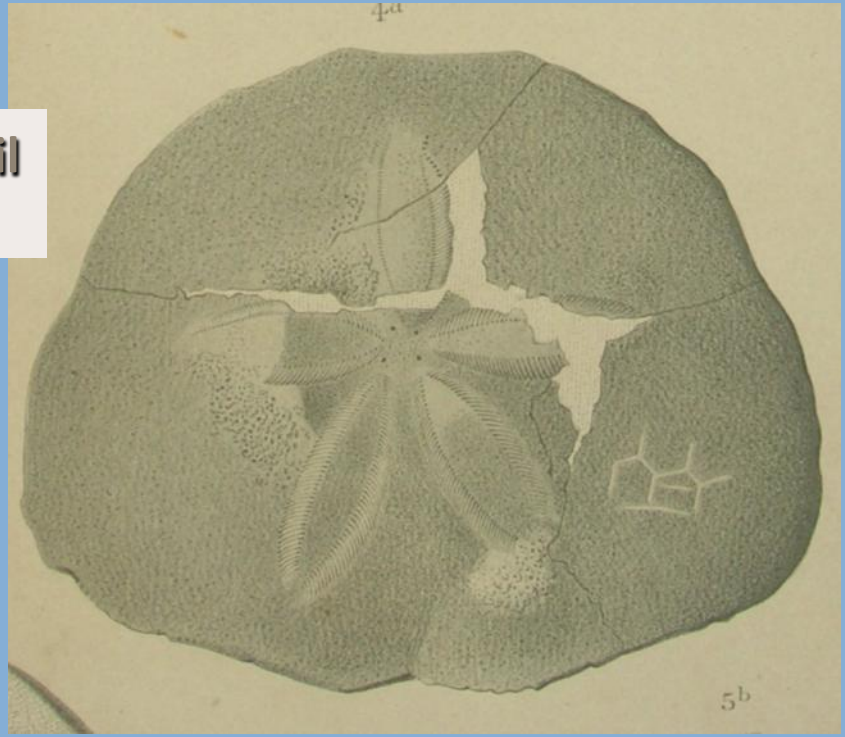
Fossil crab

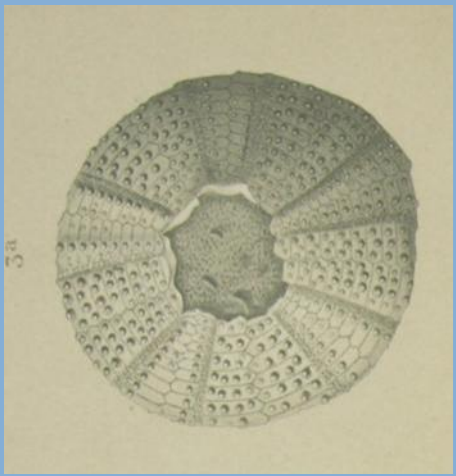


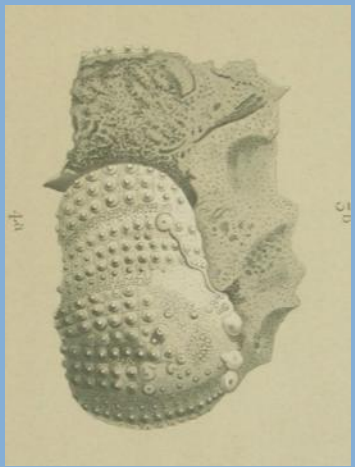
Fossil Balanus

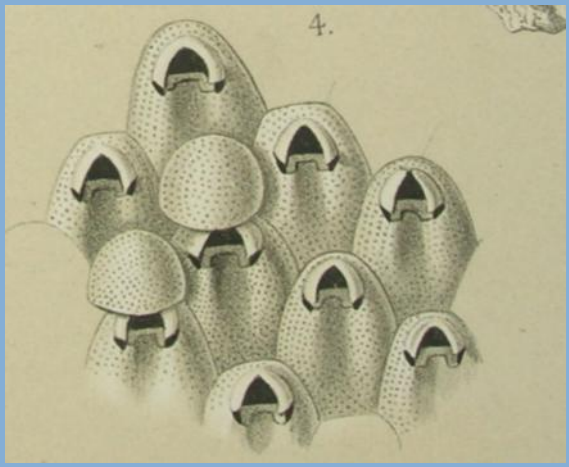


Unregular fossil Echinoids



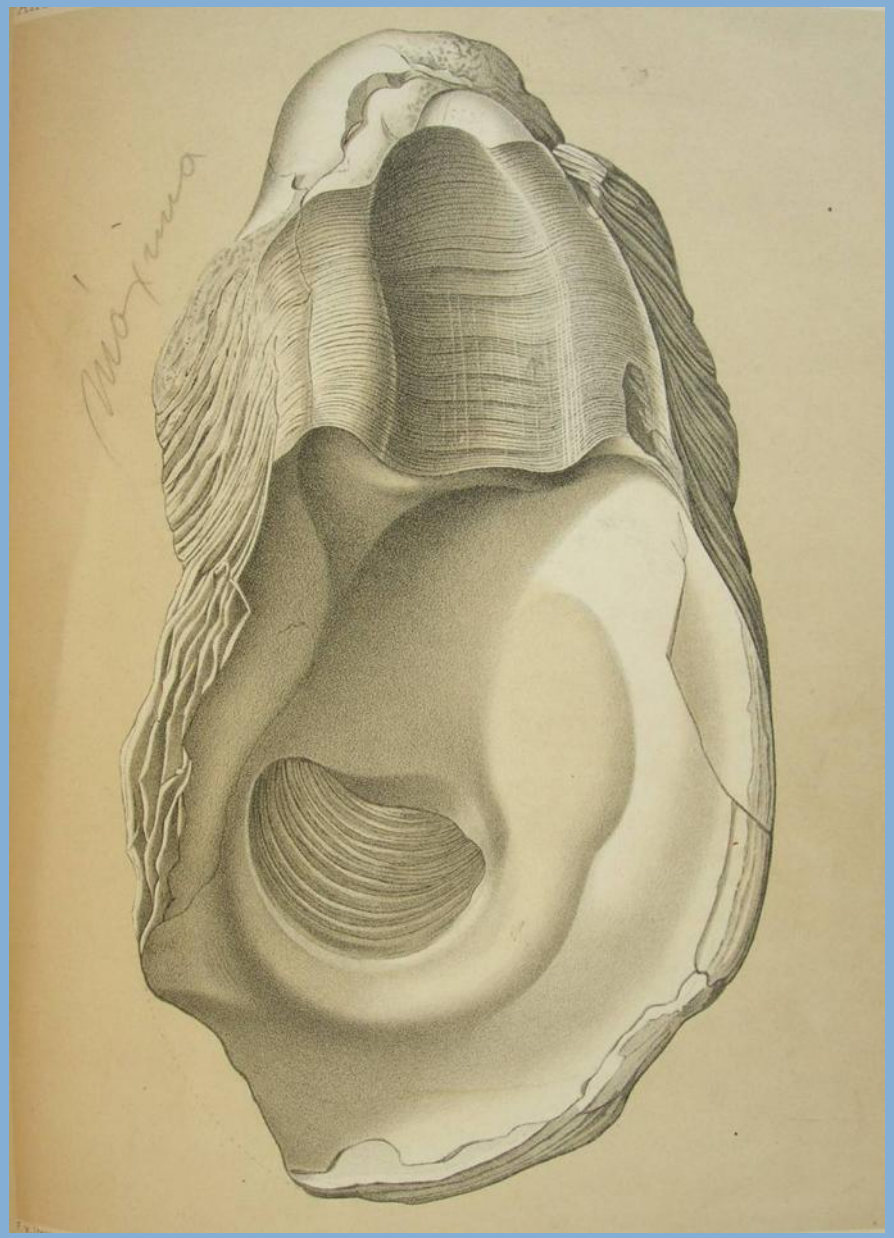


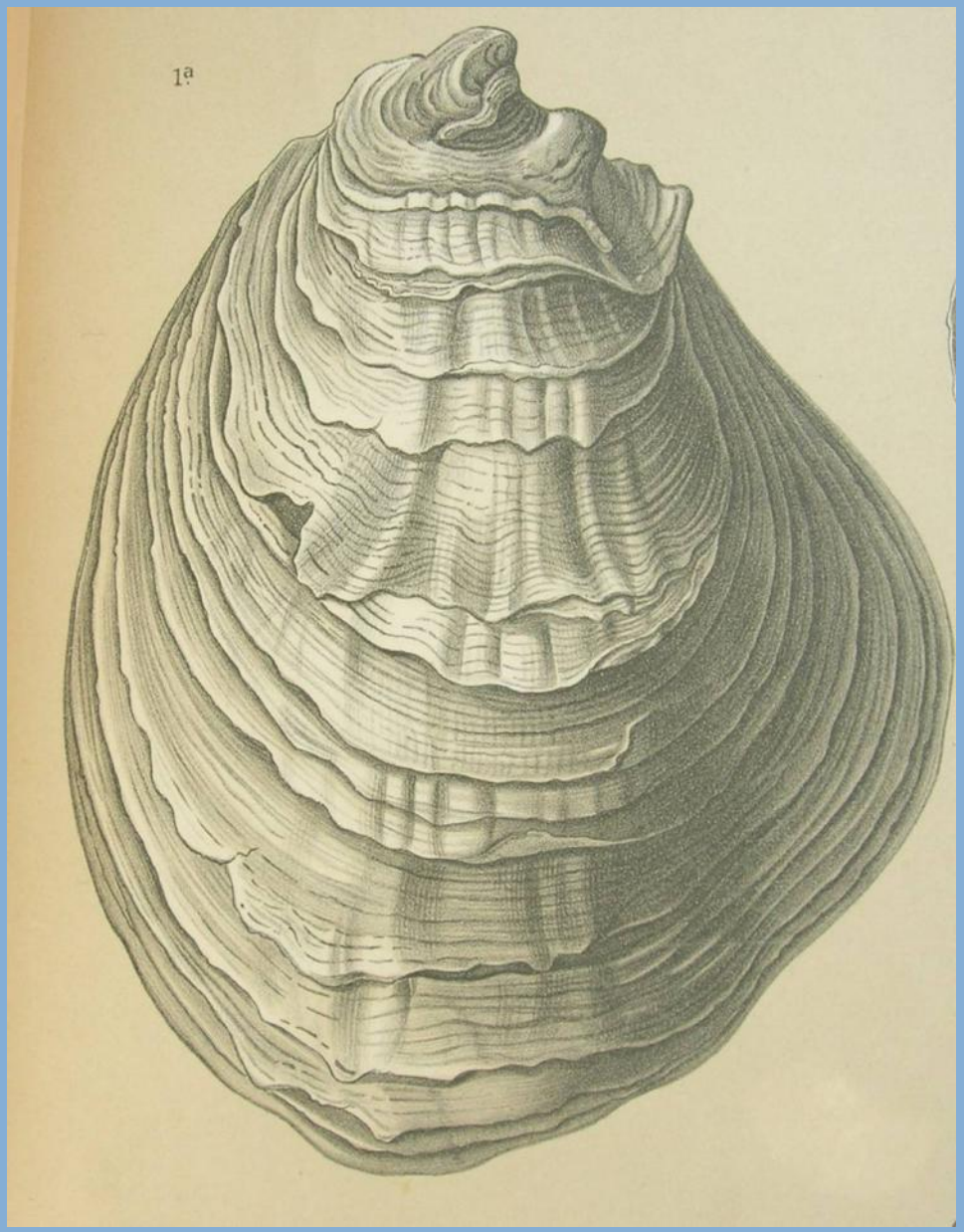




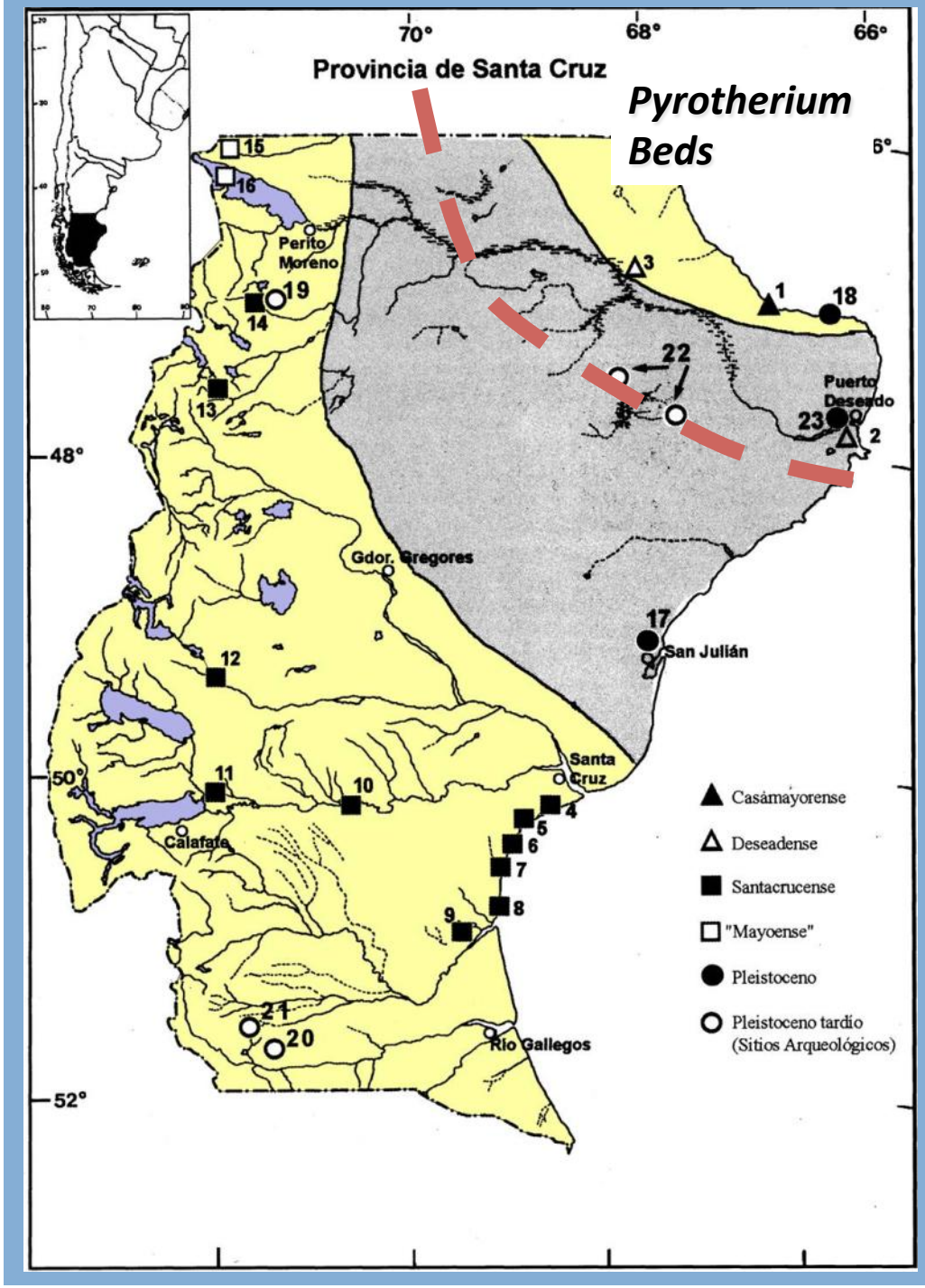
Regular fossil Echinoids

Briozoos and fossil serpulids





Ostrea hatcheri



Pyrotherium Beds

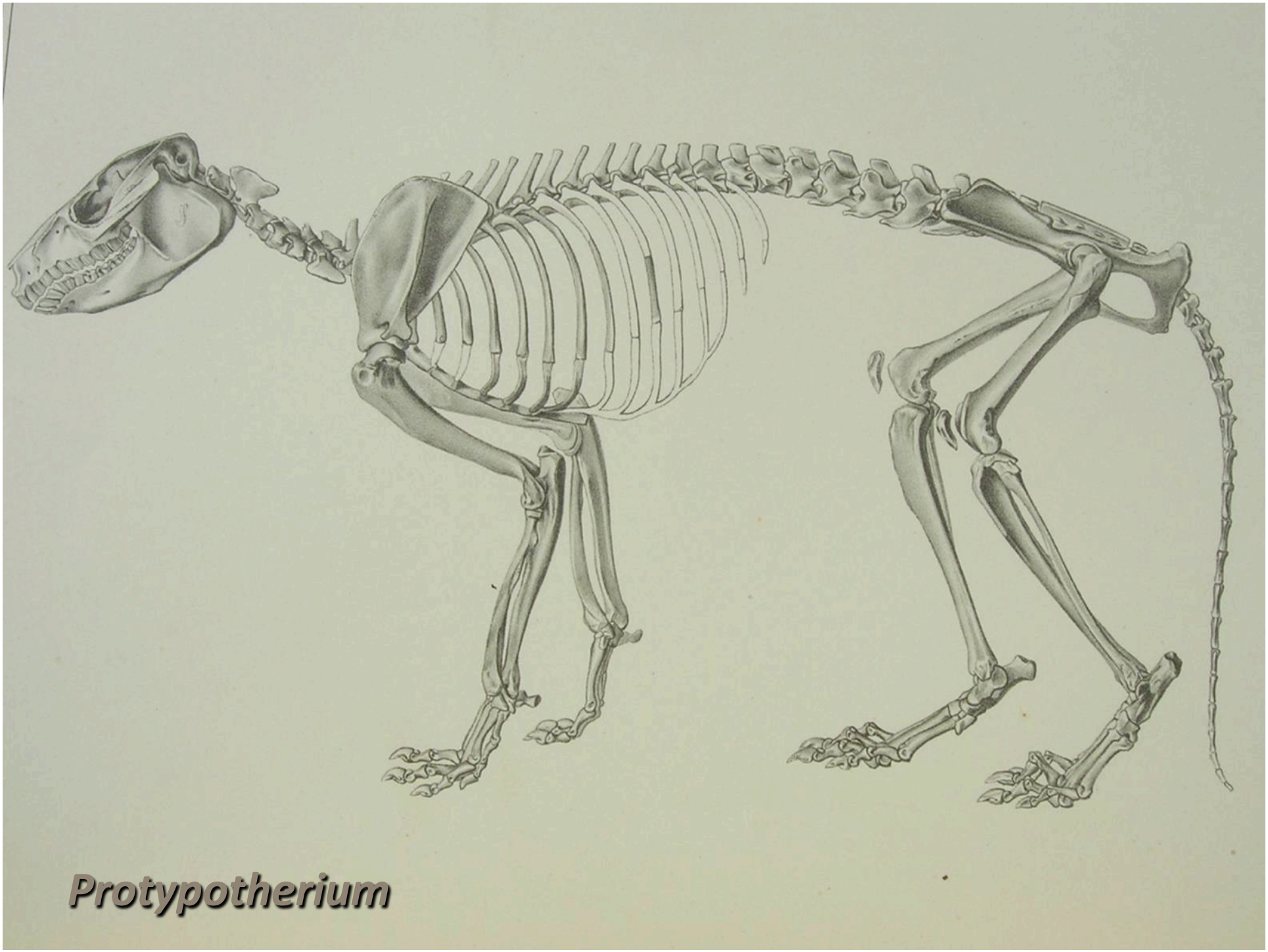
- The Pyrotherium beds are exposed north of the area examined by Hatcher expeditions and are located in Golfo de San Jorge.

- All the localities visited by Hatcher in his three years in Patagonia had beds younger where do not exist the older fauna described by Ameghino.

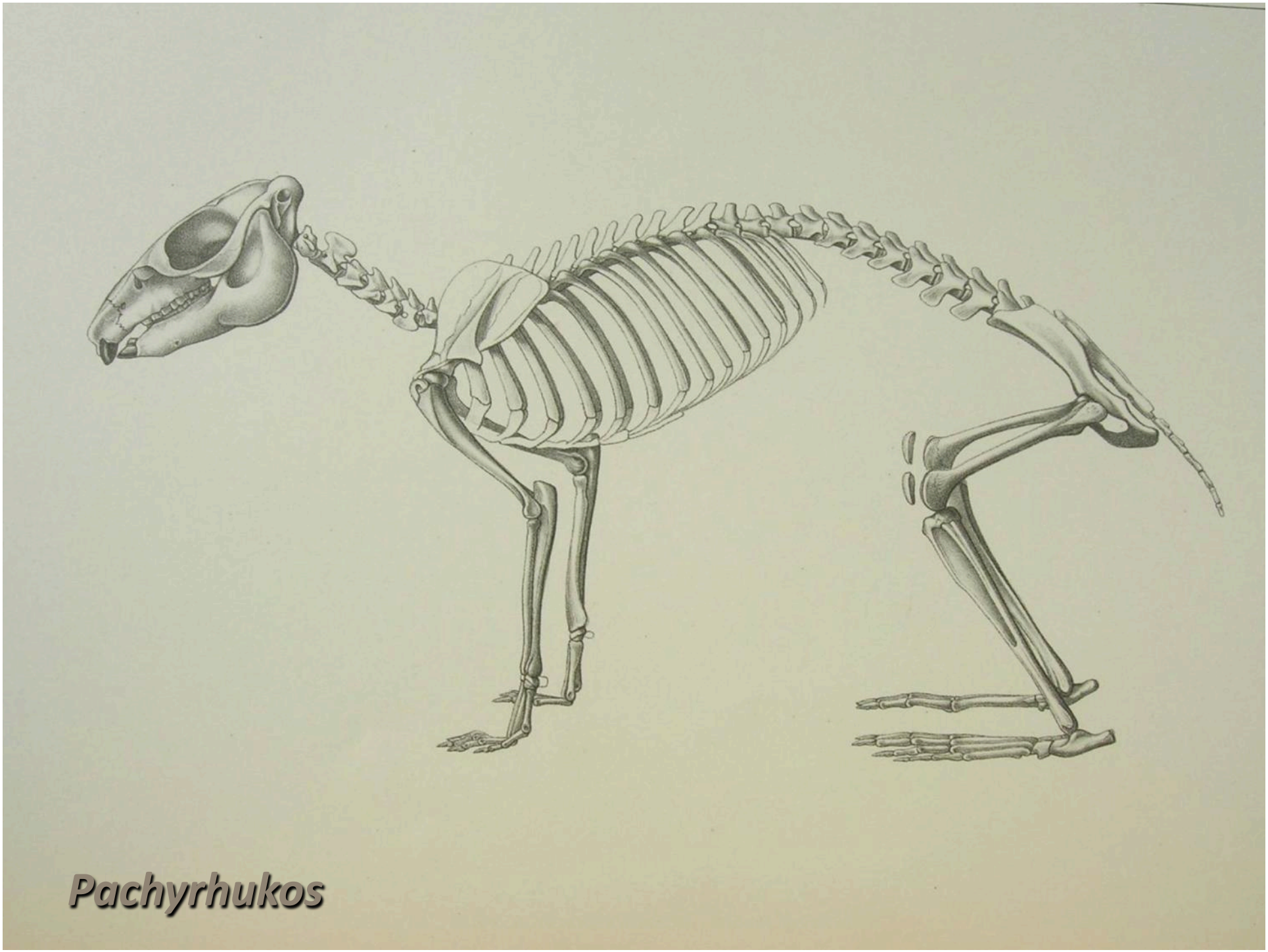
- Therefore he couldn't see the localities where Carlos Ameghino found the dinosaurs together with mammals.

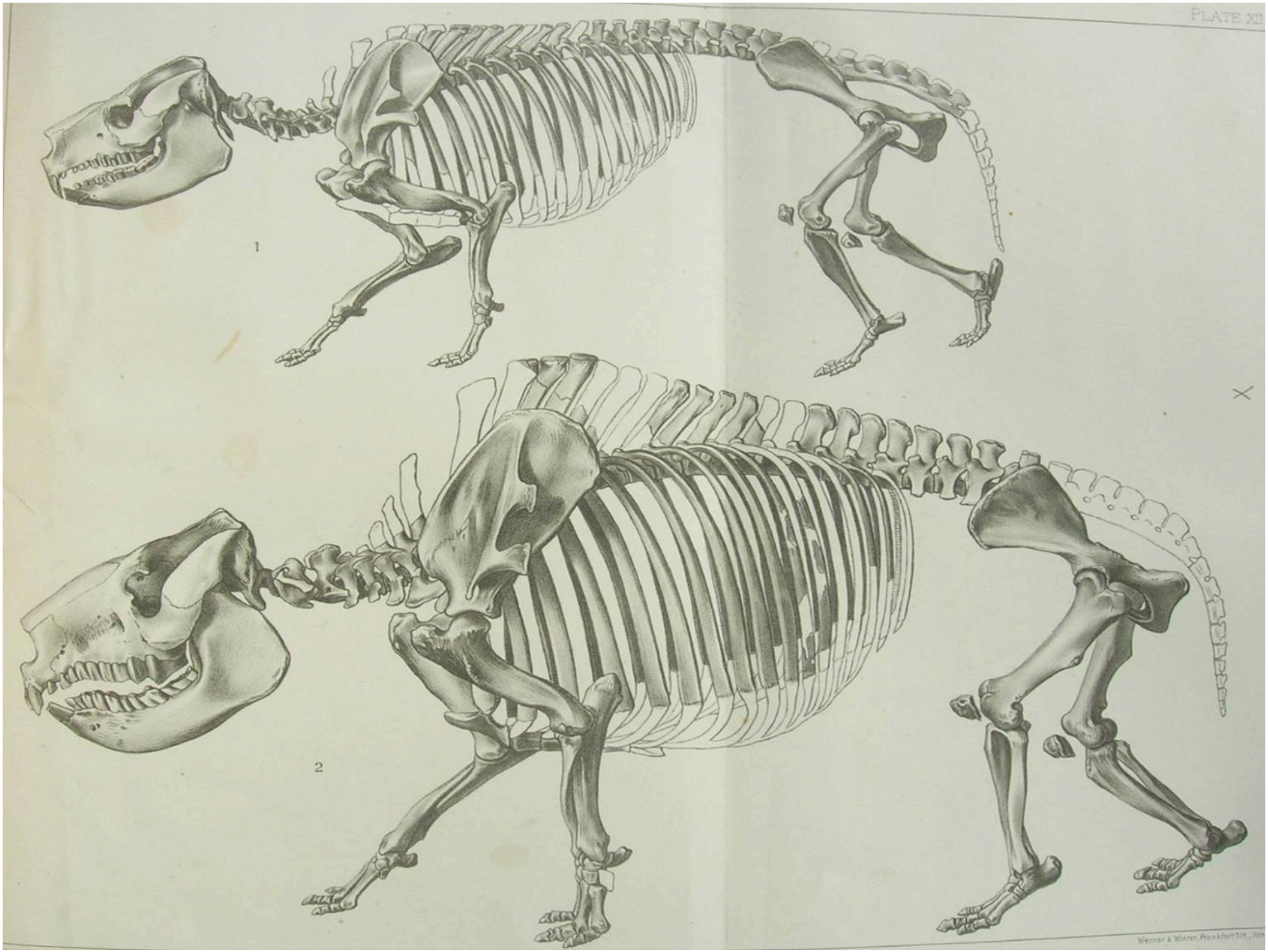
Pascual (2002)


Patagonian and Santacrucian beds in Veranada de Cárcamo

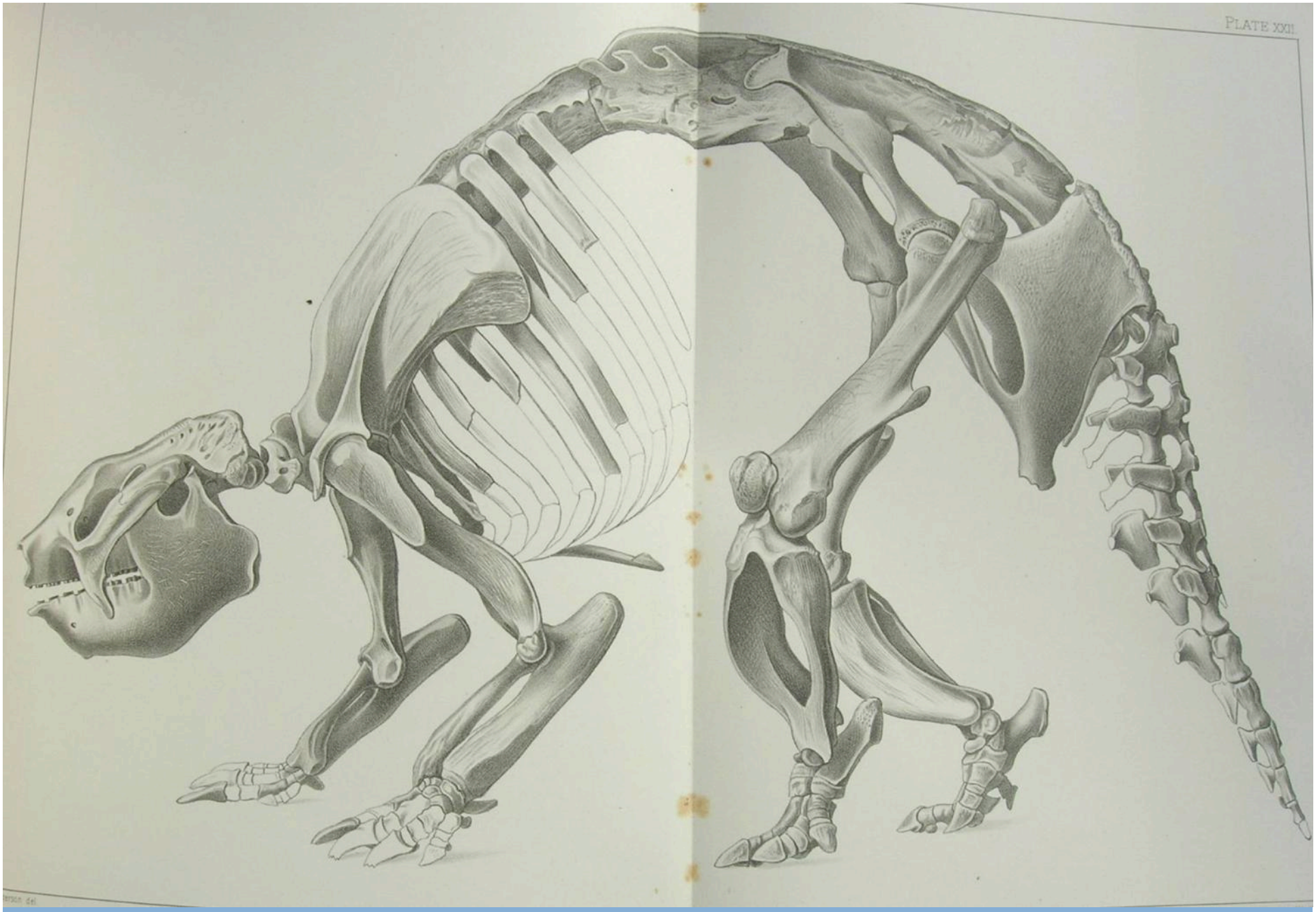


Protypotherium

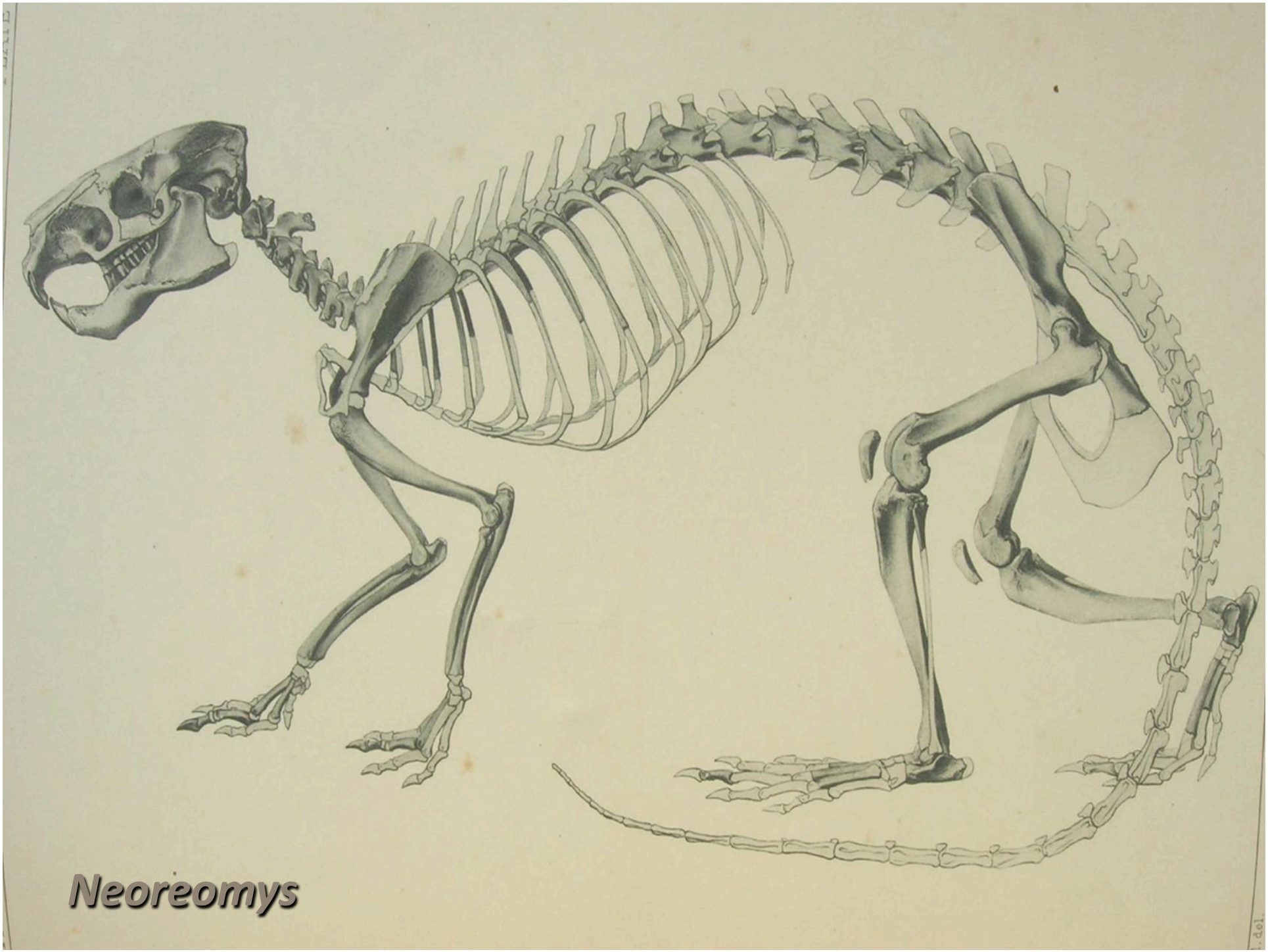

Pachyrhukos



Werner & Winter, Frankfurt M.



Propalaeohoplophorus



Neoreomys

- John Bell Hatcher collected more than 10 tons of mammal fossil bones, many of them new genus and species for the science.
- None of the many localities have dinosaurs coexisting with fossil mammals.
- However his research established:
    - The bases of the present stratigraphy of the Patagonian Andes, and discovered that the Pacific sea extended to the east of the Andes,
    - His publications like the one in Scientific American documented by the first time the Tehuelche culture, presently extinct,
    - Collected numerous Mesozoic fossils, ammonites that are carring his name acknowledging his pioneer work,
    - His collections of present plants and animals allow the comparison the fauna and flora of Patagonia with the northern hemisphere ones.
    - It was the most important Patagonian scientific expedition after Darwin.

Hatcher died of typhus fever in 1904, a few weeks after publishing his Narratives; his 47 scientific publications were widely well-known and internationally recognized, but he was known mainly for his extraordinary expedition to Patagonia.

In spit of his discussions and polemics with Ameghino he was recognized by his intellectual honesty, rigorous and systematic methods that led him to important scientific achievements.

John Bell Hatcher
11/Octubre/1861 - 3/Julio/1904
Anna Matilda Peterson
23/Mayo/1866 - 7/Marzo/1940

Epíloge:

The University of Princeton decided to get rid of the Hatcher paleontological collection giving more than 10 tons of vertebrate fossils to the Peabody Museum of Yale University and the invertebrate fauna to the University of Purdue.

The Universidad Nacional de la Patagonia Don Juan Bosco couldn't raise the necessary funding to repatriate the fossils back to Patagonia...


Muchas gracias. . .