

Revitalizing historic and iconic Trinidad type sections through archival research within Hans G. Kugler's Legacy in Basel, Switzerland

Sadie Samsoodar and Michael Knappertsbusch

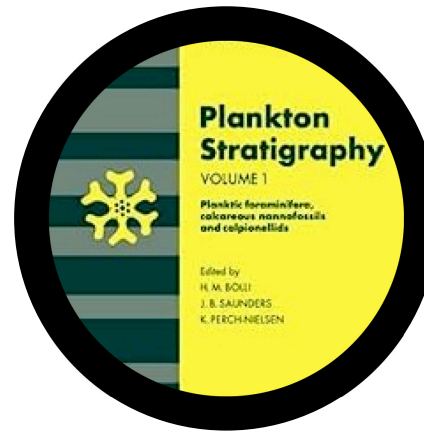
Natural History Museum Basel, Switzerland



Trinidad, oil, biostratigraphy, Basel

- Trinidad Caribbean island
- Rich hydrocarbon resources
- Attracted international petroleum geologists
- Developed foraminiferal biostratigraphy
- NMB* - largest (?) Trinidad collection

*NMB: Natural History Museum Basel, Switzerland



Oil industry, Trinidad



Hans Kugler

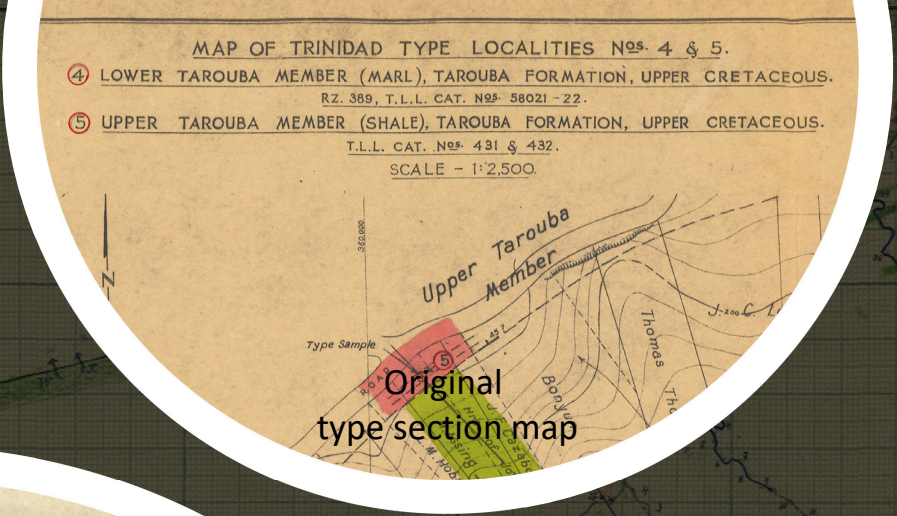


Caribbean region

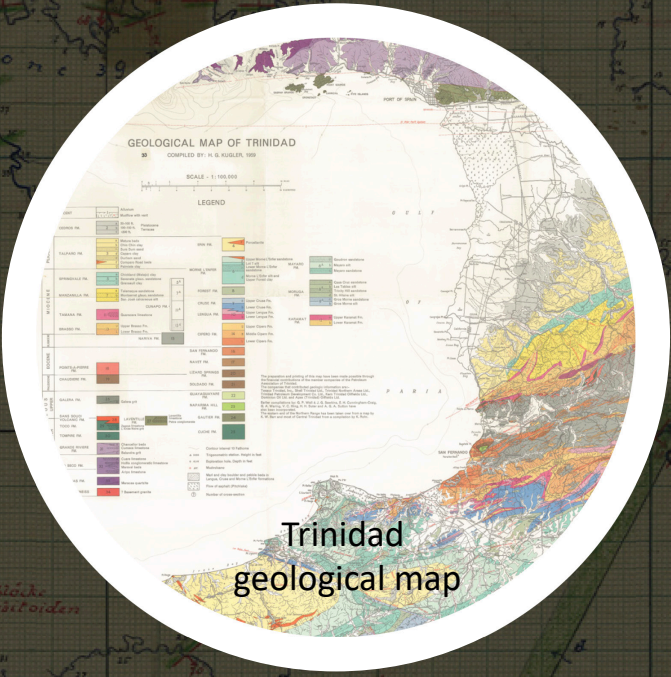
Samsundar & Knappertsbusch



NMB, Basel



Original type section map



Trinidad geological map



Left to right:
J Saunders, B Carr-Brown,
HG Kugler, HH Renz



Kugler [1920] in Trinidad

Dr. Hans G. Kugler (1893-1986)

- Swiss Petroleum Geologist
- “Father of Trinidad’s Geology”
- Established 57 type sections in Trinidad
- International standards
- Replicate material shipper around the world



Archives



Hand library



Field books



Samples



Raw sediment



Maps

Largest and most complete Trinidad collection (?) in Basel

- HGK* retired back to Basel 1959
- Material shipped to NMB
- Various authors
 - *A Senn, HH Renz, RM Stainforth, B. Caudri, HM Bolli, JB Saunders*
- 85 Box archive
- Photo archive
- Maps archive
- Samples
- Field books
- Hand library
- 1 year project curating collection

*HGK: Hans G Kugler

- First application planktonic foraminiferal biostratigraphy
- Cushman and Stainforth (1945)
- Renz and Stainforth (1939) – Oil company private report
- Bolli (1957), Bolli et al. (1985), Wade et al. (2018)
- Today inaccessible



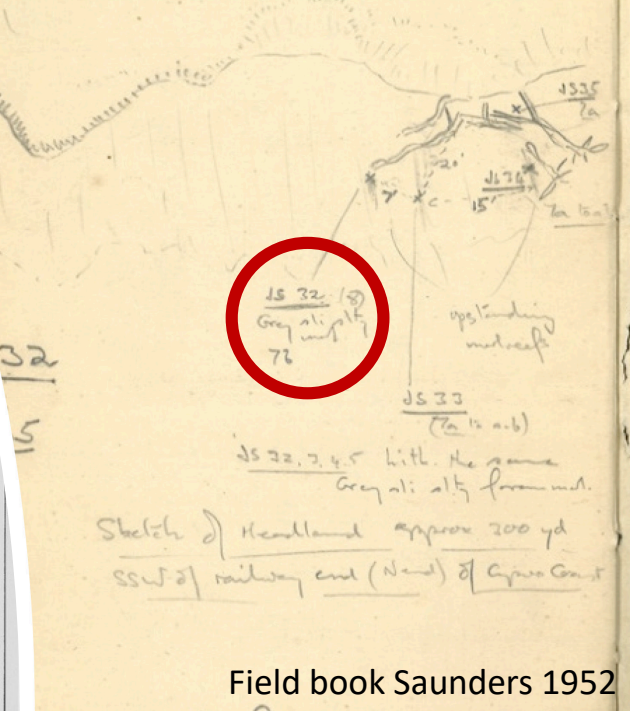
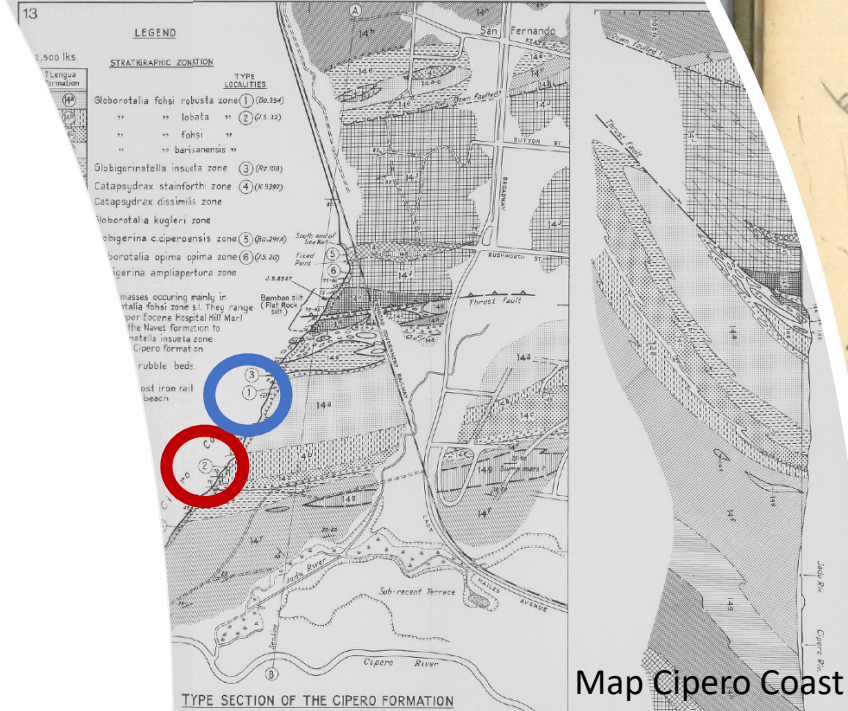
Cipero Coast [1957]

Importance of archival research: *Case study Cipero Coast, Trinidad*

The value of correspondence

“...JS 32 (2) was actually taken N of (1).”

Correspondence Hans G Kugler and John B Saunders
15th August 1964



I have been looking at the Ciperó Coast again. I went down last week mainly to collect Flat Rock Tongue. I have never seen the coast in such a terrible state. To start with, they are pushing clay over the cliff at the railway end and have covered the Gg 31 type locality. Also, the famous 'fixed' point rails have gone! When the ground gets a bit firmer (I had to be dug out of the beach) I shall try to tie things in again. On the Ciperó enclosure K 9397 (4) is out of place by 500 ft or more. It should be level with the 65 dip. JS 32 (2) was actually taken N of (1). I told Hans this when we were looking over Bull 215 but he wouldn't believe it. There is certainly some 7b up there and I am having 10 ft samples across this interval picked now. An outsider sampling 7a is likely to get 7b at the moment.

The whole of the point at P-a-P is about to be pushed into the sea. Imagine a line from the Geol. Office to Weatherhead's old bungalow and

"The Washington Chart"

X To be drawn in same style as rest of Isham's drawings
 Types given to John Saunders to be forwarded to Isham for drawing
 NUS CORPULINA

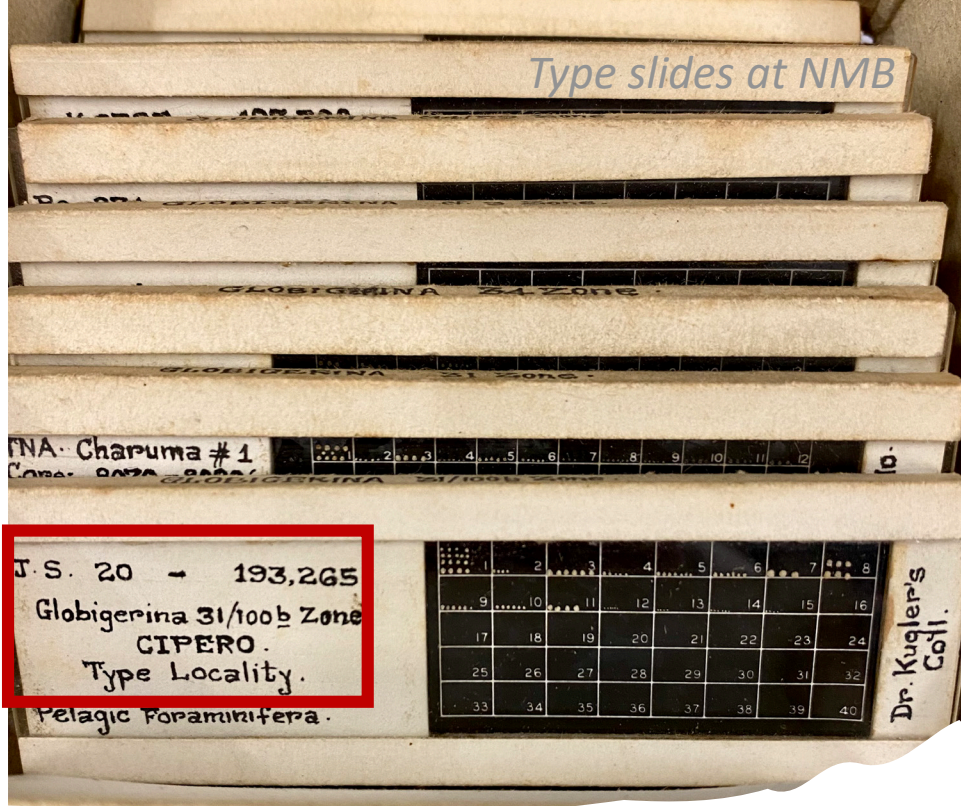
AGE	FORMATION/MEMBER	ZONE/ZONULE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
PLEISTOCENE-RECENT	MATURA	Eponides	10																																																							
	LA BREA/TALPARO	Elphidium	3																																																							
	TELEMAQUE/MAYARO	Miliolid	6																																																							
	FOREST/ST. HILAIRE	Nonion	2																																																							
	GROS MORNE	Valvulina	3																																																							
		Valvulina	15																																																							

ZONAL MARKERS FOR TREATISE
 (from U.S.N.M. Bull. 215)

Globigerina 31/100b **Globorotalia opima opima, pl. 28, fig. 1a-c.**

AGE	FORMATION/MEMBER	ZONE/ZONULE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
MIOCENE	LENGUA	Globigerina	7	Globorotalia mayeri, pl. 28, fig. 4a-c.																																																						
		Valvulina	2 5x																																																							
	KARAMAT	Globorotalia	7a	Globorotalia fohsi robusta, pl. 28, fig. 16a-c.																																																						
		Globorotalia	7b	Globorotalia fohsi lobata, pl. 28, fig. 13a-c.																																																						
	HERRERA	Globorotalia	7c	Globorotalia fohsi fohsi, pl. 28, fig. 10a-c.																																																						
		Globorotalia	7d	Globorotalia fohsi barisanensis, pl. 28, fig. 8a-c.																																																						
	RETRENCH	Globigerina	32	Globigerinatella insueta, pl. 8, fig. 4, 5b, 6.																																																						
		Globigerina	24/32	Catapsydrax stainforthi, pl. 7, fig. 11a-c.																																																						
	CIPERO BRASSO	Valvulina	2 6x	type drawn in same style (Samoensis?)																																																						
		Globigerina	24/39	Catapsydrax dissimilis, pl. 8, fig. 8a-c.																																																						
OLIGOCENE	MARIYA	Globigerina	24/39	Globorotalia kugleri, pl. 28, fig. 5a-c.																																																						
		Globigerina	24/110																																																							
	Globigerina	31	Globigerina ciperensis ciperensis, pl. 22, fig. 10a-b.																																																							
	Globigerina	31/100b	Globorotalia opima opima, pl. 28, fig. 1a-c.																																																							
Eocene	SAN FERNANDO	Globigerina	34	Globigerina ampliapertura, pl. 22, fig. 6a-c.																																																						
		Globorotalia	21	Globorotalia cerro-azulensis, pl. 39, fig. 6a-c.																																																						
	NAVET	Globigerina	55	Globigerapsis seminivoluta, pl. 36, figs. 19, 20.																																																						
		Globigerina	14	Truncorotaloides rohri, pl. 39, fig. 12a-c.																																																						
	NAVET	Globigerina	27	Porticulasphaera mexicana, pl. 37, fig. 1a-b.																																																						
		Globorotalia	3	Globorotalia lehneri, pl. 36, fig. 11a-b.																																																						
	NAVET	Globigerina	29	Globigerapsis kugleri, pl. 6, fig. 6a-c.																																																						
		Hantkenina	1 5x	Hantkenina aragonensis																																																						
	NAVET	Globigerina	32																																																							
		Globorotalia	42	Globorotalia pelmerae, pl. 38, fig. 2a-c.																																																						
Eocene	GAUDRYINA 19 BEDS	Gaudryina	1 19x	Gaudryina																																																						
	POINTE-A-PIERRE	Cyclammina	2 8x	to be selected by J. Saunders																																																						
PALEOCENE	UPPER	Globorotalia	22	Globorotalia aragonensis, pl. 18, figs. 7-9.																																																						
		Globorotalia	2	Globorotalia formosa formosa, pl. 18, figs. 1-3.																																																						
	UPPER	Globorotalia	15	Globorotalia rex, pl. 18, figs. 10-12.																																																						
		Globorotalia	28	Globorotalia velascoensis, pl. 20, figs. 1-3.																																																						
	LOWER	Globorotalia	27	Globorotalia pseudomenardi, pl. 20, figs. 14-16.																																																						
		Globorotalia	44	Globorotalia pusilla pusilla, pl. 20, figs. 8-10.																																																						
	LOWER	Globorotalia	38	Globorotalia uncinata, pl. 17, figs. 13-15.																																																						
		Globigerina	101	Globorotalia trinidadensis, pl. 16, figs. 19-21.																																																						
LOWER	Rzehkina	1 1x																																																								
	GUAYAGUAYARE	Globotruncana	12	Abathomphalus mayaroensis, pl. 11, fig. 1a-c.																																																						
Globotruncana		3 7x	Globotruncana gansseri																																																							
Globotruncana		3 16x	Globotruncana lepparenti tricarinata																																																							
Globotruncana		3 20x	Globotruncana stuarti																																																							
NAPARIMA HILL	Globotruncana	3 30x	Globotruncana fomicata																																																							
	Globotruncana	18	Globotruncana concavata, pl. 13, fig. 3a-c.																																																							
	Globotruncana	1/21	Globotruncana renzi, pl. 14, fig. 3a-c.																																																							
	Globotruncana	21	Globotruncana inornata, pl. 13, fig. 5a-c.																																																							
GAUTIER	Globotruncana	3 15x	Rotalipora appenninica appenninica																																																							
	Globigerina	84	Globigerina washitensis: being drawn for Bull. Amer. Pal.																																																							
	Globotruncana	26	Rotalipora ticinensis ticinensis, pl. 12, fig. 1a-c.																																																							
	Globigerina	18	Biglobigerinella barri, pl. 1, figs. 13-16.																																																							
CUCHE	Globigerina	148	Leupoldina protuberans, Eclogae Geol. Helv., 50/2, pl. 2, fig. 7a, 7c.																																																							
	Cristellaria	2 102x	Lenticulina (L.) ouachensis ouachensis																																																							
TOCOPIRE	Cristellaria	2 125x	Lenticulina (L.) barri																																																							

BOX 33 KUGLER
 CORRESPONDENCE:
 HUGO BOLLI



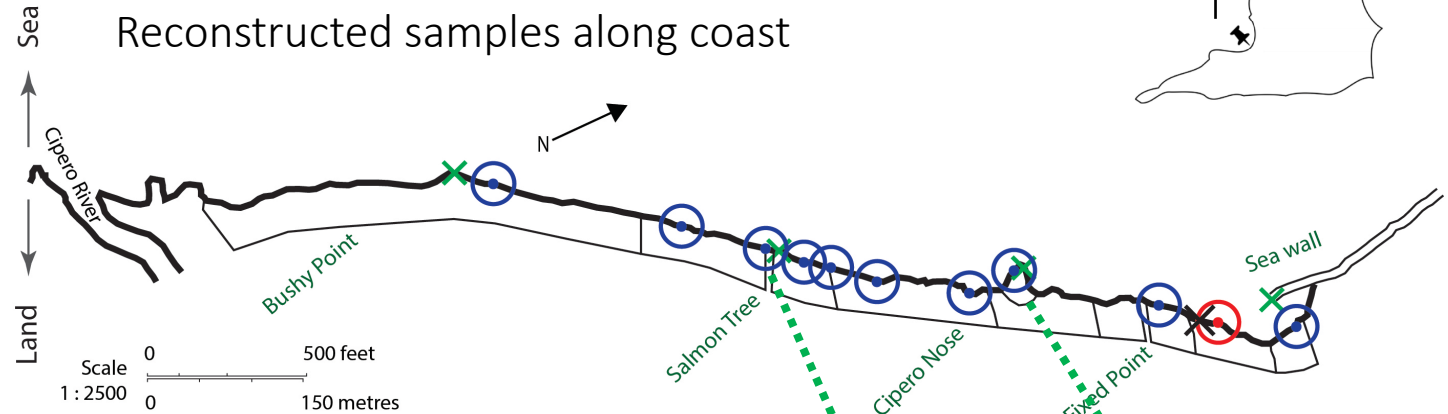
Cipher for biostratigraphic code found in correspondence

Correspondence HG Kugler and HM Bolli

Cipero Coast type samples only accessible through museum collections

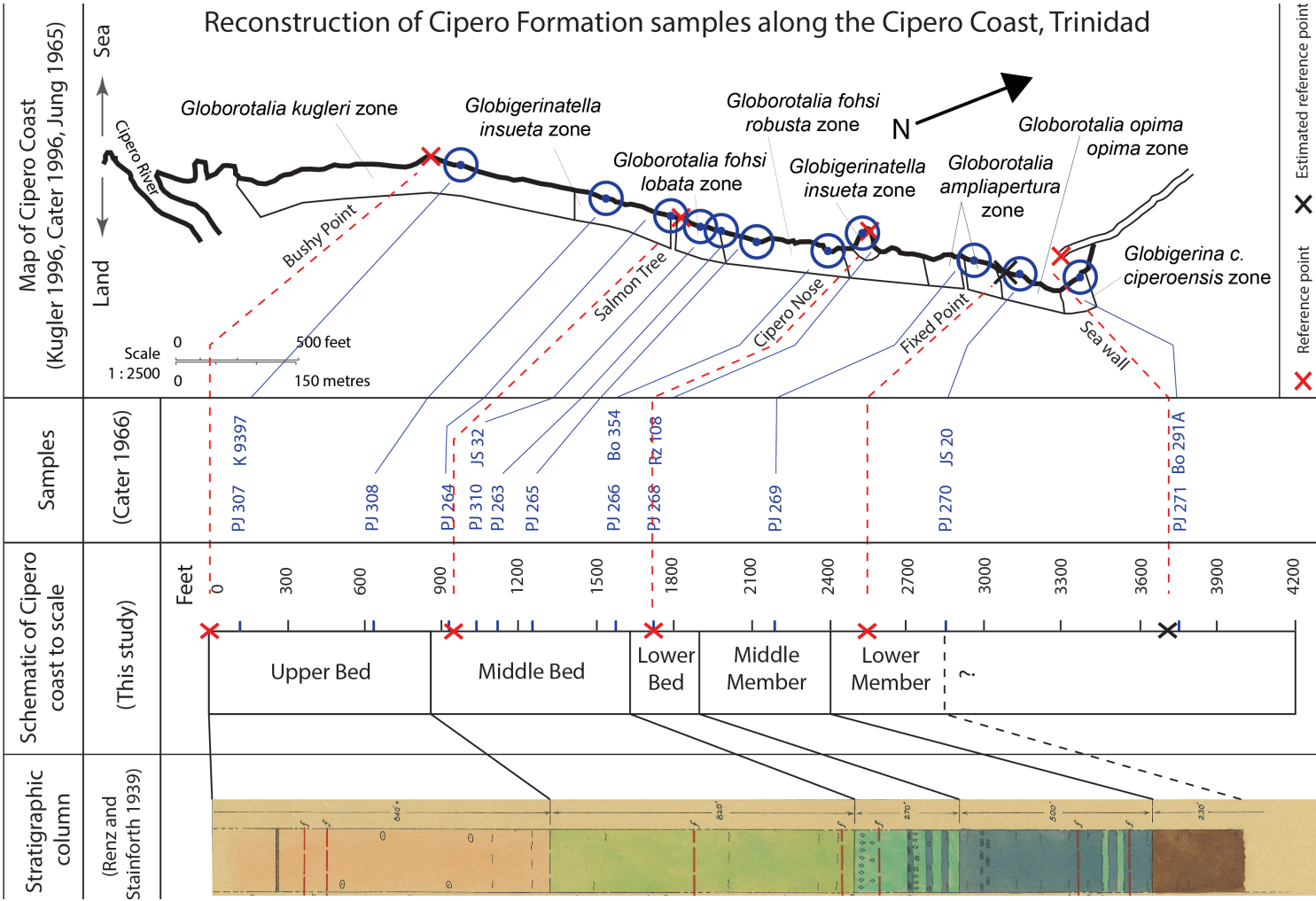


Raw sediment NMB



City dump Cipero Coast, 1967

Reconstruction of Cipero Formation samples along the Cipero Coast, Trinidad



Type samples can be restored to original location using archives

Conclusions

- NMB houses large and complete Trinidad collection
- Archives are key to other Trinidad samples around the world
 - For curation
 - For teaching
 - For evolution of micropalaeontological practices and methods
 - For new science
- Hope to inspire other archival studies around the world



Thank you for listening

All material sourced from Hans G Kugler's Legacy, NMB



Kugler-Werdenberg-Stiftung



Cipero Coast (my home) 2023