

Zenitales aparentes.

45°	45°	45°	45°
$\frac{1}{2}(b-a) + 2 \ 4 \ 16.25-$	$+ 2 \ 5 \ 15.00-$	$+ 2 \ 5 \ 43.75-$	$+ 2 \ 5 \ 45.00-$
$x + 7.75+$	$+ 9.62+$	$+ 9.25+$	$+ 8.12+$
$z'_1 = 42^{\circ} 55' 51.50$	$z'_2 = 42^{\circ} 54' 54.62$	$z'_3 = 42^{\circ} 54' 25.50$	$z'_4 = 42^{\circ} 54' 23.12$
45°	45°	45°	45°
$\frac{1}{2}(b-a) + 2 \ 5 \ 12.50-$	$+ 2 \ 4 \ 17.50-$	$+ 2 \ 2 \ 53.75-$	$+ 2 \ 1 \ 2.50-$
$x + 6.37+$	$+ 5.87+$	$+ 6.00+$	$+ 5.62+$
$z'_5 = 42^{\circ} 54' 53.87$	$z'_6 = 42^{\circ} 55' 48.37$	$z'_7 = 42^{\circ} 57' 12.25$	$z'_8 = 42^{\circ} 59' 3.12$

Refracciones.

q por z'_1	1.734 52	} Para promedio de z' de 1 á 4
bfl (1.44)	+ 9.974 39	
r = 51.16 (1.44)	1.708 91	
q por z'_5	1.734 98	} Para promedio de z' de 5 á 8
bfl (5.48)	+ 9.974 39	
r = 51.21 (5.48)	1.709 37	

Zenitales verdaderas.

$(z'+r) = \left\{ \begin{array}{l} z_1 = 42^{\circ} 56' 42.66 \\ z_2 = 42^{\circ} 55' 45.78 \\ z_3 = 42^{\circ} 55' 16.66 \\ z_4 = 42^{\circ} 55' 14.28 \\ z_5 = 42^{\circ} 55' 45.08 \\ z_6 = 42^{\circ} 56' 39.58 \\ z_7 = 42^{\circ} 58' 3.46 \\ z_8 = 42^{\circ} 59' 54.33 \end{array} \right.$

Coord. apar. de la * en su tráns. sup.

En Washingt. R. á 10.5	11 24 51.16 +	Decl. á 10.5	69° 56' 36.00 +
corr. por 9.0	+ 0.08 +	corr. por 9.0	+ 2.64 +
(09+)	= 11 24 51.24 +	(29+)	= 69° 56' 38.64 +

Correcc. del Cronóm.

á la hora sid.	19 7 35 59.471	Δt abs.	35 11.568 -
T	19 11 24 51.240		

interv. progres.	3 48 51.769	3.8144	} + 0.763 +
corr. en	$\left\{ \begin{array}{l} 24 \text{ sid.} = v = 4.792 + \\ 1 \text{ ,,} \times 0.200 + \end{array} \right.$		

corr. cronom. á la hora del tránsito 35 12.331 +

Hora cronom. tráns. sup.

corr. cronom. á la hora del tránsito	T = α 11 24 51.24
	- 35 12.33 +
hora cronom. del tráns.	t = 10 49 38.91

L horarios en tpo. del Cronóm.

horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 296.59 \\ 156.15 \end{matrix}$	$\begin{matrix} n & s \\ 0.22 \\ 0.06 \end{matrix}$
L horario	$\begin{matrix} h_{1a} \\ = 12 & 17.51 \end{matrix}$	$\begin{matrix} h_{1b} \\ = 8 & 55.11 \end{matrix}$	$\begin{matrix} m \\ 452.74 \\ 226.37 \end{matrix}$	$\begin{matrix} n \\ 0.28 \\ 0.14 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 61.98 \\ 114.35 \end{matrix}$	$\begin{matrix} n & s \\ 0.01 \\ 0.03 \end{matrix}$
L horario	$\begin{matrix} h_{2a} \\ = 5 & 37.11 \end{matrix}$	$\begin{matrix} h_{2b} \\ = 7 & 37.91 \end{matrix}$	$\begin{matrix} m \\ 176.33 \\ 88.16 \end{matrix}$	$\begin{matrix} n \\ 0.04 \\ 0.02 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 34.23 \\ 1.54 \end{matrix}$	$\begin{matrix} n & s \\ 0.00 \\ 0.00 \end{matrix}$
L horario	$\begin{matrix} h_{3a} \\ = 4 & 10.51 \end{matrix}$	$\begin{matrix} h_{3b} \\ = 0 & 53.11 \end{matrix}$	$\begin{matrix} m \\ 35.77 \\ 17.88 \end{matrix}$	$\begin{matrix} n \\ 0.00 \\ 0.00 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 22.58 \\ 1.52 \end{matrix}$	$\begin{matrix} n & s \\ 0.00 \\ 0.00 \end{matrix}$
L horario	$\begin{matrix} h_{4a} \\ = 3 & 23.49 \end{matrix}$	$\begin{matrix} h_{4b} \\ = 0 & 52.79 \end{matrix}$	$\begin{matrix} m \\ 24.10 \\ 12.05 \end{matrix}$	$\begin{matrix} n \\ 0.00 \\ 0.00 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 42.69 \\ 122.78 \end{matrix}$	$\begin{matrix} n & s \\ 0.01 \\ 0.04 \end{matrix}$
L horario	$\begin{matrix} h_{5a} \\ = 4 & 39.79 \end{matrix}$	$\begin{matrix} h_{5b} \\ = 7 & 54.49 \end{matrix}$	$\begin{matrix} m \\ 165.47 \\ 82.73 \end{matrix}$	$\begin{matrix} n \\ 0.05 \\ 0.02 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 255.41 \\ 167.66 \end{matrix}$	$\begin{matrix} n & s \\ 0.16 \\ 0.07 \end{matrix}$
L horario	$\begin{matrix} h_{6a} \\ = 11 & 24.39 \end{matrix}$	$\begin{matrix} h_{6b} \\ = 9 & 14.49 \end{matrix}$	$\begin{matrix} m \\ 423.07 \\ 211.53 \end{matrix}$	$\begin{matrix} n \\ 0.23 \\ 0.11 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 329.10 \\ 457.56 \end{matrix}$	$\begin{matrix} n & s \\ 0.26 \\ 0.51 \end{matrix}$
L horario	$\begin{matrix} h_{7a} \\ = 12 & 56.89 \end{matrix}$	$\begin{matrix} h_{7b} \\ = 15 & 16.09 \end{matrix}$	$\begin{matrix} m \\ 786.66 \\ 393.33 \end{matrix}$	$\begin{matrix} n \\ 0.77 \\ 0.38 \end{matrix}$
horas obs.	t $\begin{matrix} h & m & s \\ 10 & 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 49 & 38.91 \end{matrix}$	$\begin{matrix} m & s \\ 706.37 \\ 548.99 \end{matrix}$	$\begin{matrix} n & s \\ 1.20 \\ 0.73 \end{matrix}$
L horario	$\begin{matrix} h_{8a} \\ = 18 & 58.39 \end{matrix}$	$\begin{matrix} h_{8b} \\ = 16 & 43.49 \end{matrix}$	$\begin{matrix} m \\ 1255.36 \\ 627.68 \end{matrix}$	$\begin{matrix} n \\ 1.93 \\ 0.97 \end{matrix}$

Reducciones al meridiano.

cos. φ	9.949 7897 +	φ	27° 1' 25.00 +	C ²	+ 9.303 84 +
cos. δ	+9.535 2147 +	δ	69 56 38.64 -	cot. ζ'	+ 0.021 55 +
sen. ζ'	-9.833 1359 +	ζ' =	42° 55' 13.64	C ² cot. ζ'	+ 9.335 39 +
C'.....	9.651 8685 +				
k para v.....	+0.000 05 +				

C.....	9.651 92 +	9.651 92 +	9.651 92 +	9.651 92 +
m ₁	+ 2.354 82 +	m ₂ + 1.945 27 +	m ₃ + 1.252 37 +	m ₄ + 1.080 99 +
(Cm) ₁	{ 2.006 74 +	() ₂ { 1.597 19 +	() ₃ { 0.904 29 +	() ₄ { 0.732 91 +
	{ 101.56 +	{ 39.55 +	{ 8.02 +	{ 5.41 +
C.....	9.651 92 +	9.651 92 +	9.651 92 +	9.651 92 +
m ₅	+ 1.917 66 +	m ₆ + 2.325 37 +	m ₇ + 2.594 76 +	m ₈ + 2.797 74 +
(Cm) ₅	{ 1.569 58 +	() ₆ { 1.977 29 +	() ₇ { 2.246 68 +	() ₈ { 2.449 66 +
	{ 37.12 +	{ 94.91 +	{ 176.47 +	{ 281.62 +
C ² cot. ζ'	9.335 39 +	9.335 39 +	9.335 39 +	9.335 39 +
n ₁	+ 9.146 13 +	n ₂ + 8.301 03 +	n ₃ + ∞ +	n ₄ + ∞ +
(C ² n cot. ζ') ₁	{ 8.481 52 +	() ₂ { 7.636 42 +	() ₃ { 0.00 +	() ₄ { 0.00 +
	{ 0.03 +	{ 0.00 +	{ 0.00 +	{ 0.00 +
C ² cot. ζ'	9.335 39 +	9.335 39 +	9.335 39 +	9.335 39 +
n ₅	+ 8.301 03 +	n ₆ + 9.041 39 +	n ₇ + 9.579 78 +	n ₈ + 9.986 77 +
(C ² n cot. ζ') ₅	{ 7.636 42 +	() ₆ { 8.376 78 +	() ₇ { 8.915 17 +	() ₈ { 9.322 16 +
	{ 0.00 +	{ 0.02 +	{ 0.08 +	{ 0.21 +

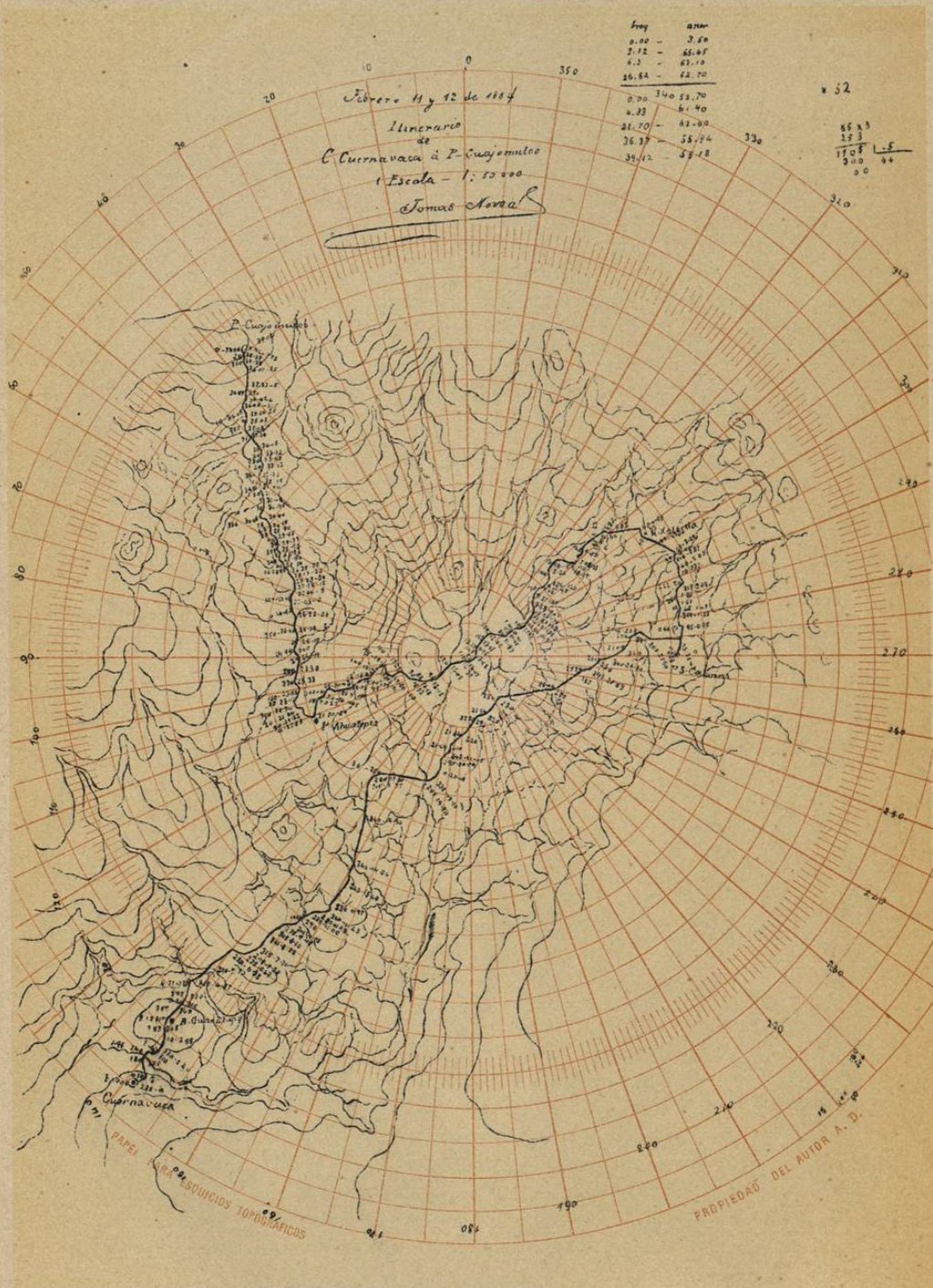
Resultados parciales de latitud.

zen.verd. z	42° 56' 42.66 +	55' 45.78 +	55' 16.66 +	55' 14.28 +
C m.....	- 1 41.56 +	- 39.55 +	- 8.02 +	- 5.41 +
C ² n cot. ζ'	+ 0.03 +	+ 0.00 +	+ 0.00 +	+ 0.00 +
ζ	42° 55' 1.13 +	55' 6.23 +	55' 8.64 +	55' 8.87 +
δ	69 56 38.64 -	56 38.64 -	56 38.64 -	56 38.64 -
lat. φ_1	= 27° 1' 37.51 +	φ_2 1' 32.41 +	φ_3 1' 30.00 +	φ_4 1' 29.77 +
zen.verd. z	42° 55' 45.08 +	56' 39.58 +	58' 3.46 +	59' 54.33 +
C m.....	- 37.12 +	- 1 34.91 +	- 2 56.47 +	- 4 41.62 +
C ² n cot. ζ'	+ 0.00 +	+ 0.02 +	+ 0.08 +	+ 0.21 +
ζ	42° 55' 7.96 +	55' 4.69 +	55' 7.07 +	55' 12.92 +
δ	69 56 38.64 -	56 38.64 -	56 38.64 -	56 38.64 -
lat. φ_5	= 27° 1' 30.68 +	φ_6 1' 33.95 +	φ_7 1' 31.57 +	φ_8 1' 25.72 +

Calc. por Julio Alvarado.

Revis. por J. A. Peña.

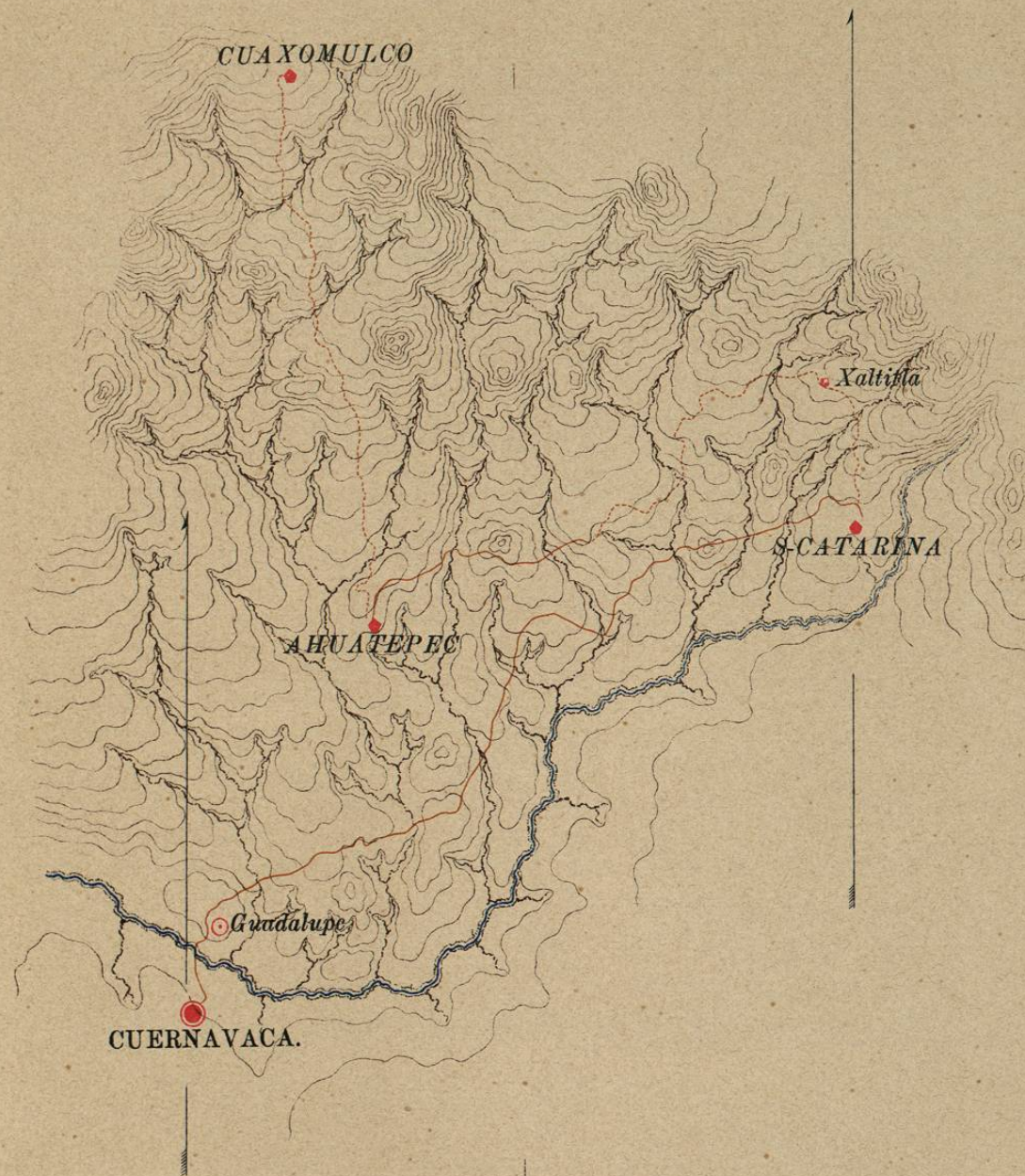
Resultados del croquis de un camino trazado á caballo, sobre el papel de esquicios y del mismo croquis construido al transportador y al compás con los datos numéricos de campo.



ESCALA DE 1:20 000.

Reducción de los originales

construidos en 1:10 000.



El uso del papel de esquicios topográficos, corre impreso en un panfleto publicado por el autor.

ESCALA GEOGRAFICA UNIVERSAL, PARA LA RELACION DE 1:250 000.

(Propiedad del Ing. A. Diaz.)

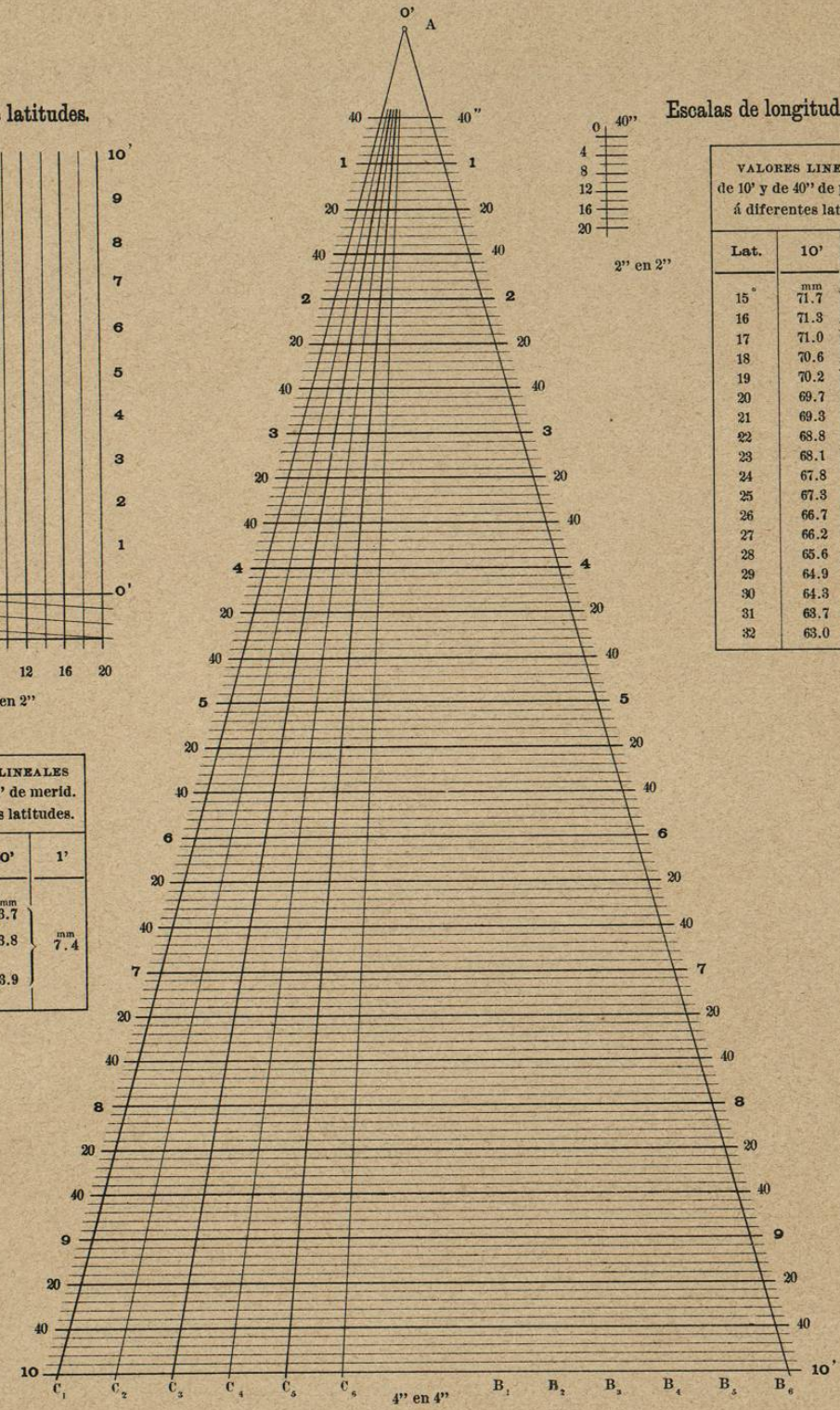
Escala de latitudes.



VALORES LINEALES de 10' y de 1' de merid. á diferentes latitudes.

Lat.	10'	1'
15°	mm 73.7	mm 7.4
16	73.8	
17		
26	73.9	
27		
32		

Escalas de longitudes.



VALORES LINEALES de 10' y de 40' de paralelo á diferentes latitudes.

Lat.	10'	40'
15°	mm 71.7	mm 4.8
16	71.3	
17	71.0	4.7
18	70.6	
19	70.2	4.6
20	69.7	
21	69.3	4.5
22	68.8	
23	68.1	4.4
24	67.8	
25	67.3	4.3
26	66.7	
27	66.2	4.2
28	65.6	
29	64.9	
30	64.3	
31	63.7	
32	63.0	