EQUATION OF LINES.

13. Another of the points that need explanation is the one referred to in paragraph 6, Chapter V, of this paper.

It is common among engineers, while at work in the field, if in running new lines, stakes or marks of abandoned lines are met with, to note the equivalence between the abandoned stake and the new one that is set. The purpose of this is to check the levels and to make use of the abandoned work for the better understanding of the topography of the region that is being studied. This is known as "Equation of Lines," and it is not rare to find A-162 = B-62.

14. But in the present case the Commission not only repeatedly checked the line that the Engineer of Panama, Doctor Don Abel Bravo, marked and laid down, without any justification appearing therefor in any notebook, but it abandoned the height that ran forming the divide of Middle Creek and which ended at Station A-1686 and branched off at some capriciously selected point as the Panamanian Map of Señor Bravo also branched off to proceed to Punta Mona.

15. That the Commission followed the Panama line, as stated in the foregoing paragraph, is shown quite clearly by the following data taken literally from the field notebooks of Party A.

NOTEBOOK NO. A.

Page 23.	Station A-15.	At head of Valley.
" 25.	"	A-18 is old stake, supposed to be Bravo's line.
" 71.	"	A-160 = Bravo's 60.
" 71.	"	A-161 = " 61.
" 71.	"	A-162 = " 62.

Page		Station A-163	=	Bravo's 63.
		" A-164	=	" 64.
		" A-165	=	" 65.
"	72.	" A-166	=	" 66.
"	97.	" A-221	=	" Buena Vista.
"	97.	" A-218	=	is near Bravo's 124.
"	121.	" A-359	=	Bravo's 200.

NOTEBOOK 2-A.

Page	56.	Station A-265	=	Bravo's 160.
"	100.	" A-479	=	" 239.
"	14.	" A-68	=	Shot to Bravo's Line.
"	108.	" A-499	=	Bravo's Camp.

NOTEBOOK No. 3-A.

Page	9.	Station A-303	=	Bravo's 294. Panama map
"	5.	" A-587	=	" 287. " "
"	17.	" A-625	=	End of branch.
"	15.	" A-618	=	End of branch A-620.
"	15.	" A-620	=	Branch line.
"	11.	" A-609	=	Branch line.
"	21.	" A-742	=	Bravo's 387. Panama map
"	23.	" A-734	=	End of branch.
"	29.	" A-766	=	End of branch.
"	31.	" A-773	=	Bravo's 369. Panama map
"	37.	" A-790	=	End of branch.
"	39.	" A-795	=	" " "
"	41.	" A-779	=	Bravo's 377. Panama map
"	47.	" A-817	=	End of branch.
"	47.	" A-806	=	Branch line.
"	49.	" A-828	=	388 Bravo.
"	57.	" A-848	=	End of branch.
"	59 and 60.	Station A-851	=	Bravo's No. 392.
"	" " "	" A-853	=	" " 394.
"	141 and and 142.	Station A-2136	=	Bravo's 483

NOTEBOOK NO. 4-A.

Page 1.	Station	A-630	= Bravo's	308.
" 69.	"	A-1178	= "	452.
" 81.	"	A-1283	= "	511.
" 119.	"	A-1431	= "	600.

16. Placing one upon the other the Panamanian tracing made by Doctor Bravo, and that of the Commission submitted by it, the proof of what is being discussed becomes evident, as may be seen by a glance at the tracing referred to in Chapter V.

17. To the present paper two maps are appended, prepared to illustrate what has been stated.

The first one, Plate No. III, contains solely and exclusively the data that the Commission obtained at Punta Mona and in its vicinity across Swamp A, as shown by and as appears from the records in the field notebooks of the respective camps. That map is entitled:

> "*Map showing the only data taken by the Commission of Engineers at Punta Mona and its surroundings.*"

18. From this it may be seen that the only traverse line, which was run from the mouth of Middle Creek towards the south, to connect with Station A-1686, was eliminated from the maps of the Commission;

19. That line, as it has been demonstrated in paragraph 10, showed a crest that was constant and never submerged, and which terminated upon the coast near the mouth of Middle Clerk.

20. Upon the second map, Plate No. VI, which was copied from the first one above mentioned, the same data are represented, confined to what is shown by the records of the Commission, and the course described, which the

Commission omitted on the final maps, and for which it substituted the drawing of a new line, indicated by two parallel lines terminating at Punta Mona. And it was in this form, disguised by a fanciful delimitation, that the Commission presented what it called a "*Continuous survey from Cuabre to Punta Mona.*"

21. It should be noted that upon neither of these maps are any level curves or contour lines delineated, since there does not appear in the field books any justification therefor. It is usual for an engineer in charge of a topographical survey, while running a traverse line, to note in his field book at the different stations of the instrument, the cross sections upon the main line that is being laid down, using a hand-level or clinometer that will indicate the gradient to one side or the other of the point in question, and with this annotation it is possible to delineate the contours showing the general topography in the immediate vicinity of the line that is being run.

22. In the present case the Commission did not deem it necessary to take these data, which could have been set down in the note books on the field, and apparently was satisfied to draw "contour lines" deduced solely from the levels taken at two neighboring points, but such a practice has no scientific value in this kind of work. This problem of *contour lines* is too important in the consideration of this controversy for us to refrain from strengthening the reasons that constrain us to refuse to accept them as correct, all the more when there is material therefor.

23. In the Report of the Commission (p. 4), the following language is used:

> "The contours are controlled in position by the general knowledge of the country gained by members of the Commission survey parties. In some portions

of these areas sketches made in the field, *but without* instrumental control in these parts form a portion of the basis of the map."

24. The foregoing statement, while it strengthens the present allegation, further declares at the same time, that instruments were not employed for the determination of these lines but they were traced *by the eye*, and not even by those chiefly responsbile for the survey, but by their employees.

25. In a matter of a legal character, like the present one, the instrumental data may be conceded and we may even go to the extent of admitting the facts personally gained by employees of the Commission, as being correct, but not the data or facts for the verification of which mathemathical operations are indispensably necessary.

26. If the mere sight would serve to determine observations, as it seems to have served the Commission, in the same way it used the time elapsed to run over a course in order to ascertain its length, surveying chains and levels would become quite superfluous. It is, of course, recognized that these instruments are susceptible to error, but means have been found to diminish or render them of little consequence.

27. So while it may be conceded that the rugged bluffs along the heights that limit the course of the Sixaola upon the north do really exist, having been personally observed by employees of the Commission and recognized by the Commission itself, still it cannot be accepted in the same way the *contour lines*, delineated according to the caprice or the fancy of employees in the interior of the territory, and where the difficulties met with, in so irregular a configuration as that to be found there, require the aid of instruments for their solution.

28. Citing but one case only as showing the abuse to which the method adopted by the Commission as regards the *contour lines* has given rise, it is sufficient to refer to what happened in the case of the *traverse line* run to Middle Creek, upon the coast—the levels for which were determined by instruments—and for some unknown reason this line was omitted in the considerations of the Commission.

29. The construction of the map showing the substitution of the line that was drawn upon the maps of the Commission as running to Punta Moua for the line that was run to the mouth of Middle Creek, will be justified by the appending full notes relating to the survey of this last line, as they are found in the field books cited in paragraph 7 of this chapter, and the calculations of which were embraced in Pamphlet No. 24, submitted by the Commission, and are here reproduced:

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
3 A	33	776	311-44-00	69.2	106.9
	33	777	246-57-00	55.7	101.1
	39	796	218-48-00	39.6	94.6
	41	797	273-48-00	55.2	81.1
	41	798	266-36-00	46.2	79.4
	41	799	282-15-00	74.9	83.6 Bravo 377
	41	800	301-40-00	79.2	92.8
	41	801	318-34-00	52.5	94.0
	41	802	301-02-30	58.7	84.9
	43	803	333-36-00	64.9	77.7
	43	804	337-35-00	56.3	89.5
	43	805	260-03-00	68.2	91.7
	49	824	274-56-00	46.3	88.3
	49	825	326-49-00	67.0	87.4
	49	826	349-34-00	31.7	90.3
	49	827	324-22-00	39.0	103.3 Bravo 388
	59	849	254-54-00	52.0	87.2
	59	851	287-35-00	58.4	97.2 Bravo 392

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*	
3 A	59	852	270–02–00	36.3	98.2	
	59	853	284–11–00	51.3	93.9	Bravo 394
	59	854	300–55–00	65.0	95.8	
	61	855	296–26–30	57.9	99.4	
	61	856	249–19–30	37.8	89.9	
4 A	23	893	176–07–00	91.7	63.7	
	23	894	182–37–00	46.6	57.3	
	23	895	254–53–00	54.5	94.9	
	23	896	278–06–00	62.8	94.7	
	23	897	310–30–00	45.3	96.1	
	25	898	325–37–00	27.9	98.5	
	25	899	297–05–00	54.7	98.1	
	25	900	333–27–00	20.0	100.8	
	25	901	338–44–00	40.2	100.8	
	25	902	285–17–00	38.3	91.2	
3 A	115	1092	234–16–00	34.5	79.7	
	115	1093	211–30–00	57.9	74.8	
	115	1094	234–05–00	34.5	74.8	
	115	1095	184–57–00	82.6	73.7	
	115	1096	190–02–30	37.2	72.1	
	115	1097	196–21–00	60.7	68.7	
	117	1098	206–00–00	57.1	66.5	
	117	1099	179–10–00	41.5	66.3	
	117	1100	234–42–30	49.9	63.5	
	117	1101	209–09–00	53.0	62.6	
	117	1102	229–15–00	31.3	62.3	
	117	1103	193–52–00	49.8	57.5	
	119	1104	233–48–00	61.1	61.0	
	119	1105	166–38–00	27.5	60.0	
4 A	53	1127	152–12–00	58.3	52.6	
	53	1128	183–01–00	40.6	49.9	
	53	1129	187–34–00	56.4	49.0	
	53	1130	218–09–00	65.1	56.7	
	53	1131	161–59–00	68.0	53.4	
	53	1132	159–06–00	29.0	55.9	
	55	1133	138–42–00	36.9	59.6	
	55	1134	86–35–30	36.9	56.6	
	55	1135	55–51–00	41.2	46.1	
	55	1136	62–30–00	58.9	48.5	
	55	1137	150–04–00	63.3	47.0	
	55	1138	186–55–00	44.8	51.4	
	57	1139	206–49–30	33.5	46.4	

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
4 A	57	1140	171 56 00	67.3	47.0
	57	1141	228 25 00	41.4	43.7
	65	1163	240-38 00	58.5	42.2
	65	1164	229 25-30	45.8	43.1
	65	1165	253 12 00	36.9	48.1
	65	1166	254 48 00	39.3	49.4
	65	1167	268-49-00	27.8	43.9
	65	1168	214-41-00	39.3	53.3
	67	1169	156-46 00	71.3	51.1
	67	1170	209-49 30	42.9	54.4
	67	1171	270 45-00	68.4	55.7
	67	1172	256-16-00	27.4	58.9
	67	1173	162-39 00	42.4	54.0
	67	1174	178 53-00	43.7	59.0
	69	1175	221 21 30	44.7	54.5
	69	1176	176 01-00	38.6	54.3
	69	1177	193 10 00	50.6	57.8
	69	1180	179 12 00	47.6	73.4
	69	1181	281 39-00	16.6	71.6
3 A	129	1201	148-49 00	25.5	77.4
	129	1202	73-04 00	23.1	70.0
	129	1203	138 58 00	46.2	67.7
	131	1204	181 34 00	57.2	68.6
	131	1205	204-59 00	32.4	70.5
	131	1206	181 54 00	52.6	67.9
	131	1207	190-50 00	43.8	75.4
	131	1208	160 16 00	36.8	87.9
	131	1209	202-08-00	61.4	102.5
	133	1210	226-38 00	25.9	105.8
	133	1211	189 42-00	48.5	119.5
	137	1224	278-35-00	52.7	124.9
	137	1225	255-13-00	60.9	129.6
	137	1226	293-20 00	40.0	129.2
	137	1227	294 26-00	18.5	134.9
	137	1228	254 27-00	25.6	131.8
	139	1229	281-31-00	41.5	137.4
	139	1230	264 48-00	32.1	134.8
	139	1231	271-31 00	43.3	127.8
	139	1232	243 30-00	32.9	123.2
	139	1233	227-03-00	56.9	146.2
	139	1234	228-53-00	34.3	145.7
	141	1235	218-42-00	20.2	144.4

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*	
3 A	141	1236	224-39-00	49.6	164.1	Bravo 483
	141	1237	208-03-00	27.4	180.7	
	141	1238	260-12-00	35.3	184.3	
	145	1239	260-45-00	19.4	192.7	
	145	1240	306-15-00	60.7	188.2	
4 A	75	1264	299-22-00	22.6	189.2	
	75	1265	325-02-00	34.7	186.4	
	75	1266	331-18-00	22.4	180.8	
	75	1267	334-50-00	19.8	180.6	
	75	1268	09-22-00	24.5	175.0	
	75	1269	266-18-00	38.9	176.7	
	77	1270	252-38-00	56.0	180.0	
	77	1271	290-30-00	25.2	183.8	
	77	1272	274-15-00	21.0	180.5	
	77	1273	280-31-00	57.2	178.7	
	77	1274	257-25-00	40.3	178.5	
	77	1275	229-40-30	22.9	187.5	
	79	1276	321-47-30	22.6	191.7	
	79	1277	303-52-30	57.8	186.1	
	79	1091	331-24-30	51.1	176.9	
	79	1278	303-44-00	70.7	176.5	
	79	1279	304-32-30	56.1	173.1	
	79	1280	284-01-00	36.9	178.8	
	81	1281	218-57-00	31.8	185.2	
	81	1282	250-25-00	57.3	185.0	
	81	1283	271-36-00	53.1	194.0	Bravo 511
	81	1284	309-53-00	79.6	188.9	
	81	1285	323-35-00	24.1	187.0	
	81	1286	303-30-00	77.2	166.2	
	83	1287	296-34-00	59.5	166.3	
	83	1288	319-04-00	56.0	177.7	
	83	1289	290-45-00	67.9	155.2	
	83	1290	298-06-00	52.1	158.5	
	83	1291	293-05-00	67.2	144.8	
	83	1292	280-09-00	62.6	166.7	
	85	1293	280-50-00	41.3	175.0	
	85	1294	313-05-00	58.5	171.5	
	87	1295	271-14-00	68.1	147.0	
	87	1296	268-54-30	44.1	166.9	
	87	1297	248-36-00	26.9	183.8	
	87	1298	260-56-00	34.4	179.3	
	87	1299	329-16-00	48.8	151.4	

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
4 A	87	1300	317-10-00	69.4	131.6
	89	1301	338-27-00	40.4	144.6
	89	1302	293-19-00	36.4	135.6
	89	1303	269-30-00	48.1	151.5
	89	1304	301-12-00	19.8	147.8
	89	1305	317-46-30	58.1	127.0
	89	1306	312-26-00	46.8	126.8
	91	1307	285-12-30	43.3	128.4
	91	1308	280-40-00	61.9	117.8
	91	1309	281-24-00	41.9	110.4
	91	1310	327-28-00	23.1	106.3
	91	1311	317-04-00	27.3	101.8
	91	1312	278-15-30	65.3	95.1
	93	1313	285-17-00	63.5	79.8
	93	1314	249-22-00	29.1	96.5
	93	1315	262-33-00	17.8	100.9
	93	1316	263-38-00	39.3	102.3
	93	1317	291-25-00	43.1	107.3
	93	1318	258-17-00	61.9	112.4
	95	1319	275-30-00	38.2	109.4
	95	1320	296-21-00	56.5	92.9
	95	1321	256-29-00	50.3	99.1
	95	1322	272-32-00	64.9	86.4
	95	1323	265-34-30	65.9	78.3
	95	1324	293-59-00	36.9	70.1
	97	1325	263-01-00	70.1	84.0
	97	1326	272-19-00	45.8	62.0
	97	1327	249-12-30	65.1	41.1
	97	1328	303-59-00	53.2	35.8
	97	1329	03-04-00	54.3	39.1
	97	1330	281-07-00	47.1	82.6
	97	1331	302-50-00	108.9	61.4
	99	1332	337-23-30	44.0	61.9
	99	1333	313-00-00	35.3	67.1
	99	1334	271-51-30	46.1	64.2
	99	1335	235-46-00	39.8	55.1
	99	1336	184-05-00	61.8	36.4
	99	1337	243-24-00	44.0	43.8
	101	1338	170-12-00	68.7	53.5
	101	1339	247-50-00	53.9	46.7
	101	1340	205-14-00	50.5	45.9
	101	1341	140-41-00	42.1	49.0

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
4 A	101	1342	167–47–00	33.3	49.1
	101	1343	113–47–00	85.1	41.8
	103	1344	156–52–00	59.7	39.9
	103	1345	185–43–30	39.3	40.8
	103	1346	247–04–00	44.5	28.5
	103	1347	160–39–00	76.6	10.3
	103	1348	140–13–00	38.6	17.5
	103	1349	160–44–00	34.3	05.6
	105	1350	205–51–00	106.3	4.9
	105	1351	210–41–00	113.3	3.9
	105	1352	201–20–00	76.3	3.8
	105	1353	205–08–00	70.6	3.7
	105	1354	200–05–00	45.3	3.8
	105	1355	206–09–00	93.3	3.5
	107	1356	208–01–00	45.3	3.5
	107	1357	200–15–00	64.3	3.5
	107	1358	209–35–00	39.8	3.6
5 A	55	1685	118–06–00	47.3	6.9
	55	1686	88–27–00	45.4	6.7
	55	1687	356–04–00	125.8	7.3
	55	1688	19–22–00	98.9	7.9
	55	1689	00–19–30	72.2	9.5
	55	1690	91–30–00	74.4	14.0
	55	1691	91–08–30	105.2	20.0
	55	1692	334–56–00	76.3	8.4
	57	1693	306–15–30	37.3	9.2
	57	1694	329–43–00	42.2	5.8
	57	1695	90–30–00	119.4	21.2
	57	1696	90–25–00	43.6	26.6
	57	1697	97–12–00	100.0	11.8
	57	1698	112–25–00	43.1	27.2
	59	1699	66–41–00	69.3	28.9
	59	1700	132–47–00	69.1	32.9
	59	1701	96–09–00	103.2	29.8
	59	1702	138–38–00	68.9	35.0
	59	1703	164–48–00	89.3	34.1
	59	1704	141–13–30	55.8	34.1
	61	1705	92–18–30	62.0	27.1
	61	1706	94–47–00	51.0	42.3
	61	1707	98–13–00	114.9	42.5
	61	1708	118–09–00	98.4	41.2
	61	1709	121–00–00	77.1	45.4

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
5 A	61	1710	150-31-00	65.3	45.2
	63	1711	134-08-00	72.2	41.4
	63	1712	112 24 00	86.8	43.5
	63	1713	141-01-00	95.3	40.7
	63	1714	142-43-00	82.7	40.0
	63	1715	136-32-00	62.8	34.2
	63	1716	95-23-00	59.4	45.5
	65	1717	119 04-00	95.6	45.6
	65	1718	107 22-00	22.4	47.0
	45	1625	323-26 00	243.8	3.5
	45	1626	36-49-00	220.3	4.4
	47	1627	31-33-00	172.8	3.5
	47	1628	26 16-00	174.3	5.5
	47	1629	44-52-00	226.0	5.8
	47	1630	32 04 00	186.9	5.5
	47	1631	23-04-30	139.3	5.6
	47	1632	02 47-00	174.3	6.1
	49	1633	358-45 00	168.6	6.7
	49	1634	354-47-00	114.8	7.1
	49	1635	43-49-00	148.3	7.4
	49	1636	45-44-00	161.2	7.2
	49	1637	46 56 00	155.4	7.2
	49	1638	48 22 00	188.5	7.0
	51	1639	54-00-00	83.3	7.0
	51	1640	66-30-00	169.7	7.9
	51	1641	62-40-30	144.8	8.7
	51	1642	49-04-30	169.6	9.9
	51	1643	49-58 00	194.3	12.4
	51	1644	44-49-00	127.8	14.1
4 A	147	1645	213 31 00	35.3	3.4
	147	1646	226-27 00	99.5	8.4
	147	1647	205-21-00	74.5	4.0
	147	1648	233-18-30	49.3	5.2
	147	1649	257-43-00	96.9	4.7
	147	1650	188 22-00	57.1	5.1
	149	1651	111-49-00	49.7	4.7
	149	1652	173 20 30	74.3	5.0
	149	1653	124-17-30	40.2	9.0
	149	1654	175-35-00	45.0	5.5
	149	1655	229-59-00	46.3	4.5
	151	1656	207-11-00	50.1	28.7
	151	1657	283-38-30	158.1	34.8

Book.	*Page.*	*Sta.*	*Azimuth.*	*Dist.*	*Elevation.*
4 A	151	1658	228-24-00	32.6	29.0
	151	1659	277-21-30	106.5	19.2
	151	1660	277-31-00	29.2	18.9
	153	1661	283-19-00	30.5	15.7
	153	1662	255-45-00	96.1	5.2
	153	1663	298-19-00	194.3	2.0
	153	1664	145-44-00	75.0	23.5
	155	1665	106-49-00	51.2	21.6
	155	1666	143-46-00	34.7	18.1
	155	1667	165-05-00	75.6	3.0
	155	1668	165-17-00	93.4	11.5
	155	1669	237-13-00	48.7	1.6
	157	1670	114-58-00	18.4	16.7
	157	1671	129-17-00	41.9	20.1
	157	1672	204-41-00	22.2	21.3
	157	1673	188-34-00	25.3	22.0
	157	1674	168-11-00	71.3	18.3
	157	1675	93-39-00	15.9	15.2
5 A	21	1676	84-00-00	53.9	14.6
	21	1677	100-55-00	23.4	18.4
	21	1678	104-30-00	64.2	16.0
	53	1679	82-59-30	127.3	5.4
	53	1680	70-24-00	128.5	5.9
	53	1681	56-46-00	76.9	6.7
	53	1682	90-08-00	77.6	6.5
	53	1683	06-27-00	63.8	5.1
	53	1684	73-16-00	50.3	5.8
	55	1685	118-06-00	47.3	6.9
	55	1686	88-27-00	45.4	6.7

31. The line to Middle Creek being thus vouched for, the Commission undertook to justify the line to Punta Mona which it substituted therefor, by the use of the following language:

> "With this exception *this divide* is well determined, by closely controlled topography depending upon a traverse line run *near* or along it, under, etc."[1]

[1] Report of the Commission, p. 55.

32. There are in that paragraph two fundamental errors. The first one is in the reference to "*this divide,*" where it is presented as the *main divide*, whereas the fact is that it is no more than the divide *which is the north limit of the area which drains into the Atlantic further south than Punta Mona.* The second, and most important one, is in asserting that such divide "*is well determined by closely controlled topography depending upon a traverse line run near or along it,*" for it only needs a glance at the map, Plate No. VI, to be convinced that the line drawn in black is not *near* the traverse line that was run (in red), but that it was distant therefrom at times as far as 3,250 meters, as was the case at the point A-1690, upon the left bank of Middle Creek, and at the place close to Station A-1414, in the survey of Punta Mona.

33. There has been prepared one profile of the traverse line that terminates near the mouth of Middle Creek, using the same data that is to be found in the field books, to which reference has been made. This profile in shown on Plate VIII, entitled: "Profile of the traverse line that follows a permanent divide to the mouth of Middle Creek, together with the profile of the hypothetical line arbitrarily drawn across swamp A."

CHAPTER VII.

THE LONGITUDINAL PROFILE SUBMITTED BY THE COMMISSION.

1. This profile appears upon a single page and it is entitled:

> "*Profile of the Sixaola River and of the Divide which is the north limit of its drainage area, together with branch divides to the north.*"

2. A profile is a section normal to the horizontal plane of a line traced upon a surface, and serving to represent one aspect of the data used to locate the line in question, showing its elevation and the differences in the heights of all the points along such line.

3. But if the points upon the horizontal plan are uncertain, approximate, hypothetical or arbitrary, as some of these appear on the maps of the commission, then the profile that is prepared from those points is also subject to these same anomalies.

4. It so happens that there has come to our knowledge the motive that led the Commission to present such a document and which explains more satisfactorily its existence.

5. It has been said *more satisfactorily*, because it does not appear from the series of questions formulated by the two countries and laid before the Honorable Arbitrator any request made in that respect. Nor is there any indication in the plan formulated by the Commission, approved by the parties and by the Honorable Arbitrator, that the presentation of any such profile was contemplated.

6. But in the "*Estrella de Panama*" (Panama *Star*, a newspaper published on the Isthmus), on the *26th of July* last past, there appeared an interview with Señor Dr. Jorge Boyd by the Editor of that periodical, in which the former made the statement that such a profile had been constructed by the Commission in compliance with one of the requests made thereto by Dr. Boyd himself during the course of the work, he being the Representative of Panama in the Boundary Question.

7. In that interview, are to be found, literally copied, various paragraphs from the Report of the Geologist of the Commission and several notes taken from the General Report, revealing the fact that such data were already within the knowledge and in the possession of Panama, before the Honorable Arbitrator knew anything about them, and, unless the moral responsibility were placed upon the Commission of having communicated its opinion to one of the parties, before it was known by the Honorable Judge who is to give the decision, it might be supposed that this was the result of some confidence on the part of the Engineer of that Republic, and on that account to a certain extent excusable; but what neither is, nor can be a matter of confidence nor excusable, was the fact that appeared in that article in the "*Estrella*," where Señor Boyd declared, in speaking of the documents submitted to the Honorable Arbitrator, using the following language: "Beside there is one special profile, on a single sheet, entitled: 'A combined profile of the River Sixaola and of the drainage from the area of the same river throughout its entire extent,' as far as Punta Mona, *which I particularly asked for in one of my requests to the Commission*."

7. Compare the translation made by Dr. Boyd with the original title of the map and with what is said in this

respect on pages 2 and 5 of the report of the Commission, and their identity will be manifest.

8. The facts, therefore, appear, as evidenced by Dr. Boyd himself, that the Commission, in the preparation of the profile submitted, did comply strictly with one of the various requests that Panama made to it directly, through its Representative.

CHAPTER VIII.

NEW PROOFS.

1. It has been stated that the line drawn upon the maps as the *Divide of the Sixaola Basin on the north*, does not in any of its intermediary or its extreme points, meet the conditions of the Loubet Award.

As stated elsewhere this demonstration has been founded solely and exclusively upon facts and arguments derived from the reports of the Commission itself.

2. The different portions of that line of uncertain, approximate, hypothetical or arbitrary character, were pointed out and records were produced of another line that combined with the first, and having its same irregularities did not terminate at Punta Mona but near the mouth of Middle Creek, and for this reason, perhaps, was not included or marked upon the maps of the Commission.

3. As a consequence of this demonstration, it is now possible to state the corollary to be drawn therefrom.

No unity of agreement whatever exists between the maps and the reports presented, nor is there any unity or agreement found to exist between the reports and the data obtained for their preparation.

4. These categorical conclusions are strong enough to destroy the arguments against the facts established, and now this seems the proper place to detail the causes which have influenced their appearance in the report.

That is the purpose of the present chapter.

5. It will be for the first and last time, contrary to the plan followed hitherto, that we are compelled to use proofs derived from other sources than those from which all our conclusions have been taken. It could not be otherwise, since it is, indeed, illogical to undertake to prove an irreg-

ularity by the same irregularity; a theorem cannot be demonstrated by using the same hypothesis stated in submitting it.

6. As a preliminary, however, it may be well to state that the proofs about to be offered are also within the knowledge of the Commission and that they were submitted by the opposing party, Panama.

7. It could not be expected, naturally, that Panama would submit documents in this matter that were favorable to Costa Rica. Panama, however, did put into the hands of the Commission the results of its own investigations, its plans and its documents; but it is also true that in so doing it could not have foreseen the use to which they would be put in the course of events; still the fact is that such data were in the possession of the Commission and if Costa Rica now makes use of them, not however in its own favor but merely to show the reasons for the irregularity of the documents of the Commission, they must be admitted.

8. That these documents to which reference is made were in the possession of the Commission and used by it, is made evident by the detailed citations made therefrom in the course of the present analyses.

These antecedents having been settled, let us now get to the bottom of the matter.

9. (a) The Commission presented a line of the North Divide of the Sixaola Basin, measuring 148 kilometers[1].

(b) Panama submitted to the Commission the plan of the line claimed by it, measuring only 109 kilometers; that is to say, a distance of 39 kilometers less.[2]

[1]See the longitudinal profile prepared at the request of Panama and without the knowledge of the Honorable Arbitrator, as shown in Chapter VII.

[2]See the plan by Doctor Don Abel Bravo, of December, 1910.

10. Whatever that line may be —the one offered by the Panama Plan,—it does reveal the fact that it followed the crest or summit of a cordillera, which in its lower portion and near the coast coincided exactly with that of the Commission in the course where the Commission designated it as arbitrary and hypothetical[1], but from Buena Vista this line branched off and ran closer to the Sixaola and Telire Rivers until Monte Uren was reached.

11. This Monte Uren, the name of which is found upon the map of Señor Peralta[2], is situated at 83° 29′ 00″ longitude west from Greenwich and 9° 38′ north latitude; and upon the map of Petermann's Mittheilungen, year 1900, Plate 22, at 83° 33′ 00″ longitude west from Greenwich and 9° 36′ north latitude,—is not defined as being the Chirripó Grande placed by the Commission at 83° 29′ 38″ west of Greenwich and 9° 29′ 2″ north latitude, for the difference in latitude is very considerable.

12. At this Monte Uren Panama found that the crest it was following connected with the Cordillera designated upon its map under the name of "Cordillera of Talamanca," at the end of the 109 kilometers measured from Punta Mona; whilst the maps of the Commission connected its line at Chirripó Grande at the end of 148 kilometers from Punta Mona.

13. As has been already stated, it could not be expected that Panama would offer proofs favorable to Costa Rica, but it is clear that such line, if it did exist, would best

[1] "It therefore be understood that *there is no actual, permanent, natural divide*, nor parting of the waters across swamp A * * *." Report of the Commission, p. 53.

[2] PERALTA: *Mapa Histórico Geográfico de Costa Rica y del Ducado de Veragua* (Historical-Geographical Map of Costa Rica and of the Dukedom of Veragua), by Don Manuel M. de Peralta; Madrid, 1892. Special edition for the Fourth Centenary of the Discovery of America.

suit Panama if it were as long as possible, just as it would best suit Costa Rica if it were the shortest possible, as thus each one would obtain the most territory.

Nevertheless, it appears that the survey made by Panama was in December, 1910; that is, some months after the Treaty of Washington was celebrated between the plenipotentiaries, Anderson and Porras; and when the Engineer commissioned by Panama Dr. Bravo—was surveying this line, he knew that his work would be carefully examined by an impartial commission of experts provided for in that treaty, so that he had every reason for seeking to execute the work as correctly as it was possible to do it.

Doctor Don Abel Bravo, commissioned for that purpose by Panama, undertook those investigations with the aid of a French Engineer, M. Lambert, who had come to the Isthmus during the period the French Canal Company was at work there, and who had located at Bocas del Toro for some years. These two competent engineers, both of them familiar with the region, determined by direct surveys, using the chain, that the distance from Punta Mona to Monte Uren was 109 kilometers. Thus measured and laid down upon their map, it was submitted to the Commission.

14. Notwithstanding this, the Commission deviated from it and showed the distance of 148 kilometers.

15. Neither is the line that Panama offered approved, nor is it admitted that it should be heeded; on the contrary the facts are stated simply for the purpose of establishing a logical comparison between them and deducing the consequences that flow therefrom. If the plans are laid over one another, the Panama Line will be found to lie, in its upper portion, between the divide delineated by the Commission and the Rivers Sixaola and Telire.

16. For greater clearness, the following statement summarizes the comparison:

Panama Line.	*Commission Line.*
1. In its lower portion it coincides with that of the Commission.	1. In its lower portion it coincides with that of Panama.
2. Panama would naturally be *partial* in the execution of its surveys.	2. The Commission must be *impartial* in the execution of its surveys.
3. Panama did the work with only a single party in the field.	3. The Commission did the work with four parties in the field.
4. Panama proceeded upon an unbroken course from Buena Vista to the Main Cordillera.	4. The course of the Commission was broken between Buena Vista and the Main Cordillera.
5. Panama measured its distances directly with the chain.	5. The Commission measured its distances indirectly, by calculation and some courses by trigonometrical means and others by estimating distances by the time taken to traverse them.
Panama Line.	*Commission Line.*
6. Panama did not abandon its continuous line to Monte Uren, where it declared it found the connection with the Main Cordillera of the crest it was surveying.	6. The Commission did abandon its continuous line, and went to San José de CostaRica to undertake it at the other extreme, and by a hypothesis fixing there the connection with the Main Cordillera.

17. It is not strange that after this accumulation of irregularities so great a difference was finally reached between the two distances.

Such an assemblage of mixed data could lead to nothing else but to mistake the facts and, at least, to exhibit them, in a veiled and covered form.

18. As a matter of fact, every one knows that uniform procedure in surveys is the best guaranty of accuracy. The longitude of one of the railway lines from Washington to New York would of course be more correct if its measurement was verified by a direct and uniform procedure than if it were done by sections, using indirect means and even taking as to some portions the method of determining the distance by the time it took a roadman to traverse them.

That is just what occurred in the case of these two surveys, one made by order of Panama and the other by the Commission.

19. Let it be repeated that the measures of Panama are not accepted; they are cited solely for the purpose of

positively, when it said: "* * * that divide, if such divide exists.[1]"

22. For such a change to have been legal and allowable, and for the connection of the two extremities of the line to have been justified, it would have been necessary and indispensable:

> (1) To determine exactly the astronomical situation of a point of the line or of its extremity on the left side of the Sixaola;
> (2) To determine in like manner the astronomical situation of a point on the line begun on the side of San José de Costa Rica; and
> (3) To connect the extremities of the two lines, correctly calculated in azimuth and distance from the points astronomically fixed.

23. Quite the contrary appears to have been the case; none of these three operations were performed, instead, the connection was made by the use of approximate and uncertain lines, the very start from the extremity of the upper part of the line being altogether hypothetical.

24. That is the reason for the great discrepancy between the two lines and indeed for the grave error of the Commission.

25. The line that Panama drew is not admissible under any theory, but this line along the summit of a cordillera lying quite near to the Sixaola and Telire rivers and their valleys, is an indication of the existence of another high and elevated range between the one traced by the Commission and the same rivers, at the foot of which would then be the line that closes the valley upon the north.

[1]Report of the Commission, p. 55.

26. The accompanying map Plate No. VII shows a drawing of the two lines; the outside one, with a black line, two black lines, two broken lines and an ending of dashes, is the one delineated by the Commission; —while the inside one, traced with a line made up of dots and dashes, is the one drawn by Panama.

27. It has been demonstrated that the one of the Commission is:

(1) *Approximate* from the coast to a point situated at 82° 29′ 3″ longitude west of Greenwich and 9° 33′ 9″ north latitude.
(2) *Imaginary* and *arbitrary* from Punta Mona to Point A.
(3) *Uncertain* from D-629 to A-2511;—and
(4) *Arbitrary* again from A-2511 to Chirripó Grande.

28. The comparison made of the two lines that have been drawn reveals to us therefore the fact that from Point-A, the location of which is 82° 40′ 45″ west of Greenwich and 9° 36′ north latitude, to Buena Vista, the Commission Line is almost the same, with some insignificant variations, as the one delineated by the Engineer Bravo, as also is the hypothetical and arbitrary section that terminates at Punta Mona; but from Buena Vista two lines appear, the divergence of which is notable; the one by the Commission farther to the north and the one of Panama farther to the south and closer to the Rivers Sixaola and Telire.

29. It is evident that arguments by one of the parties that are not based upon data submitted by the experts (the Commission) are without any force before the Honorable Arbitrator, but if these arguments are employed by the opposite party they become proofs of the highest order and of

as much force and value as those presented by the Commission itself. That is just the case here: the line claimed by Panama, one of the interested parties, is shorter and lies inside the one that the experts indicated. Such a situation, as a matter of fact, makes both of the lines doubtful; that of Panama as being biased and that of the Commission on account of having neglected to consider the Cordillera crest that appears to run parallel to the one traced by it and nearer and closer to the Rivers Sixaola and Telire; that is to say, more in accord with the conditions imposed upon the Commission.

30. There was a neglect to characterize the portion to which we have alluded among all the anomalies as to the other sections of this line, but Panama has come to our aid in its designation and to establish with as much effect as the admissions of the Commission that the portion between Buena Vista and Station D-629 constitutes a *doubtful section*.

31. It is therefore worth while to complete the statement made in Paragraph 27 above, by the following addition.

The supposed North divide of the Commission begins at a point the co-ordinates of which are: 82° 34′ 38″ longitude west of Greenwich and 9° 35′ north latitude, and it ends at Chirripó at 83° 29′ 30″ longitude west of Greenwich and 9° 29′ 30″ north latitude.[1] That line is made up as shown on the following page.

(1) Report of the Commission, page 53.

No.	Portion.	Begins in Long. W. of G., N. Lat.		Ends in Long. W. of G., N. Lat.		Proof.
1	Approximate	82° 34′ 38″	9° 35′.	82° 39′ 3″	9° 33′ 9″	(1)
2	Imaginary	82° 37′ 30″	9° 38′ 20″	82° 40′ 45″	9° 36′ 00″	(2)
3	Doubtful	82° 40′ 45″	9° 36′ 00″	83° 17′ 00″	9° 40′ 25″	(3)
4	Uncertain	83° 17′ 00″	9° 40′ 25″	83° 25′ 45″	9° 34′ 20″	(4)
5	Arbitrary	83° 25′ 45″	9° 34′ 20″	83° 29′ 30″	9° 29′ 30″	(5)

[1]Report of the Commission; p. 54.
[2]Report of the Commission, p. 53.
[3]Map of Panama.
[4]Report of the Commission, pp. 54, 57.
[5]Report of the Commission, p. 57.

32. This shows how the documents presented by Panama have come to constitute the most eloquent proof of the errors in the course followed by the Commission, because they are not only evidence of those errors but they point out and indicate the reason why they orignated. Panama could not enter into the territory at San José to assume, as the Commission did assume, the extreme point of the supposed divide line and for that reason its investigation was continued from its beginning at Buena Vista to its ending at Uren.

33. The reasons stated have also justified the use of the arguments foreign to the Report of the Engineers but not foreign to the subject under discussion.

CHAPTER IX.

THE DIVIDE BETWEEN THE WATERSHEDS OF THE TWO OCEANS.

1. The preceding chapters have been devoted exclusively to the analysis of the *supposed divide* limiting the Sixaola Basin upon the north and the conclusions of the previous chapter have summed up the prior ones and demonstrated the mistakes of the Commission, as well as shown the cause and source of those mistakes.

The present chapter will analyze the divide traced by the Commission, supposed by it to separate the watersheds of the two oceans.

2. It should be mentioned here that the corollary stated in paragraph 3 of Chapter VIII, resulting from the examination of the Sixaola divide, is not applicable to this division. On the contrary there is as to this divide a uniformity in the proceedings of the Commission, more unity and a great degree of harmony between the maps and the reports, both of these characterizing it with the frank and honest statement of the truth—"This section is *approximate* and *uncertain*."[1]

3. Indeed, it was demonstrated by unquestionable data that the ending of the divide at Chirripó Grande was in no way justified. The Commission arbitrarily assumed that point, as it could have assumed any other whatever in that region, and the course of three kilometers only which was run toward the northwest from Chirripó is a proof of its arbitrary character.

[1]Report of the Commission, top of page 57.

4. In the same way it was seen that the *paramo* or high plateau which was attained at Chirripó Grande, not by any means in a continuous or uniform manner, for the work was stopped and the entire outfit engaged in the survey transferred to San José de Costa Rica, was wide and extensive and it was discussed enough to make it evident that this point was an arbitrary one. There would have been no need for all this argument inasmuch as the Commission itself proclaimed the fact, when it said that "* * * the line from Chirripó Grande to Durika is uncertain. * * *"[1]

5. It is proper to observe, now, the mathematical contradiction in which the Commission fails in speaking of the accuracy in the tracing of the North Divide: It states on page 54 that: "The remainder of the divide is drawn as a continuous line indicating that it is known with a considerable degree of accuracy," —this line is marked thus at *Chirripó Grande*—and three pages further on—top of page 57—it says that: "* * * in the portion from *Chirripó Grande* to Durika and from Dome to Cerro Pando, where there is some uncertainty as to the location * * *" *i. e., Chirripó* Grande is *certain* for the extremity of the line and at the same time *uncertain* for the beginning of the other, which is its continuation.

6. It would be of no consequence that the section from Durika to Dome were correctly localized, if it did not appear joined in a satisfactory way to the two extremities of the divide.

7. The map of Dr. Bravo, a document submitted by Panama, raises again a doubt in this respect; the Main Cordillera is called here "Cordillera de Talamanca" and starts, in this map, from Monte Uren, where the crest that

[1]See the conventional signs on map No. 1, sheet No. 1.

begins at Buena Vista terminates. This Panamanian line is enclosed by the uncertain divide drawn by the Commission and as the one is biased by reason of being submitted by one of the parties (Panama) and the other is uncertain according to the declaration made by the Commission itself, it is not possible to solve the question and it ought to be left as an acknowledged uncertainty.

8. It would not be proper to allege that the examination and preparation of the Panama map was wrong, just because so great a difference existed between the two courses. It has been shown that the surveys by Panama were more methodical and more uniform than those made by the Commission, and consequently, in case of a discrepancy, the probabilities are very much greater in favor of the correctness of the Panama map, more particularly as on the very face of the one made by the Commission there is the confession of uncertainty, whilst the Panama map does not suggest any doubt.

9. The portion between Durika and Dome was surveyed by the Commission sending a field party by Punta Arenas (Costa Rica) to Boruca, upon the Pacific side; and thence this field party proceeded by a trail towards the Cordillera, as far as "*Cruz del Obispo*" (the Bishop's Cross), a camping place of our well remembered Bishop of Costa Rica, Dr. B. A. Thiel; but from here the investigations to one side and the other of "*Cruz del Obispo*" concerning the ridge or crest of the Cordillera did not extend beyond Durika upon the west and Dome upon the east.

10. The very situation of the extremity delineated by the Commission is uncertain. The words used "Possibly Cerro Pando," indicate a probability, nothing more, but no certainty.

11. This point seems to be one of vital importance, if it is considered that the error as to its situation, as the Report of the Engineers certifies (p. 59), is greater in an east to west direction than in the north to south direction, for since the upper end of the southern frontier is not fixed, there would be left between the two countries a territory that might be of considerable extent, without any frontier line, nor any way to mark it.

SUMMARY OF THE DOCUMENTS PRESENTED BY THE COMMISSION.

1. After all of these papers have been studied with due attention, it is not difficult to formulate a summary of them.

2. The Report and the Maps of the Commission are distinguished by three essential characteristics:

The first is what they appear to say;
The second is what they really mean; and
The third is what they ought to state and to mean.

I.

The first characteristic does not need any comments.

But, as it has been pointed out, in accordance with all the proofs established, the submerged divide *which ends* at Punta Mona MUST BE WITHDRAWN FROM THE MAPS; IT BEING A CREATION OF THE COMMISSION AND NOT A FACT OF NATURE.

II.

3. The result of the analysis demonstrates the second.

Sufficient data are to be found in the documents to

establish the facts, as they have been established, and at the same time there are data enough to annul and destroy those arguments presented which are not in accordance with the actual facts.

4. The truth is always to be found if we go to the bottom of a question, and the contradictions that appear are explained by the same citations and data furnished.

5. The Commission could not have established the irregularities affecting its studies and the maps of the Sixaola and Telire divides any more honestly, nor could it have been less frank in its expression in considering the results of its examination of the divide between the two oceans, than it did in stating that it was left uncertain.

6. Incapacitated by those very irregularities, it would not proceed to formulate the answer to the questions propounded by the two countries—not for lack of data collected, but for want of a method for their analysis.

7. The Commission from its inception being led by the erroneously preconceived idea of a *divide*, at the very outset upset the methodical plan that would have conduced to the establishment of the truth without any circumlocution, in a clear and definite way. The Sixaola *divide*, "* * * if such divide exists * * *," always was and it will be one of the things perhaps least needed in the whole question, but this secondary and insignificant matter was considered by the Commission as the *sole and only object* of its investigations. This was the basic reason for all of its mistakes.

8. The effort to give credit to an unjustifiable hypothesis, laying down *a priori* a theory so foreign to the question

plished fact which it should be sought to demonstrate by the use of every sort of argument and even imaginary suppositions.

12. The Commission, in the discharge of its duties and having proved that Punta Mona is isolated by an enormous *swamp*, that separates it from the rest of the main land, ought to have stopped there so far as regards clause (a) of said report (p. 12), establishing the fact that *no divide starts from Punta Mona*, but that this locality is found upon a basin foreign to that of the Sixaola, and not even contiguous thereto, for that might give rise to doubt and still more, if any divide did exist there, that divide is not the one that limits upon the north the basin of the Sixaola.

13. On the contrary, however, the Commission, instead of all this, settled *a priori* as existing in fact what it ought to have studied and proved, whether it did exist or not; and hence the origin of all its irregularities and mistakes.

14. The Commission changed the *subject of study* into the *basis of study*. Clause (a) of Plan V, cited (p. 12, Report of the Commission), was a *subject proposed*, not an *admitted conclusion*. As a subject or theory it was allowable; but not as a conclusion or fact. This clause was headed: "The survey is to embrace * * *": the plan did not say, " * * * it is a fact that * * *."

15. It has, then, been purely a question of method, and if instead of taking the *supposed divide* for granted, the Commission had devoted its efforts to investigating the reality or the supposition of the fact stated, it would then have proceeded in compliance with its duties.

16. The course taken by our studies of this matter has brought out the continuous tendency that is noted in the

assumed its existence as certain, without any premises authorizing it, although the party interested sumbitted it as doubtful.

20. The logic of these facts is so irresistible, that the arguments would be the same if the Commission instead of assuming as an accomplished fact one of the things presented in a conditional form by Panama, had taken up one of those submitted by Costa Rica. For example, it would not have been admissible for the Commission to have persisted in an effort to demonstrate the nonexistence of the *supposed spur*, if in order to do so it became necessary to have recourse to pre-historic hypotheses in the field of geology or to those common to the present epoch. That was the manner in which it did proceed,—in the first case under the theory of a submergence and in the second under the erroneous supposition of an inundation, in the attempt to arrive at a demonstration that fell by its own weight and could not resist the slightest analysis.

21. The recourse to hypotheses is excluded in expert opinions.

22. As already stated, the greatest source of error was the method adopted. In order to secure all the requisite data the Commission was called upon to furnish, the logical and impartial procedure would have been to once having shown the course of the Sixaola, to take cross sections at convenient intervals, perpendicular to the axis of the current of the river. No opinions would thus have been advanced nor hypotheses offered, either ancient or modern, but with the simple facts that were collected it would have been easy to answer the questions propounded and to state the real and actual facts regarding the region. Those cross sections could have been prolonged as far as the *divides*, if it were desired, without relying upon any data

or document offered by either one of the parties, which the Commission had the right to disregard and was even under obligation to put aside, as dangerously compromising its impartiality in the discharge of its duty.

23. It is proper to say here, at the conclusion of this third division, that the first reading of the opinion of the Commission was a source of real surprise. A frank and ingenuous statement of the facts had been expected: In a paper entitled "The Manzanillo Basin" and prepared on the 14th of May of last year, after making the general statement, the writer said:

> "From the foregoing allegations, which will appear in all their fullness and detail in the work and reports of the Commission, the following facts are evident:
>
> 1. That the place called Punta Mona is found to be situated upon a watershed directly upon the ocean, characterized by rivers of this second basin or watershed, being absolutely independent of the basins of the Sixaola and the North River.
>
> 2. That the foregoing conclusion establishes without any question that no line that starts from Punta Mona can reach, in any direction it may be traced, any valley or any other place that directly or indirectly belongs to the River Sixaola, without first cutting and traversing this second watershed, entirely foreign to the watershed or basin of the Sixaola."

The paper ended as follows:

> "The investigations that are now being carried on by the surveying Commission will show the perfect distinction between the basin of the Sixaola and that of Manzanillo."

24. Assuredly, to these very conclusions we have in the end arrived, not, however, as had been expected, in the form of a clear and precise statement, but by means of a *well founded criticism* and by the *force of the facts.*

LUIS MATAMOROS,
Consulting Engineer of Costa Rica.

Washington, D. C. September 19, 1913.

INDEX OF PLATES.

INDEX.

APPENDIX.

APPENDIX I.

PHOTOGRAPHIC VIEW NO. 125.

1. It has been abundantly shown in this study that the theory of the North Divide is wholly foreign to the question now in litigation, for the French Arbitrator, as has been repeatedly stated, never referred in this connection to any divide whatever, but to a spur or counterfort which he supposed existed, closing on the north the valley of the Tarire, or Sixaola River, and which, starting from Punta Mona, ended in the chain that separated the waters of the two oceans.

2. It has also been established that if the Commission undertook the location of that divide, they should have treated it as a mere detail or as information for use in illustrating their study, but under no circumstances as the principal subject of their inquiry; much less should the Commission have adopted it as a basis for its conclusions, which apparently is what was done.

3. Because, even in the event that that divide as shown on the maps and reports had been topographically correct, such conclusions would still have been without value on account of the admitted fact that *no spur or counterfort whatever exists which starts from Punta Mona and continues uninterruptedly to a terminal in the cordillera dividing the waters of the two oceans and which, at the same time, closes on the north the valley of the Talire and Sixaola rivers.*

4. This indisputable proposition, which is in itself alone enough to upset the conclusions of the French Award, remains in full force and vigor, based as it is upon the incontrovertible facts and arguments presented in the maps and reports of the Commission and detailed at great length in the present report.

5. Nevertheless, the positive establishment of this truth is so important to a just determination of the present litigation that no discussion tending in any manner to throw more light on the point can be looked upon as a work of supererogation.

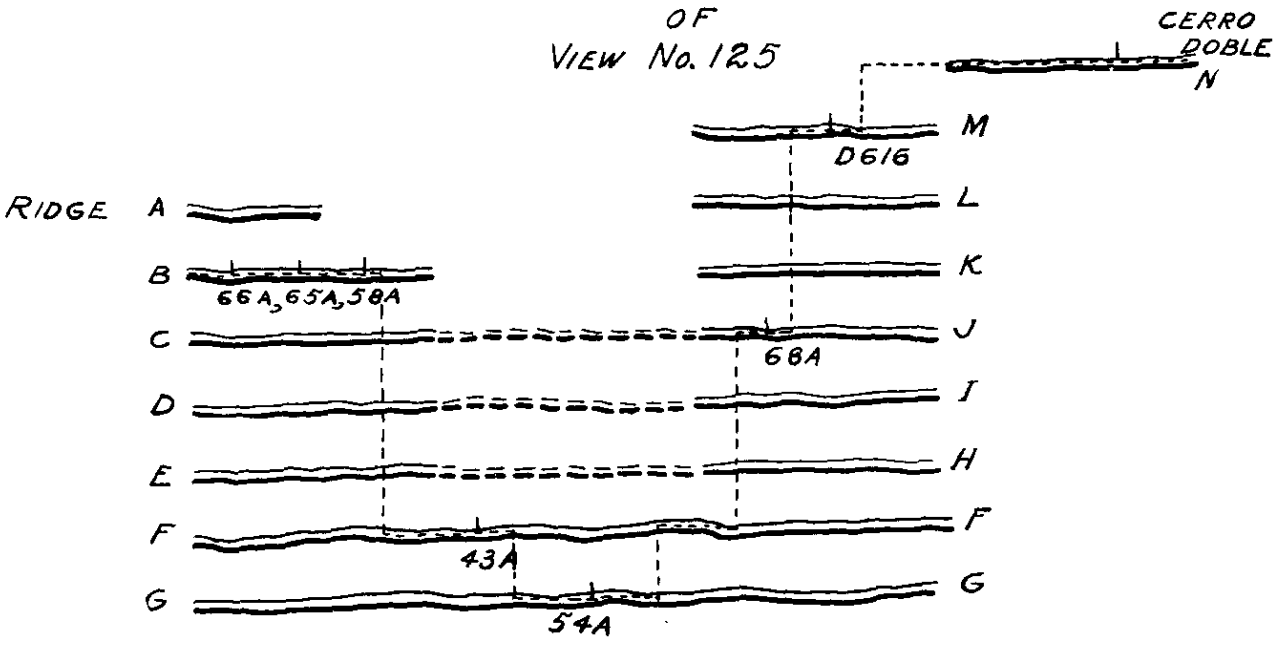
6. For the determination of a real and material fact science offers many resources—and none more simple, none more exact and eloquent than photography. By means of this process the real and material facts as they exist impose themselves upon the human mind before all other considerations; they are made to stand forth by the aid of this art in defiance of and in the face of the craftiest arguments of the logician, of the most exact maps of which the hand of man is capable—subject as they are to imperfection and error—and even in the face of contradiction of mathematical deductions.

7. Precisely of this character is the final evidence adduced as to the indisputable proposition above mentioned.

8. In fact, photographic view No. 125, which the Commission presents in its report (Vol. 4, Appendix No. 4) suffices in itself to give full light to the truth and could in strict justice be held to render negligible any contradictory contentions on this point.

9. It is also true that, as in the case of the reports of the engineers in the field corps, the Commission did not give to this document the most important of all that have been presented—the merit to which it is entitled; that body contented itself with tracing between stations D616 and Cerro Doble, which appear in the said photograph, the line of the North Divide, which is drawn on the maps as a continuous ridge between those stations, leaving out the other points shown in the photograph, which also form part of the Divide.

DIAGRAM SHOWING PLAN OF VIEW No. 125



10. The filling in of this omi sion s the sol labor that remains to be preformed in this connection, and this Chapter will undertake the task in the fewest possible words.

11. According to the Commission[1] the photographic camera was located at some 410 meters towards the north of Station A2480 on the Divide, and at the respective azimuths of 202°, 232° and 252° were taken the views numbered 120, 121 and 122, which together compose the view numbered 125A, and later known as No. 125, and finally the view which is the subject of this Chapter, enlarged for greater clearness.

12. In this view it not only appears that the Commission marks D616 and Cerro Doble as forming the North Divide, but that from the same point are also taken peaks 66A, 65A, 58A, 43A, 54A, and 68A which in the same way pertain to the Commission's Divide, as may be seen on the maps.

13. These stations occupy the following positions on the maps of the Commission:

Location.	*Station.*	*Longitude W. of Greenwich.*	*N. Latitude.*
North Divide....	66A	83° 20′ 00″	9° 40′ 00″
North Divide....	65A	83° 20′ 04″	9° 39′ 50″
North Divide....	58A	83° 20′ 15″	9° 39′ 32″
North Divide....	43A	83° 23′ 50″	9° 36′ 40″
North Divide....	54A	83° 20′ 12″	9° 39′ 32″
North Divide....	68A	83° 21′ 40″	9° 37′ 30″
North Divide....	D616	83° 16′ 30″	9° 40′ 50″
North Divid	Cerro Doble	83° 10′ 20″	9° 38′ 50″

[1]Report of the Commission, Vol. 4, Appendix No. 4, page 13.

14. These points having been thus fixed, it is enough to glance at the photograph in order to be convinced:

FIRST.

That the stations 66A, 65A and 58A are found to be in the same file, or ridge, B.

SECOND.

That in order to continue the Divide from 58A on the ridge B to station 43A on the ridge F, it has been necessary to cut across the ridges C, D, E, with their corresponding deep depressions, to reach the ridge F whereon is located point 43A.

THIRD.

That in order to go from 43A to point 54A in the Divide, it has been necessary to descend ridge F and ascend ridge G.

FOURTH.

That from ridge G, whereon is located station 54A, in order to reach ridge J, whereon is located station 68A, it has been necessary to cross ridges F, H, I, and one side of J.

FIFTH.

That from ridge J, station 68A, it is necessary to cross ridges K, L and M in order to reach station D616, which the Commission connects directly with Cerro Doble.

15. From these five propositions—apparent from a simple glance—the irresistible conclusion results that NO CONTINUOUS SPUR OR COUNTERFORT OR CORDILLERA WHATSOEVER EXISTS THAT CLOSES ON THE NORTH THE VALLEY OF THE

SIXAOLA AND TELIRE RIVERS, but that, on the contrary, the supposititious Divide is itself formed by a group of ridges alternating with deep ravines that place beyond the possibility of doubt the fact that there is no regular and continuous spur or cordillera.

16. To make perfectly clear these facts shown in photographic view No. 125, attention is called to the accompanying diagram. On it the ridges are designated with the same letters that are used on the photograph, and the dotted line indicates the course of the Divide.

Ridge A is the most distant. Then follows ridge B, whereon are located stations 66A, 65A and 58A; but from this point it is necessary to cross the ridge C, D, E in order to reach 43A on ridge F; from that point on F, 54A ridge G is reached, and then, this time recrossing F, and afterwards H and I, ridge J is reached, whereon is located station 68A; but from this point, in order to reach D616, it is necessary to cut across ridges K, L and M.[1]

17. The Commission assumes that D616 connects with Cerro Doble along the ridge, but if the photograph is examined, or a glance taken at the above diagram, it will be seen that stations D616 and Cerro Doble are not in the same chain contrary to the indication of the maps.

The merest glance at the photograph shows that station D616 is on ridge M, which lies at a considerable distance from ridge N, whereon is located the Cerro Doble station.

It will be seen that ridge N loses itself exactly in the direction of the station 69A between ridges K and M, ridges K and N being nearer the camera than ridge M. The error in the maps is therefore incontrovertibly established by this photograph.

[1] It may be possible that ridges E and H, D and I, C and J, be respectively the same ridge, but this does not change the argument.

18. It is impossible to conceive a simpler and more evident demonstration of the fundamental principle which has been established, to-wit, the non-existence of a counterfort or cordillera on the site fixed by the Survey Commission on its maps as the divide north of the Sixaola and Telire Rivers.

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