2029

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2029
1890-93

U. S. Coast and Geodetic Survey
JAN 24 1894
ARCHIVES

U. S. COAST AND GEODETIC SURVEY.

T. C. Mendenhall, Superintendent.

State: California

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 2029.

LOCALITY:

Santa Barbara
Speed Trial
Course.
(originally for Stmr. San Francisco)

1890-93.

CHIEF OF PARTY:

Ths. O. Delehanty & W. J. Moore.
U.S.N.

H-2029

U. S. Coast and Geodetic Survey
JAN 24 1894
ARCHIVES

Des. Report
Hyd. Sheet
2029

Office computation of the extension of the Santa Barbara Speed Trial Course, in 1893

U. S. COAST & GEODETIC SURVEY,
JAN 18 1894
COMPUTING DIVISION

All papers returned herewith.

Form 25—Computation of Triangles.

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
		Cyltrame to Front					3.74493
	Back	68 03 22					0.03266
	Cyltrame	91 15 30	−1 29				9.99990
	Front	20 41 09					9.54807
		Back to Front					3.77749
		" " Cyltrame					3.32566
		Front to Ridge					3.71915
	Back	21 57 25	+19 44				0.42714
	Front	3 21 41	+19 60				8.76883
	Ridge	154 39 57	+19 76				9.63126
		Back to Ridge					2.91512
		Back " Front					3.77755

Do not write on this margin.

10.

U. S. Coast and Geodetic Survey.
(Ed. 9-24-'91—2,500.)

STATE:

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.

Do not write on this margin.

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
	Haseler to Ridge						3.67541
	Mud	115 01 10	-2	08			0.04277
	Haseler	25 57 26	-3	23			9.64116
	Ridge	39 01 32	-3	29			9.79910
	Mud to Ridge						3.35934
	" " Haseler						3.51728
	Spring to Ridge						3.71238
	Mud	95 04 35	-1	34			0.00171
	Spring	26 13 11	-0	11			9.64624
	Ridge	58 42 15	-0	15			9.93174
	Mud to Ridge						3.35933
	" " Spring						3.64580
	Front to Ridge						3.71915
	Mud	158 27 60	-08	52			0.43524
	Front	9 13 40	-08	32			9.20499
	Ridge	12 18 44	-08	36			9.32879
	Mud to Ridge						3.35938
	" " Front						3.48318
	Front to Ridge						3.71915
	Extreme	70 02 37	+06	43			0.02689
	Front	24 02 50	+06	56			9.61014
	Ridge	85 54 14	+07	21			9.99889
	Extreme to Ridge						3.35618
	" " Front						3.74493

Do not write on this margin.

U. S. Coast and Geodetic Survey.
(Ed. 9-24-'91—2,500.)

STATE:

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
		Mid to Ridge					3.35934
	Extreme	53 28 42	-2	40			0.09494
	Mid	52 55 55	-2	53			9.90196
	Ridge	73 35 30	-3	27			9.98194
		Extreme to Ridge					3.35624
		" " Mid					3.43622
		Mid to Ridge					3.35934
	Back	27 56 46	+10	56			0.32912
	Mid	9 41 30	+10	40			9.22632
	Ridge	142 21 14	+10	24			9.79586
		Back to Ridge					2.91478
		" " Mid					3.47432
		Extreme to Ridge					3.35621
	Back	90 00 42	+14	56			0.00000
	Extreme	21 12 52	+14	66			9.55861
	Ridge	68 45 44	+14	58			9.96947
		Back to Ridge					2.91482
		" " Extreme					3.32569
		Extreme to Mid					3.43622
	Back	62 03 56	+2	58			0.05380
	Extreme	74 41 34	+1	35			9.98431
	Mid	43 14 25	+2	27			9.83573
		Back to Mid					3.47433
		" " Extreme					3.32575

Do not write on this margin.

Form 28—Geographical Positions.

State

	AZIMUTH. ° ′ ″	BACK AZIMUTH. ° ′ ″	TO STATIONS.	DISTANCE. Metres.	LOGARITHMS.

U. S. COAST & GEODETIC SURVEY,
JAN 18 1894
COMPUTING DIVISION

Do not write in this margin.

U. S. Coast and Geodetic Survey.

[Ed. 9-19-'89—2,500.]

Locality Santa Barbara Channel

STATIONS.	LATITUDE. ° ′ ″	Seconds in Metres.	LONGITUDE. ° ′ ″	Seconds in Metres.	
Warbler	34 26 09.04	278.5	119 38 25.13	641.6	
Ridge	34 25 53.63	1652.6	119 35 20.58	525.5	
Mid	34 25 12.92	398.1	119 36 35.49	906.3	
Extreme	34 24 43.09	1327.7 / 165.0	119 34 54.80	1399.5 / 174.4	
Back	34 25 51.59	1589.7	119 34 48.48	1237.8	
E	34 22 46.27	1425.7 / 178.2	119 38 43.71	1116.7 / 129.8	?
E 1843	34 22 32.41	998.7 / 124.8	119 35 06.85	175.0 / 21.9	
Front	34 24 52.80	1626.9	119 38 32.12	820.3	
Buoy	34 22 33.22		119 35 06.76		
Buoy (of 55° angle)	34 22 33.22	1023.6	119 35 06.76	172.7	

Do not write in this margin.

Form 28—Geographical Positions.

State California

AZIMUTH. ° ′ ″	BACK AZIMUTH. ° ′ ″	TO STATIONS.	DISTANCE. Metres.	LOGARITHMS.
95 46 03	275 44 19	Hassler	4736.0	3.67541
121 42 44	301 41 42	Hassler	3290.6	3.51728
236 43 52	56 44 34	Ridge	2287.4	3.35934
109 40 42	289 39 45	Mid	2730.4	3.43622
163 09 22	343 09 07	Ridge	2270.9	3.35621
4 22 32	184 22 28	Extreme	2117.0	3.32571
94 23 27	274 23 09	Ridge	821.9	2.91482
238 21 55	58 24 04	Extreme	6866.3 858.3	3.83672
94 28 ~~49~~	274 23 27	E	5556.9* 694.6	3.74483
184 22 21	~~4~~ 22 28	Extreme	4038.4 504.8	3.60621
129 22 01	309 20 05	Front	* or 18231 feet or 2.9984 naut. mls	
129 22 01	309 20 05	Front	6783.7	3.83147 Sch.
184 22 01	4 22 08	Extreme	4013.0	3.60347

The Survey (angle 55°) is 25 m inside the station E 1893
83.3 ft

Do not write in this margin.

U. S. Coast and Geodetic Survey.

[Ed. 9-19-'89—2,500.]

Locality

STATIONS.	LATITUDE. ° ′ ″	Seconds in Metres.	LONGITUDE. ° ′ ″	Seconds in Metres.

Do not write in this margin.

Capt. Moser
Please furnish Sketch
& orig Chart asked
for. BAC

1/13/93

Hamilt. Couple took with
sketch on fly leaf requested.
It should be secured for
& archive.
The orig sketch can be obtained
from archive

J. F. M.

Referred to Computing Division
1/15/94 SCM

In order to compute the position of the new stations it is necessary to have a sketch showing their relative positions.

The original sheet No. 2029 should also be furnished to understand exactly what is wanted of computation.

C. A. Schott

Jan. 12. 1894

I think it would be well to note that the amplifying signals were fired on each range, not marked and no description.

When the new east ranges are computed they should be plotted on original chart # 2029.

I would also suggest that this data be kept together so it may be available for future calls

J. F. M.

U. S. COAST AND GEODETIC SURVEY
OFFICE OF
JAN 11 1904
HYDROGRAPHIC INSTITUTE

Mr. Schott

Form No. 1.

THE WESTERN UNION TELEGRAPH COMPANY.

INCORPORATED

21,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

This Company **TRANSMITS** and **DELIVERS** messages only on conditions limiting its liability, which have been assented to by the sender of the following message. Errors can be guarded against only by repeating a message back to the sending station for comparison, and the Company will not hold itself liable for errors or delays in transmission or delivery of **Unrepeated Messages**, beyond the amount of tolls paid thereon, nor in any case where the claim is not presented in writing within sixty days after the message is filed with the Company for transmission.

This is an **UNREPEATED MESSAGE**, and is delivered by request of the sender, under the conditions named above.

THOS. T. ECKERT, President and General Manager.

7136

NUMBER	SENT BY	RECD BY	CHECK
68 W	Jo	Ga 23	Collect GP

RECEIVED at 314 PA. AVE. S. F.

Dated Ware Island Calif 19 1/19 1894

To Moser Coast Survey office Washn. D.C.

Extreme and Back on Range Left angle to front fifty five Degrees Paymasters accounts forwarded.

Moore

Write me at: U. S. Navy Yard Mare Island Cal (Vallejo Cal)

Telegraph me at:

My Express Office is: JAN. 10. 1894. 000531

Office of M. Sch. for the Necessary Communication Dec 26th 1893 1894 1/2, 94

U. S. Coast and Geodetic Survey,

Hydrographic Inspector Mare Island Cal

2—547

Dr T. C. Mendenhall.

Superintendent U. S. Coast & Geodetic Survey.

Sir.

I have the honor to report the completion of the duty assigned me in connection with the Speed Trial Course in Santa Barbara Channel, Cal. and the return of the Pattison to this port.

In compliance with your Instructions of October 12th, this vessel left San Francisco on October 22nd, anchored at Santa Barbara on October 24th. The range signal △ Hassler was rebuilt and both signals repainted.

Proceeding to Point Concepcion, the range signal ~~△ Range~~ was rebuilt and the △ on Astronomical Station repaired.

The range signals have in order. I reported the fact to Captain C. S. Cotton U. S. Navy.

Senior Member of the Board for the Trial of the Cruiser Olympia.

On November 16th. I received a letter from Captain Cotton stating that the ranges on the extension of the course were unrecognizable. Harry had no instructions to extend the course beyond the forty miles already laid out. I immediately went to San Francisco for further instructions and found that the orders of the Board stated that the course was forty-three miles long. I then telegraphed to Ensign Rodman to sign the work on the extension, and at once returned to Santa Barbara.

The work of the extension necessitated the reestablishment of Δs Ridge and Spring, the establishment of an intermediate Δ Mid, and building the range signals Δs Extreme and Back. This work was finished in time for the first Trial of the Olympia on Nov 24th

At the request of Captain Cotton. Senior Member of the Board, two auxiliary Δs

one built, one on each range. These are not marked and no description is given.

I forward with this report one angle book. Computation of triangulation, and description of signals built. also a statement of expense incurred.

Very respectfully
W. I. Moore.

LIEUT. COM'D'R U. S. N. COM'D'G U. S. C. & G. S. PATTERSON.

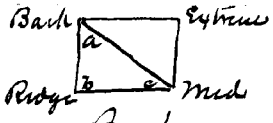
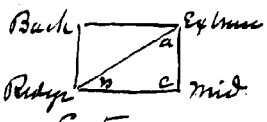
Forwarded,
J. F. T. Moser. Lt Com'd'r. U. S. N.,
Hydrographic Inspector C. & G. Survey.

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.

Do not write in this margin.

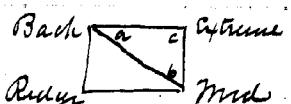
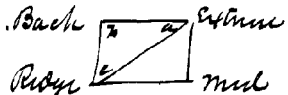
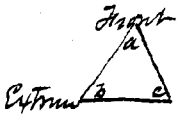
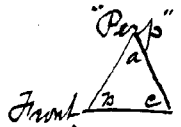
Computation of Triangulation
Extension of Speed Trial Course
Santa Barbara Channel Cal
November 1893.

U. S. Coast and Geodetic Survey,
(Ed. 7-29-'85—2,500.)

NO.	STATIONS.		OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
			Ridge - Spring				5156.8	3.71238
	Mid	a	95° 04' 35"	5			95.04.30	10.00171
	Ridge	b	58. 42. 24	5			58.42.19	9.93171
	Spring	c	26. 13. 15	4			26. 13. 11	9.64524
			Mid - Spring					3.64580
			Mid - Ridge					3.35933
			Ridge - Front				5237.8	3.71915
	Mid	a	158. 28. 00	10			158. 27 50	10.43523
	Ridge	b	12. 18. 52	10			12. 18. 41	9.32883
	Front	c	9. 13. 40	11			9. 13. 29	9.20495
			Mid - Front					3.48321
			Mid Ridge					3.35933
			Ridge - Mid.					3.35933
	Back	a	26. 56. 57	2			27. 56. 59	10.32910
	Ridge	b	142. 21. 27	2			142 21. 29	9.78600
	Mid	c	9. 41. 30	2			9. 41. 32	9.22623
			Back Mid					3.47443
			Back Ridge					2.91466
			Ridge - Mid					3.35933
	Extreme	a	53. 28. 32	3			53. 28. 29	10.09496
	Ridge	b	73. 35. 42	3			73. 35. 39	9.98194
	Mid	c	52. 55. 55	3			52. 55. 52	9.90195
			Extreme - Mid					3.43623
			Extreme - Ridge					3.35624

Do not write in this margin.

Do not write in this margin.

NO.	STATIONS.		OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
								
	Ridge		Mid-Extreme					3.43623
	Back	a	62° 04' 10"	2			62° 04' 08"	10.05379
	Mid	b	43. 14. 25	1			43. 14. 24	9.83572
	Extreme	c	74 41. 30	2			74 41. 28	9.98431
			Back Extreme				2117.2	3.32574
			Back-Mid					3.47433
								
	Ridge		Back-Ridge					2.91466
	Extreme	a	21° 12' 57"	11			21° 13' 8"	10.44138
	Back	b	90. 00. 45	11			90. 00 56	10.00000
	Ridge	c	68. 45. 45	11			68. 45. 56	9.96947
			Extreme Ridge					3.38604
			Extreme-Back				2116.	3.32537
								
	Extreme		Extreme-Back				2116.6	3.32564
	Front	a	20° 41' 08"				20. 41. 08	10.45193
	Extreme	b	91. 15. 30				91. 15 30	9.99999
	Back	c	68. 03. 22				68. 03. 22	9.96734
			Front-Back				5990.3	3.77747
			Front Extreme				5557.9	3.74491
								
	Front		Front-Back				5990.3	3.77747
	"Perp"	a					90° 00 00	- - - - - -
	Front	b	Comp. and obtuse cor				68. 02. 56	9.96759
	Back	c	Complement of b				21. 57 04	
			Perp-Back - - - - - - -				5559.55	3.74504

Perp is an imaginary point on the old range (Front-Hassler) at which a line drawn from "Back" would cut it at right angles.

U. S. Coast and Geodetic Survey.
(Ed. 7-29-'85—2,500.)

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.

Do not write in this margin.

U.S.Coast and Geodetic Survey steamer Hassler,

Santa Barbara, Cala. July 31, 1890.

Dr. T. C. Mendenhall,

Superintendent,U.S.C. & G. Survey,

Washington, D. C.

Sir:

I have the honor to report that I have completed the duty of laying off a forty mile course in Santa Barbara Channel for the speed trial of the new cruiser "San Francisco" in accordance with your instructions of May 17th last.

Your suggestion "that the western terminus be marked by Point Conception Light House and Mesa △ and the eastern terminus by Nidevers House and an inshore range signal to be constructed" I found to be impracticable on account of the configuration of the land, and objectionable on account of the current and generally rough sea off Point Conception.

After careful examination of the ground, I selected for the western terminal range Astronomical △ and a point bearing north 11° 08′ west (mag.), distant 1256 metres; and erected over both these points strong tripod signals 27′ 4″ high, marking the points with brick monuments two feet cube.

The eastern terminal range is similarly marked, the front

signal of which is located on a low bluff 97.5 metres to the westward of white △ and the back signal near the old adobe chapel and distant from the front signal 2354.8 metres.

On consultation with Commodore John Irwin, U. S. N., President of the Board for the trial of the "San Francisco" and Captain C. M. Goodall, who is to command the vessel during her trial, it was decided that one intermediate range would be sufficient, which is marked by the Santa Barbara Light House and a tall wind mill distant from the Light House 547 metres, all three ranges are parallel.

As the eastern terminus is to be the starting and finishing point of the course, the intermediate range was laid off as near four miles from it as practicable for the puspose of marking approximately, the seventy-sixth mile, the distance the ship is required by contract to make in four hours.

I forward herewith by registered mail a tracing of the projection showing the △ used, the ranges and the course; also two books of angles. It will be observed that the apparent length of the course (by scale measurement) is between 60 & 70 metres in excess of forty miles, while the actual length of the course, by computation is 53 metres short of forty miles.

The computation was made by Ensign S. R. Hurlburt, U. S. N.,

according to form in Appendix No. 7, Superintendent's Report, June 1884.

This discrepancy is due to the stretching of the projection sheet. Before commencing work the projection was tested and found to be correct, and the scale of miles laid off on it; the beam compasses were so often applied to this scale that when the eastern terminus was marked on the projection the distance was taken directly from the metre scale - As great care had been taken with the projection, always keeping it in a felt lined box when not in use, it was not again tested until after the course was completed when the projection was found to have stretched about 115 metres in forty miles.

Owing to the many improvements in the vicinity of Santa Barbara such as the cutting of roads, erection of buildings, and cultivation of the land, I experienced great difficulty in recovering a sufficient number of triangulation points to determine the locality of the eastern terminus. After a most careful search we succeeded in recovering only Santa Barbara △ Thompsons △ and Ridge △ , with these three points we established three auxilliary points, Vista, Spring and Bems* 2 as shown on projection.

On the 21st inst. I went over the course in the Hassler with Commodore John Irwin, U. S. N. and Captain C.M. Goodall, and both these gentlemen expressed themselves as satisfied with the course in every respect.

I had the western terminal range signals photographed from the ship while on the range. It may prove of value; if it develops satisfactorily I shall have the other range signals photographed.

I inclose herewith bills for expenses incurred in the prosecution of the work.

Very respectfully

Your obedient serv't.,

(Signed) D. D. Delehanty,

Lieutenant U. S. Navy,

Commanding.

Forwarded

(Sd.) Chas.M. Thomas, Comd'r.,U.S.N.

Hydrographic Inspector C.& G. Survey.

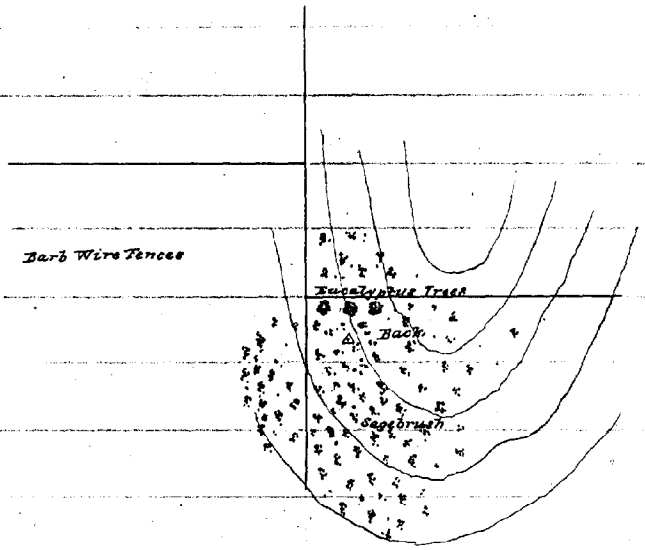
△ Back.

△ Back is on the range of hills about 1¼ miles back of Summerland. The seaward end of range comes to the beach between Summerland and Montecito.

The △ is on a spur of the hill about 30 feet from three eucalyptus trees which form a background for the tripod from seaward. The centre is marked by a brick pier centred around an upright post the whole covered with cement.

A tripod, 26 feet in height is used for the range signal. The △ is near the edge of the Lambert property and its site is known by Mr. Cole Smith of Summerland, Mr. Latham, a teamster on the dock at Santa Barbara, and by Mr. George Culbertson of Santa Barbara.

Δ Back.



Contours are Sketched

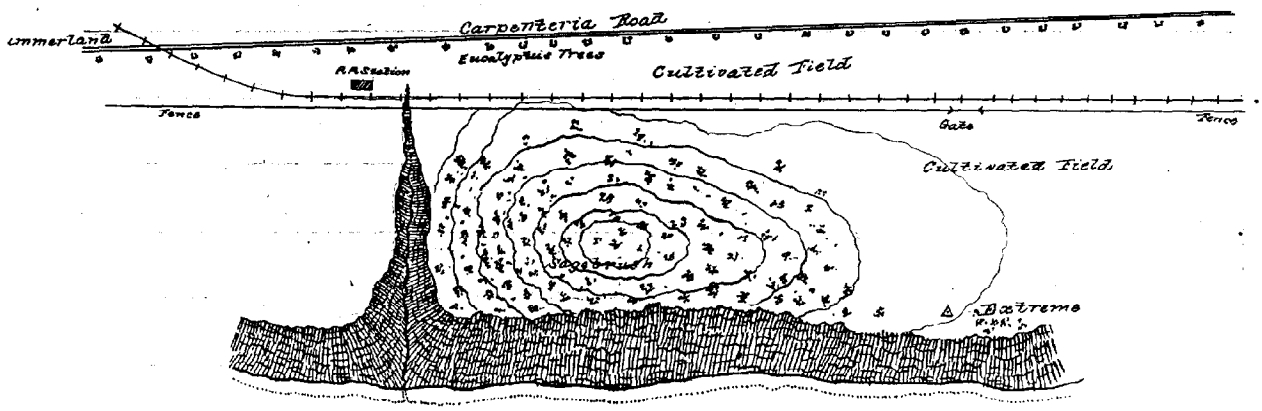
△ Extreme.

△ Extreme is on the seaward edge of the first field beyond (east) the station at Summerland, distant about 25 feet from the bluff. The field in its highest point (on the edge of the bluff) is covered with sagebrush and the △ is about 50 feet east of the edge of the brush in cultivated ground.

The centre is marked by a brick pier centred around a post, and is surmounted by a tripod 25 ft. in hight.

Mr. Latham, a teamster on the docks at Santa Barbara, Mr. George Culbertson of Santa Barbara, and a number of people in Summerland know the location of the △.

△ Extreme



Contours are Sketched

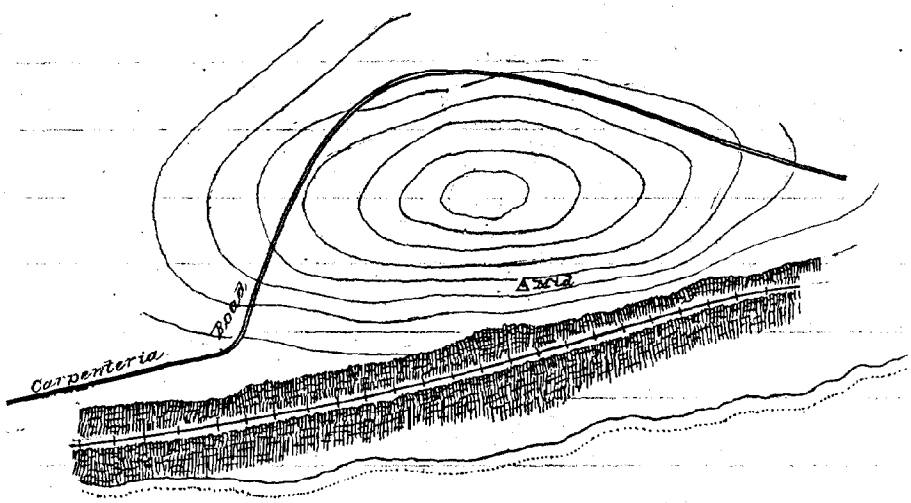
△ Mid.

△ Mid is marked by a stake with three nails in top, with stones piled around it. It is on the seaward slope of the large bare hill to the seaward slope of the Carpenteria road from Santa Barbara and is the last field before reaching Summerland.

This hill is the seaward extreme of the range on which △'s "Ridge" & "Back" are built.

The railroad runs on face of bluff below this signal and is distant about 75 yards. At present on top of hill distant about 50 yards are the remains of a well digging apparatus

Δ Mid



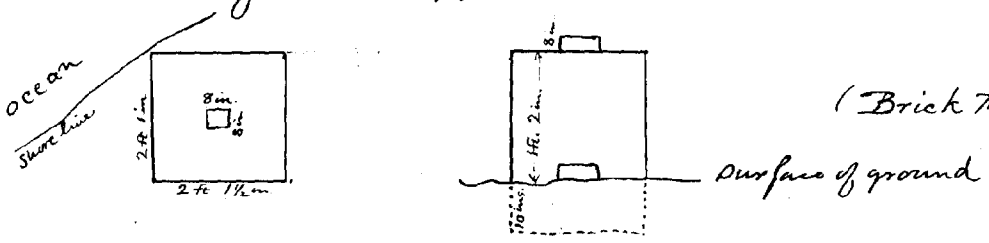
"Summerland"

Contours are Sketched

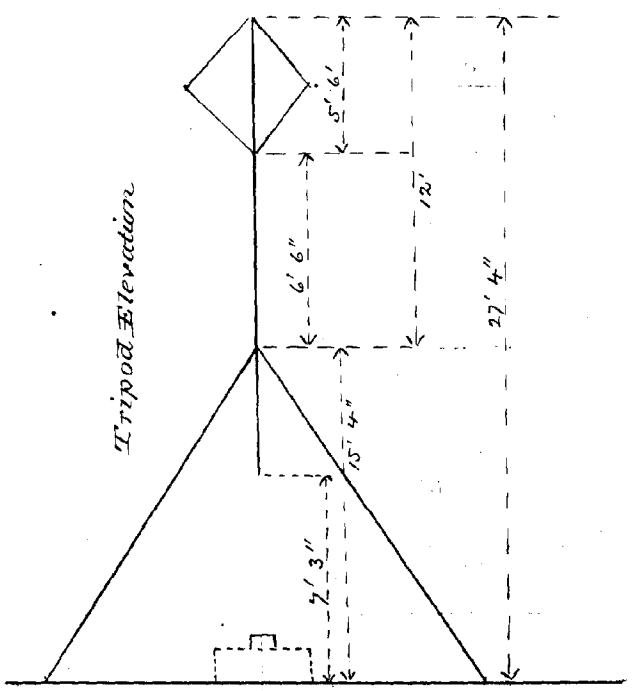
Point Conception, Astronomical station

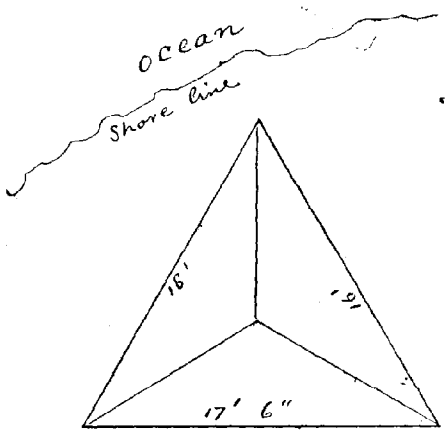
Lt. Delehanty 1890

The following diagrams give the dimensions of the brick monument and the signal built on Astronomical station 1850–51 near Point Conception for the front range signal of the western terminus of the speed course. The signals built on Range, Front and Hassler stations are of the same general appearance and dimensions.



(Brick Monument)





Plan.

Range — Lt. Delehanty 1890

This is the back range signal of the western terminus of the speed course. It is situated on the ridge between the two main branches of El Lopo Cañon. On ascending the ridge in rear of Garcia's house it will be found to run back for about half a mile with very little rise to it. The signal is not on top but is on the last spur of the ridge overlooking the eastern branch of the Cañon. A few hundred yards beyond the signal, the ridge begins to rise more rapidly.

A cross formed of tacks, the center one of which is of copper, in the top of the center stake 3½" x 5" marks the center of the station.

A brick monument 2' x 2' x 2' was built around this stake. A bottle buried neck up, 30 ins. under ground also marks the center.

Coyote ..... B. Rockwell, 1869

Is on main ridge West from left hand or West^n branch of the Coxo Cañon. The slope rising just to the West^d of the Coxo Ranch House is the beginning of this ridge. It is nearly on the highest ground of the slope, about 378 ft above N. W. M. About 40 meters North from its position the slope falls down about 50 ft and then gradually rises to the mountains.
Its position is secured in same way as other Signals before described.

Magnetic courses

Wildcat	61	30
Sight No:	335	15
La Cocta	230	30
Lone tree on trail	221	

Note: by Lt. J. Delehanty 1890. At this station were found the north and south stubs, the center stub and 4 small stubs, also the stakes for braces.
Did not dig to recover center stone but erected signal over center stub.

Wildcat b. Rockwell, 1869

Is on the top of spur above small valley formed by the forks of the Boxo Cañon
S. E from Signal is a pass about 50 ft lower than the Signal, on the main slope rising gradually to the Lomas in the rear. On the east side of this pass is a land slide falling abruptly to the cañon below, presenting a low sandy appearance. Its position is secured in same way as Signals before described.

Magnetic courses

Coyote	242	
Sight do	315	15
Boxo	43	15

Note by. Lt. D. Delehanty 1890

The north stub, 6 ft. distant from △ was found and also four small stubs evidently placed there on a remarking of the station as the description does not mention them.
The center was recovered and a signal pole placed over it.

Front Lt. Delehanty 1890

This is the front range signal of the eastern terminus of the speed course. It is situated on the eastern end of a low bluff opposite where the wagon road crosses the railroad tracks at Montecito Station. A nail in the top of the center stake 3½" × 5", around which the brick monument was built, marks the center of station. A large flat stone with drill hole, buried 3 feet under ground also marks the center.

Hassler Lt. Delehanty 1890

This is the back signal of the eastern terminus of the speed course. It is situated on land on which the old Catholic Church at Montecito is built. It is almost directly behind the church and about 6 ft. from an old chaparral fence which forms the northern boundary of the property.

A board fence begins about 40 feet to the westward of the signal, in a little gully which runs north and south through the property.

A nail in the top of the center post 3½" x 5" marks the center.

A brick monument 2' x 2' x 2' is built around the stake.

A drill hole in a large flat stone buried 30 inches underground also marks the center.

Bens 2 Lt. Delehanty 1890

This station is on the top of the first of the low range of hills running parallel with the coast to the westward of Montecito. The hill which is the same one on which Bens △ of Asst. Greenwell was is under cultivation. The center is marked by a drill hole in a stone buried 30 inches under the surface of the ground. A drill hole in the top of a stone on which the letters U o S are cut and which is buried 8 inches below the surface also marks the center. Additional marks as follows:

(1) A benchmark on an oak tree in which nails in the form of a cross were driven is 47 ft. 6 in. S. 30° W. of the △.

(2) A line to the eastern edge of another oak tree S. 31° W. and 82 ft. distant passes two feet from center of benchmark.

(3) Another benchmark is placed on a two pronged oak tree 79 ft. 9 in. from the center and 85° west of it. Mr George Cuilbertson of Santa Barbara knows the location of this signal.

Vista — Lt. Delehanty 1890

This station is situated about 3 miles north of Santa Barbara. On ascending the ridge between Sycamore and Mission Canyons, you will come to a knoll beyond which the ridge falls down about 40 feet and forms a very narrow backbone between the two canyons. About 75 ft. before reaching the top of this knoll the signal will be found. It stands in an open space between boulders. The center is marked by a drill hole in a large flat-topped stone buried 4 ins. under the ground. North, South, East and West - distant 2 ft. from center were driven 4 2"x3" stubs. Drill holes were also sunk in fixed rocks as follows:

(1) Drill hole in the face of the northern part of a large split boulder distant 12.9 ft. from center hole and S.W. from it. Over this drill hole is cut a circle + cross, thus: ⊕.

(2) Drill hole in face of rock distant 12 ft. N.W. from center hole.

(3) Drill hole in top of rock nearly level with the surface and distant 3.7 ft. S.E. from center hole.

Mr. P.E. Law of Santa Barbara knows the location of this station.

Thompson W. E. Greenwell, 1862

Is on Dixie Thompsons Ranch & about 1 mile in a N.W direction from his house which is in full view. It is on a rocky knoll about 200 metres West of the "Arroya del Burro". To reach it take stage road from Santa Barbara leading through the Gaviota Pass until you pass Thompson's house about $\frac{1}{2}$ mile; then turn off to the right hand in a wood road & $\frac{1}{2}$ mile will bring you to the Arroya which you cross & Keep up the west side about $\frac{1}{4}$ mile when you will come to a knoll covered with large boulders & on this the Signal stands. It is a 4 x 4 redwood pole, 10 ft 4 ins. long supported by 3 braces. Station point is marked by a drill hole in a fixed rock & further secured by 3 holes drilled in fixed rocks - viz

One in a S.W. direction distant 7 ft 8 ins

" " N.E. " " " 7 " 9 "

" " S " " " 11 " 8 $\frac{1}{2}$ "

This station recovered in 1890, by Lt. D. Delehanty. Center and S. drill holes and one redwood stab were found. Signal erected over the center.

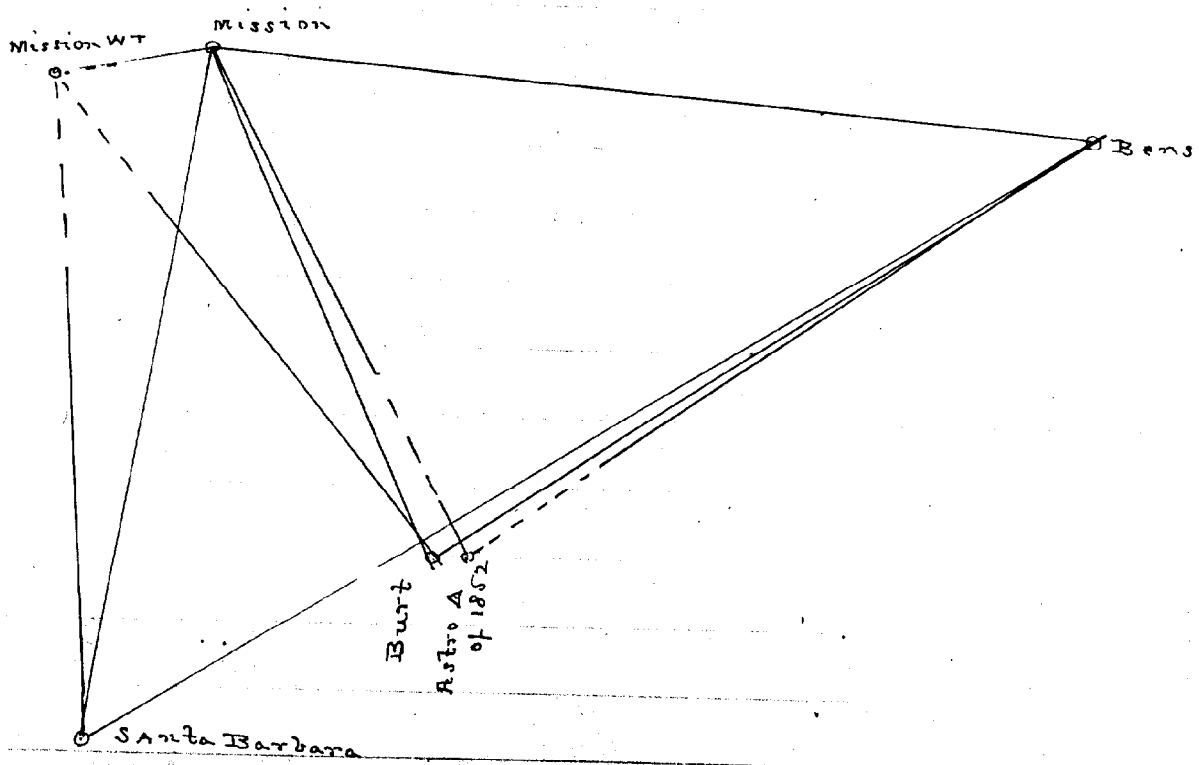
Thompsons
West road
Stage road
Dutchmans
Thompsons

Santa Barbara Astronom △

W. E. Greenwell 1870

The Astronom △ at Santa Barbara Cal: was located with the Plane Table & with the original Topog: Sheet of Asst Harrison of 1852. I searched for marks of △ of 1858 but could find none

A stone was firmly fixed in the ground 2 feet having upon the top the letters U S C S three (3) inches below surface over which a signal was erected



Form 28—Geographical Positions.

State

AZIMUTH. ° ′ ″	BACK AZIMUTH. ° ′ ″	TO STATIONS.	DISTANCE. Metres.	LOGARITHMS.

U. S. COAST & GEODETIC SURVEY,
OCT 10 1893
COMPUTING DIVISION

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Copy of geodetic data & information used in connection with the establishment of a 40 mile speed-trial line on Santa Barbara Channel Cal.

The Clarke Spheroid of 1866

U. S. Coast and Geodetic Survey.

[Ed. 9-19-'89—2,500.]

Locality Santa Barbara Channel

STATIONS.	LATITUDE. °	′	″	Seconds in Metres.	LONGITUDE. °	′	″	Seconds in Metres.
Santa Barbara astronomical latitude station of 1869	34	24	10·91	336·3	119	42	58·41	149·8
Thompson	34	27	03·03	93·2	119	44	11·59	295·8
Ridge	34	25	53·63	1652·6	119	35	20·58	525·5
Vista	34	27	24·86	766·0	119	41	23·90	610·0
Bens 2	34	25	46·98	1447·6	119	39	03·83	97·8
Spring	34	27	05·50	169·5	119	38	23·00	587·1
Hassler	34	26	09·04	278·5	119	38	25·13	641·6
Front	34	24	52·80	1626·9	119	38	32·12	820·3

Do not write in this margin.

Form 28—Geographical Positions.

State California

AZIMUTH. ° ′ ″	BACK AZIMUTH. ° ′ ″	TO STATIONS.	DISTANCE. Metres.	LOGARITHMS.
340 35 03	160 35 44	Santa Barbara	5622.9	3.749948
74 53 17	254 48 58	Santa Barbara	12112.4	4.083230
21 59 46	201 58 52	Santa Barbara	6444.8	3.80921
81 04 48	261 03 13	Thompson	4332.9	3.63678
63 43 16	243 41 03	Santa Barbara	6682.0	3.82491
130 09 14	310 07 55	Vista	4677.7	3.67004
23 18 42	203 18 19	Bene 2	2634.2	3.42064
97 22 22	277 20 40	Vista	4655.9	3.66801
55 29 12	235 28 50	Bene 2	1199.1	3.07885
181 47 26	1 47 27	Spring	1740.4	3.24066
79 16 31	259 14 00	Santa Barbara	6922.4	3.84026
154 07 34	334 07 16	Bene 2	1855.4	3.26845

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F

The Clarke Spheroid of 1866.

U. S. Coast and Geodetic Survey.

[Ed. 9-19-'89—2,500.]

Locality Santa Barbara Channel

STATIONS.	LATITUDE. °	′	″	Seconds in Metres.	LONGITUDE. °	′	″	Seconds in Metres.
Wildcat	34	27	51·64	1591·3	120	26	17·47	445·8
Coyote	34	28	18·93	583·3	120	26	53·84	1374·0
Point Conception astronomical latitude station of 1850.	34	27	02·74	84·4	120	26	50·56	1290·6
Range	34	27	43·36	1336·1	120	26	47·24	1205·7
W.	34	25	40·88	1259·6	120	26	57·24	1461·5
E.	34	22	46·27	1425·7	119	38	43·71	1116·7

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Form 28—Geographical Positions.

State California

AZIMUTH. ° ′ ″	BACK AZIMUTH. ° ′ ″	TO STATIONS.	DISTANCE. Metres.	LOGARITHMS.
312 10 03	132 10 24	Wildcat	1252.5	3.097758
209 15 52	29 16 11	Wildcat	1727.4	3.23740
171 15 28	351 15 24	Coyote	1109.1	3.04496
251 25 07	71 25 24	Wildcat	801.5	2.90392
183 52 08	3 52 12	St. Conception	2528	3.40278
184 20 34	4 20 40	Front	3910	3.59218
94 23 27	273 56 12	W.	74099	4.86981

Do not write in this margin.

U. S. Coast and Geodetic Survey.

[Ed. 9-19-'89—2,500.]

Locality

STATIONS.	LATITUDE. ° ′ ″	Seconds in Metres.	LONGITUDE. ° ′ ″	Seconds in Metres.

Do not write in this margin.

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
	Coyote to Wildcat						3.097758
	Range	80 09 38	+1			80 09 39	0.006435
	Coyote	30 05 21	0			39 05 21	9.799705
	Wildcat	60 44 59	+1			60 45 00	9.940763
	Range to Wildcat					801.5	2.903898
	Range to Coyote					1109.0	3.044956
	Wildcat to Pt. Conception ast. stn.						3.237400
	Range	112 27 07					0.034234
	Wildcat	42 09 13					9.826801
	Pt. C. ast. stn.	25 23 40					9.632303
	Range to Pt. Conception ast. stn.					1254.4	3.098435
	Range to Wildcat					801.6	2.903937
	Santa Barbara to Thompson						3.749948
	Vista	59 05 02	0			59 05 02	0.066553
	Santa Barbara	41 23 07	+1			41 23 08	9.820282
	Thompson	79 31 49	+1			79 31 50	9.992709
	Vista to Thompson					4332.9	3.636783
	Vista to Santa Barbara					6444.8	3.809210
	Ridge to Santa Barbara						4.083230
	Vista	95 09 53	−1			95 09 52	0.001767
	Ridge	32 00 04	−2			32 00 02	9.724216
	Santa Barbara	52 50 08	−2			52 50 06	9.901403
	Vista to Santa Barbara					6444.9	3.809213
	Vista to Ridge					9691.7	3.986400

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U. S. Coast and Geodetic Survey.
(Ed. 9-24-'91—2,500.)

STATE:

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
	Santa Barbara to Vista						3.809212
	Bens 2	66 25 55	+3			66 25 58	0.037824
	Santa Barbara	41 42 08	+3			41 42 11	9.822998
	Vista	71 51 48	+3			71 51 51	9.977870
	Bens 2 to Vista					4677.7	3.670034
	Bens 2 to Santa Barbara					6682.0	3.824906
	Vista to Ridge						3.986400
	Bens 2	137 46 23	−5			137 46 18	0.172575
	Vista	23 18 05	−5			23 18 00	9.597196
	Ridge	18 55 48	−6			18 55 42	9.511061
	Bens 2 to Ridge					5703.9	3.756171
	Bens 2 to Vista					4677.7	3.670036
	Bens 2 to Vista						3.670035
	Spring	74 03 35	+5			74 03 40	0.017026
	Bens 2	73 09 02	+4			73 09 06	9.980946
	Vista	32 47 09	+5			32 47 14	9.733615
	Spring to Vista					4655.9	3.668007
	Spring to Bens 2					2634.4	3.420676
	Ridge to Bens 2						3.756171
	Spring	87 53 55	−4			87 53 51	0.000292
	Ridge	27 29 02	−5			27 28 57	9.664151
	Bens 2	64 37 16	−4			64 37 12	9.955921
	Spring to Bens 2					2634.0	3.420614
	Spring to Ridge					5156.8	3.712384

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NO.	STATIONS.	OB[illegible]	CORR'N.	SPHER'L ANGLES.	SPH'L EXCESS.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.
	Bene 2 to Spring						3.420645
Hassler		126 18 08	+6			126 18 14	0.093725
Bene 2		32 10 25	+6			32 10 31	9.726329
Spring		21 31 09	+6			21 31 15	9.564476
	Hassler to Spring					1740.6	3.240699
	Hassler to Bene 2					1199.1	3.078846
	Spring to Ridge						3.712384
Hassler		93 56 51	+2			93 56 53	0.001032
Spring		66 22 39	+1			66 22 40	9.961994
Ridge		19 40 26	+1			19 40 27	9.527205
	Hassler to Ridge					4736.0	3.675410
	Hassler to Spring					1740.3	3.240621
	Santa Barbara to Bene 2						3.824906
Front		74 50 58	+5			74 51 03	0.015361
Santa Barbara		15 32 48	+4			15 32 52	9.428203
Bene 2		89 36 01	+4			89 36 05	9.999990
	Front to Bene 2					1855.5	3.268470
	Front to Santa Barbara					6922.4	3.840257
	Bene 2 to Ridge						3.756171
Front		94 53 33					0.001585
Bene 2		66 11 49					9.961392
Ridge		18 54 38					9.510668
	Front to Ridge					5237.8	3.719148
	Front to Bene 2					1855.3	3.268424

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U. S. Coast and Geodetic Survey.
(Ed. 9-24-'91—2,500.)

DATE:

NO.	STATIONS.	OBSERVED ANGLES.	CORR'N.	PLANE ANGLES AND DISTANCES.	LOGARITHMS.

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