

LETTERS TO EDITOR

PRELIMINARY REPORT ON AMOSPHERIC ELECTRICITY WORK, YACHT "GALILEE," SITKA TO HONO- LULU, AUGUST, 1907.¹

On unpacking the instruments at Sitka it was found that the leaves of three of the electroscopes were damaged, making necessary to put in new leaves and to recalibrate the electroscopes. Some trouble was encountered in the calibration, due to the leakage between the poles of the battery of small cells constructed at the Office in Washington, which was overcome by removing all the parafine surrounding the cells. The work of calibration took so much time that there was no opportunity for observations in port, nor for observations on land to determine the influence of the ship on the results, these being especially desirable in the case of the potential work.

The extra gimbal stand was mounted on the forecassle beneath the bridge. Lead weights were added, in addition to the brass ball to balance the Gerdien conductivity apparatus, when mounted on the gimbal stand on the low tripod purchased for the purpose. The Ebert ion-counter was also fitted to be mounted on the same tripod.

Electroscope No. 1416, with its accessories, used for radio-activity work, has been used mounted on its own box, and fairly good readings can be made with it placed on a shelf in the cabin turned so that the leaves move in a plane parallel to the fore and aft line of the ship.

Up to the present the most satisfactory work has been done with the Gerdien conductivity apparatus. Observations have been made on five days. These give results fully as high as are expected on land, being of the same order of magnitude as those obtained by Mr. Burbank in Labrador². The leakage, with no air-current passing through the cylinder, is so small that it may be neglected in comparison with the uncertainty of reading due to the motion of the ship. The practice has been to turn the instrument lengthwise of the ship while a reading is being made, in order to minimize the effect of the ship's roll, while during rotation of the fan it is turned so as to face into the wind.

The results so far obtained are summarized as follows, the times given being only approximate:

¹ Transmitted by Mr. *W. J. Peters*, Commander of the *Galilee*.

² *Cf.* This number pp. 97-104.

Date, 1907.	L. M. T.		Conductivity.	
	Beg. h m	End. h m	+	-
August 12,	11 25	11 30	1.26	.....
"	32	37	.....	1.42
"	50	55	.....	3.70
"	57 12	02	5.22	.....
"	12 05	10	.....	1.52
August 13,	11 57	12 02	1.12	.....
"	12 05	10	.....	1.70
"	12	17	.64	.....
"	30	35	.....	1.62
August 16,	10 10	10 15	1.66	.....
"	13 51	13 56	.....	2.43
"	58 14	03	2.45	.....
"	14 08	13	.....	2.26
"	15	20	2.35	.....
"	23	28	.....	2.30
"	31	36	2.02	.....
August 19,	13 51	13 56	1.18	.....
"	58 14	03	.....	1.63
"	14 06	11	.99	.....
"	17	22	.....	1.47
"	25	30	1.33	.....
"	32	37	.....	1.78
"	40	45	1.44	.....
August 23,	11 38	11 43	2.40	.....
"	13 39	13 44	2.19	.....
"	46	51	.....	3.04
"	54	59	2.30	.....
"	14 01	14 06	.....	1.70
"	08	13	1.78	.....
"	16	21	.....	1.97

In connection with the potential gradient work the ship has been explored to some extent with collector and electrocope to find a favorable place for regular observations. The poop-deck seems to be the best spot available, but nothing definite can be done till simultaneous observations can be arranged in port to find what the potentials shown by the electrocope really mean. Large potentials, which seem to vary with the roll of the ship, are indicated, and undoubtedly results of some sort can be obtained, though they may be hard to interpret.

Owing partly to weather conditions and partly to other duties with which I had to become familiar, the amount of time so far spent on this work has not been large, but enough has been done to show that something can be accomplished.

P. H. DIKE, *Observer.*

Honolulu, August 31, 1907.