

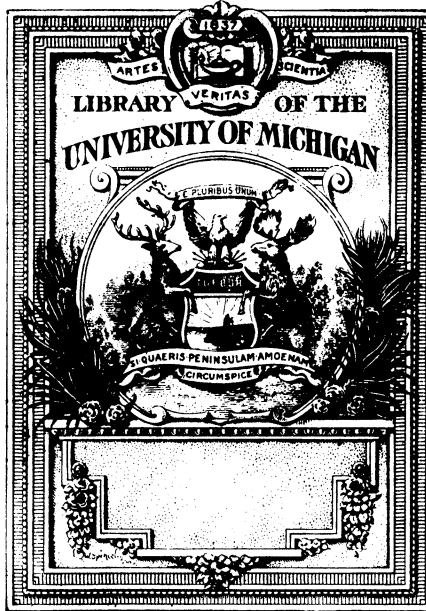
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PHILIPPINE
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BUREAU
BULLETIN
1918

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THE GOVERNMENT OF THE PHILIPPINE ISLANDS

Philippine *Is.* **WEATHER BUREAU**

MANILA CENTRAL OBSERVATORY

MONTHLY BULLETIN, 1914

PREPARED UNDER THE DIRECTION OF

REV. JOSÉ ALGUÉ, S. J.

DIRECTOR OF THE WEATHER BUREAU

MANILA
BUREAU OF PRINTING
1914



INTRODUCTION.

Two modifications have been introduced into the Monthly Bulletin of the Bureau for the present year. The first is the inclusion of a fairly complete and detailed summary of the observations made in the "Mirador" observatory at Baguio; this table will come immediately after the Manila observations.

The second is the omission of the tables which have been published hitherto of the observations for first and second-class stations, and instead the daily rainfall and the daily maximum and minimum temperatures of these stations will be given in two tables. Economy and the avoidance of useless repetitions has been the cause of this second modification. The other observations of these stations will be kept for the annual report.

We subjoin a list of all the meteorological stations of the Weather Bureau together with the names of the respective observers, who are in a great measure responsible for the accuracy of the observations published in this bulletin.

SECONDARY STATIONS AND OBSERVERS OF THE WEATHER BUREAU.

Station.	North latitude.	East long- itude.	Observer.	Class.
	° /	° /		
Jolo	6 03	121 00	Rufino de la Cruz	III
Isabela, Basilan	6 42	121 58	Inocencio Rodriguez	IV
Zamboanga	6 54	122 05	Francisco Ventus	III
Davao	7 01	125 35	Lamberto Garcia	III
Cotabato	7 13	124 15	Doroteo Eusebio	III
Cagayan, Misamis	8 29	124 38	Dolorito Contreras	III
Dapitan	8 40	123 25	Agaton Alingal	IV
Butuan	8 56	125 32	Generoso Copin	III
Dumaguete	9 18	123 19	Matias Ordiales	III
Yap, Western Carolines	9 29	138 08	Prudencio Z. Urbiztondo	III
Tagbilaran	9 38	123 51	Francisco Burgos	II
Iwahig	9 44	118 38	Filemon C. Bulaong	III
Surigao	9 48	125 29	Arsenio Nicdao	II
Maasin	10 08	124 50	Aguedo Espina	III
Cebu	10 18	123 54	Domingo de los Angeles	I
Iloilo	10 42	122 34	Ricardo A. Luna	I
San Jose Buenavista	10 44	121 55	Teodoro Peñeiro	III
Cuyo	10 51	121 01	Roman Kabigting	III
Ormoc	11 00	124 36	Pedro Baltasar	I
Guiuan	11 02	125 44	Patricio Yabao	III
Tacloban	11 15	125 00	Perfecto Paulino	II
Capiz	11 35	122 45	Juan Lugod	II
Borongan	11 37	125 26	Cesareo Montes	III
Calbayog	12 04	124 36	Segundo Peñaflorida	II
Masbate	12 22	123 36	H. L. Heath	IV
Romblon	12 35	122 16	Pedro M. Asturias	III
Batag	12 40	125 04	Placido A. Edroso	IV
Gubat	12 55	124 08	Victorio Ramos	IV
Legaspi	13 09	123 45	Bernardino Costa	I
Sumay, Guam	13 24	144 38	Herbert Taylor	III
Calapan	13 25	121 11	Aquilino Nokom	III
Virac	13 35	124 14	Eusebio Talion	III
Nueva Caceres	13 37	123 11	Eduardo Ontengco	III
Batangas	13 45	121 03	Enrico Cabral	III
Atimonan	14 00	121 55	Leon G. Guinto	I
Ambulong, Tanauan	14 07	121 04	Gregorio Peralta	II
Silang	14 14	120 58	Marcos Medina	IV
Paracale	14 17	122 47	Benito Pelaez	II

Secondary stations and observers of the Weather Bureau—Continued.

Station.	North latitude.		East longitude.		Observer.	Class.
	°	'	°	'		
Santa Cruz, Laguna	14	18	121	25	Santiago Villaflores	III
Antipolo	14	36	121	10	Valeriano Garcia	IV
Iba	15	20	119	58	Deogracias Tablan	III
San Isidro	15	22	120	53	Bernardo Pecache	II
Tarlac	15	30	120	35	Valeriano Magat	IV
Baler	15	40	121	34	Santiago Palmero	IV
Dagupan	16	03	120	20	Jose M. Sison	I
Bolinao	16	24	119	53	Ezequiel Reynoso	II
Baguio	16	25	120	36	Pastor P. Daroy	I
San Fernando, Union	16	37	120	19	Rafael P. Albano	III
Echague	16	41	121	39	Benito Maramba	III
Candon	17	12	120	26	Luis Quismorio	IV
Vigan	17	34	120	23	Joaquin S. Gallego	II
Tuguegarao	17	36	121	40	Jose C. de Leon	II
Laoag	18	12	120	35	Jose Saez	III
Aparri	18	22	121	38	Manuel Delgado	I
Santo Domingo, Batanes	20	28	121	59	Claudio Castillejos	III

The signs and symbols employed in this publication are the following:

Symbol.	Equal to—	Symbol.	Equal to—
Ci.	Cirrus.	o	Overcast.
Ci.-S.	Cirro-stratus.	p	Passing showers of rain.
Ci.-Cu.	Cirro-cumulus.	q	Squally weather.
A.-Cu.	Alto-cumulus.	u	Ugly or threatenning.
A.-S.	Alto-stratus.	v	Visibility of distant objects.
S.-Cu.	Strato-cumulus.	w	Wet or heavy dew.
N.	Nimbus.	●	Rain.
Cu.	Cumulus.	≡	Fog or mist.
Cu.-N.	Cumulo-nimbus.	⊖	Dew.
S.	Stratus.	⊕	Solar corona.
Fr.-Cu.	Fracto-cumulus.	⊙	Lunar corona.
Fr.-N.	Fracto-nimbus.	⊕	Lunar halo.
Fr.-S.	Fracto-stratus.	⊙	Solar halo.
S.-cf.	Stratus-cumuliformis.	⊕	Heat lightning.
N.-cf.	Nimbus-cumuliformis.	⊙	Thunderstorm.
M.-Cu.	Mammato-cumulus.	⊕	Thunder without lightning.
b	Bright, clear sky.	⊙	Strong wind.
c	Cloudy weather.	⊕	Rainbow.
d	Drizzling, light rain.	⊙	Dry mist.
g	Gloomy or stormy looking weather.		

NOTE.—A small zero (°) or 2 (²) used as an exponent to the above symbols indicates, respectively, that the intensity of the meteor denoted by the symbols thus affected was small or very great.

INTRODUCCION.

Dos modificaciones introducimos este año en este boletín. En primer lugar, publicamos inmediatamente después de la tabla de observaciones de Manila un resumen bastante detallado y completo de las observaciones hechas en el Observatorio de "Mirador," Baguio. En segundo lugar, con el fin de evitar algunas repeticiones inútiles y por motivos de economía omitimos las tablas que veníamos publicando para las estaciones de primera y segunda clase contentándonos con incluir estas estaciones en las dos tablas de lluvia diaria y de máximas y mínimas diarias de temperatura. Las demás observaciones se reservarán para el *report* anual.

Damos en el texto inglés una lista de todas nuestras estaciones con los nombres respectivos de los observadores, los cuales son en gran parte responsables de las observaciones que se publican en estos boletines.

Los signos y símbolos usados en esta publicación son los siguientes:

Símbolos.	Significado.	Símbolos.	Significado.
Ci.	Cirrus.	o	Cubierto.
Ci.-S.	Cirro-stratus.	p	Lluvia pasajera.
Ci.-Cu.	Cirro-cumulus.	q	Achubascado.
A.-Cu.	Alto-cumulus.	u	Tiempo feo o amenazador.
A.-S.	Alto-stratus.	v	Transparencia del aire.
S.-Cu.	Strato-cumulus.	w	Húmedo.
N.	Nimbus.	●	Lluvia.
Cu.	Cumulus.		Niebla o neblina.
Cu.-N.	Cumulo-nimbus.	⊕	Rocío.
S.	Stratus.	⊙	Corona solar.
Fr.-Cu.	Fracto-cumulus.	☾	Corona lunar.
Fr.-N.	Fracto-nimbus.	☼	Halo lunar.
Fr.-S.	Fracto-stratus.	☽	Halo solar.
S.-cf.	Stratus-cumuliformis.	☉	Relámpago sin trueno.
N.-cf.	Nimbus-cumuliformis.	☁	Tempestad de trueno.
M.-Cu.	Mammato-cumulus.	☂	Trueno sin relámpago.
b	Despejado.	☃	Viento duro.
c	Nublado.	☄	Arco-iris.
d	Llovizna o lluvia ligera.	★	Niebla seca.
g	Mal cariz; tiempo cerrado, fosco.		

NOTA.—Un ^o o un ² puestos como exponentes de los signos, indican respectivamente una muy débil o una muy fuerte intensidad en el meteoro que representan.

BULLETIN FOR JANUARY, 1914.

METEOROLOGICAL BULLETIN FOR JANUARY, 1914.

By Rev. JOSÉ CORONAS, S. J.,
Chief, Meteorological Department.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was over 1 mm. greater than during the corresponding month of last year. In Manila it was 2.08 mm. greater than the normal for January. The highest pressures were registered in all the stations of the Bureau on the 9th, the lowest on the 20th or 21st in some stations, and on the 29th or 30th in others.

The mean monthly temperature was less than in February of last year in all the stations. In Manila it was less than the normal by 1.2° C. The absolute minimum 14.5° C. registered in Manila on the 11th is noteworthy, in that according to the observatory records, it was the lowest temperature since 1880, for during the last thirty-five years the minimum temperature had never been below 15° C. and even that temperature was recorded once only during the period, viz, on January, 1907.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND-CLASS STATIONS FOR JANUARY, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from Jan., 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Jan., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	761.61	+1.19	764.67	9	759.90	21	25	-0.5	32.5	31	17.5	11
Cebu	61.89	+1.38	64.79	9	60.22	21	25.9	- .6	30.1	1	21.4	11
Iloilo	61.75	+1.53	64.84	9	59.98	21	25.3	- .9	30.5	14	19.5	11
Ormoc	62.08	+1.41	64.85	9	60.35	21	25.4	- .4	32.3	24	17.1	11
Tacloban	62.35	+1.52	65.75	9	60.77	21	25.2	- .8	31.5	19	19.7	11
Capiz	62.54	+1.65	65.78	9	61.04	21	24.9	- .8	30.5	31	19.3	11
Calbayog	62.49	+1.71	66.20	9	60.90	20	24.6	- .4	32.5	31	17.3	11
Legaspi	62.84	+1.57	66.67	9	61.10	20	25.2	- .7	31.3	6	18.1	7
Atimonan	63.52	-1.87	67.82	9	61.51	30	24.7	- .4	29.7	31	20	25
Ambulong, Tanauan	62.78	-	66.16	9	60.91	30	24.9	-	32.2	31	18	12, 19
Paracale	63.63	+1.72	68.13	9	61.77	29	24.9	- .5	29.7	24	19.5	29
Manila	63.24	+1.57	67.03	9	61.35	30	23.7	-1	32.7	31	14.5	11
San Isidro	63.40	+1.56	67.35	9	61.48	30	24.2	- .5	33	6	14.4	11
Dagupan	62.54	+1.38	65.86	9	60.62	30	25.1	- .6	34.5	15	17.6	12
Bolinao	62.81	+1.53	65.68	9	61	29	25.4	- .5	32.6	16	17.8	13
Baguio ^a	639.26	+ .97	641.30	9	637.76	25	15.9	- .9	24.3	21	9	9
Vigan	762.91	+1.53	765.95	9	760.99	29	24.9	- .5	32.4	3	17.6	12
Tuguegarao	64.83	+1.84	70.02	9	62.12	30	22.4	- .9	32	14	12.5	10
Aparri	64.94	+1.73	70.16	9	62.39	19	22.1	- .9	28.8	6	15.6	11

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—There was a scarcity of rain in almost all the stations of the Philippines. From the following table it will be seen that the greater number of the stations had less than the normal amount of rainfall and also less than January, 1913. In Luzon, nine stations had no rain at all, and in Manila only 3.5 mm. fell which is less than the normal by 23.8 mm.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF JANUARY, 1914.

Station.	Total.	Departure from January, 1913.	Departure from normal.	Rainy days.	Departure from January, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from January, 1913.	Departure from normal.	Rainy days.	Departure from January, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	22.9	+ 10.3	- 65.5	6	0	16	31	Calapan	45.9	- 63.3	-----	15	- 4	12.7	8
Isabela, Basilan	37.9	16.5	- 15.1	5	- 2	13	2	Virac	177.2	+ 31.8	-----	17	1	72.1	2
Zamboanga *	38.9	6.6	- 9	5	3	20.6	31	Nueva Caceres	66.6	-----	- 49.3	7	-----	37.2	1
Davao	67.9	4	- 67.6	6	+ 3	21.6	13	Batangas	13.7	-----	- 19.8	6	0	5.1	3
Cotabato	20.5	- 85.9	- 63.8	5	- 5	14.5	27	Atimonan	183.9	- 84.9	- 12.2	16	- 7	60.3	3
Dapitan	48.7	197.3	- 61	12	2	20.3	13	Ambulong, Tanauan	5.6	-----	-----	3	-----	2.3	14,22
Butuan	131	8	- 45.5	22	+ 4	20.8	26	Silang	23.4	- 36.8	- 14.5	3	- 4	8.9	8,22
Dumaguete	43.2	29.7	-----	13	+ 4	15.2	2	Paracale	289.1	- 44	-----	15	- 7	108	2
Yap, W. Carolines	55.6	+ 18.3	-----	12	1	18.8	10	Sta. Cruz, Laguna	15.1	- 89.4	-----	9	- 7	5.1	22
Tagbilaran	61.9	+ 31.7	- 20.1	7	0	27.9	20	Manila	3.5	- 61.5	- 23.8	3	- 7	1.7	8
Iwahig	36.1	-----	-----	7	-----	23.6	13	Antipolo	0	- 107.8	-----	0	-----	0	0
Maasin	118.5	- 54.7	- 18.2	9	- 3	32.2	30	Iba	0	- 23.2	-----	0	5	0	0
Cebu	59.1	8.7	- 34.4	14	2	12.7	12	San Isidro	.3	- 26.6	- 15.8	1	- 6	.3	7
Iloilo	21.9	19	- 24.1	6	- 3	11.2	1	Tarlac	0	- 11.4	- 6.8	0	- 3	0	0
San Jose Buenavista	1.8	- 5.2	- 26.4	1	- 3	1.8	13	Baler	139.3	- 84.8	- 107.9	17	- 3	39.2	16
Cuyo	.5	- .4	- 9.7	1	0	.5	9	Dagupan	0	- 8.6	- 9.9	0	- 3	0	0
Ormoc	40.2	- 102.5	- 126	13	- 1	16	12	Bolinao	90.9	+ 44.5	+ 81.6	1	5	50.8	4
Guiuan	233.5	-----	-----	24	-----	66.6	4	Baguio	0	- 146.9	- 35	0	- 11	0	0
Tacloban	203	- 131.8	- 19.1	19	+ 3	59.1	12	San Fernando, Union	0	- 25.4	- 11.3	0	5	0	0
Capiz	73.9	- 56.2	- 65.7	15	- 3	21.7	12	Echague *	18	- 66.8	-----	10	0	4.4	16
Borongon	375.8	+ 6	- 88	28	+ 6	86.4	12	Candon	0	- 17.5	- 4.3	0	- 1	0	0
Calbayog	42.7	- 147.8	- 93.1	9	- 10	18.1	12	Vigan	0	0	- 2	0	0	0	0
Masbate	78.4	- 27.4	- 48.6	13	0	17	3	Tuguegarao	14.4	- 106.8	- 12.4	4	8	4.8	16
Romblon	108.1	- 66.1	+ 1	18	+ 2	33.5	3	Laoag	0	0	-----	0	1	0	0
Batag	159.7	-----	-----	13	-----	40.6	20	Aparri	101.2	- 176.2	- 109.1	14	- 6	47.3	20
Gubat *	173.8	- 33.3	- 124.1	18	0	61.2	1	Sto. Domingo, Bata-	260.7	- 19.9	+ 24.5	17	- 4	74.4	18
Legaspi	210.5	- 15.8	- 154.3	16	- 1	79.5	2	nes.	-----	-----	-----	-----	-----	-----	-----
Sumay, Guam	42.7	+ 27.6	-----	10	+ 6	15.2	5	-----	-----	-----	-----	-----	-----	-----	-----

* 30 days of observation.

DEPRESSIONS AND TYPHOONS.

Prescinding as usual from the continental depressions or cyclones which move from W to E in high latitudes, there was no typhoon or depression in the Far East worthy of special mention.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes en Filipinas es mayor en más de 1 mm. a la del año pasado. La de Manila difiere de la normal de Enero en +2.08 mm. Las mayores presiones se registraron en todas las estaciones el día 9: las más bajas ocurrieron generalmente el 20 ó 21 en unas estaciones, y el 29 ó 30 en otras.

La temperatura media mensual es para todas las estaciones algo menor que la de Enero de 1913. La de Manila se diferencia de la normal en -1.2° C. Es digna de llamar la atención la mínima absoluta 14.5° C. registrada en Manila el día 11. Examinando los registros del observatorio de los últimos treinta y cinco años, o sea, desde 1880, hallamos que antes del presente año 1914 la mínima temperatura nunca había sido menor de 15° C., y aun esta lectura tan baja solamente se había observado una vez en todo el período, o sea, en Enero de 1907.

Precipitación acuosa.—Ha habido este mes falta de lluvia en casi todas las estaciones de Filipinas. En la tabla que como de costumbre acompaña el texto inglés se ve que la gran mayoría de las estaciones dan un total de precipitación acuosa inferior así a la normal de este mes como a la de Enero del año pasado. En Luzón aparecen nueve estaciones sin nada absolutamente de lluvia en todo el mes. La cantidad de agua recogida en los pluviómetros de Manila no pasa de 3.5 mm., inferior a la normal de Enero en 23.8 mm.

DEPRESIONES Y TIFONES.

Prescindiendo, como solemos prescindir en este boletín, de las depresiones continentales o ciclones que se mueven de O a E en altas latitudes, no se ha observado este mes en todo el Extremo Oriente tifón o depresión alguna que sea digna de especial mención.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.		Evaporation. ^b				
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in Sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).	
					8 a.m.	2 p.m.	8 a.m.	2 p.m.									8 a.m.
					°C.		°C.										
1	764.48	24.6	31.7	20	26.1	27.5	27.3	27.7	27.9	28.2	72.5	16.5	17	54.4	4.2	3.2	
2	64.18	24.6	31.4	20	26.3	27.3	27.2	27.5	27.9	28.2	73.1	16.7	18.2	54.4	4.5	3.5	
3	64.97	24.6	29.9	21.3	26.5	27.1	27.3	27.4	28	28.2	72.6	16.6	19.9	51.2	5	3.9	
4	64.59	24.2	30.4	20	26.3	27.1	27.2	27.2	28	28.2	74.6	16.6	17.8	51.5	4.5	3.4	
5	64.34	24.4	29.5	20.9	26.3	26.9	27	27.1	27.9	28.1	78.2	17.6	19.1	43.7	3.4	2.7	
6	64.19	24.8	31.9	19.3	25.8	27.2	27.1	27.2	27.9	28.2	76.2	17.5	16.8	55.2	4.3	3.2	
7	64.31	24.5	30.9	20	26.2	27.3	27.1	27.3	27.9	28.3	79.5	18	17.3	51.4	3.7	2.7	
8	65.88	22.8	28.3	20.4	26.3	26.8	27.1	27.3	27.8	28.1	81.5	16.8	18.1	44.7	2.2	2.3	
9	67.03	22.5	29.2	18.7	25.3	26.4	26.9	26.9	27.6	28	69.4	13.9	15.9	50.6	4.6	3.6	
10	66.13	20.9	28.6	15.7	24.6	25.6	26.3	26.5	27.8	27.9	75.2	13.7	13.2	48.8	3	2.1	
11	64.57	21.3	28.9	14.5	24	25.5	26.1	26.4	27.6	28	77.2	14.3	11.4	50.1	4.4	3.6	
12	63.13	22.5	29.8	17.4	24.6	25.7	26	26.2	27.8	28	79.3	16	14.8	48.4	3.5	2.6	
13	62.56	23.7	29.9	18.6	24.6	25.7	26.1	26.2	27.7	28.1	80.3	17.4	16.2	52.1	3.3	2.4	
14	62.71	23.3	29.6	19	24.8	26	26.1	26.3	27.8	28.1	81.2	17.2	16.7	46.2	2.5	2.1	
15	62.98	23.8	30.7	18.6	24.6	26.1	26	26.6	27.6	28.1	78.5	16.9	15.9	51.5	4.2	3	
16	63.49	23.7	30.5	20.5	25.4	26.3	26.1	26.4	27.4	28	79.2	17.2	18.3	49.2	2.9	2.3	
17	63.48	23.9	29.9	19.4	25.2	26.3	26.2	26.5	27.7	28	75.4	16.4	16.8	49.6	4.6	3.6	
18	62.93	23.6	30.6	17.8	24.9	26.3	26.2	26.6	27.5	27.8	72	15.4	14.8	51.8	4.8	3.6	
19	61.90	22.7	29.8	16	24.6	26.1	26.1	26.3	27.4	28	79.1	16.2	13.7	48.9	3.9	2.9	
20	61.57	23.5	30.9	17.1	24.6	26.5	26.1	26.6	27.3	27.8	76.1	16.2	14.2	51.2	4.8	3.6	
21	61.44	23.8	31.8	17.2	24.5	26.5	26	26.6	27.3	28	75.9	16.4	14.5	51.3	4.5	3.3	
22	62.11	24.5	29.7	20.7	25.5	26.4	26.3	26.4	27.3	28	78.2	17.8	18.3	46.9	3.5	2.7	
23	62.56	23.8	28.8	21.2	25.5	26.2	26.4	26.5	27.3	28	82.6	18	19	43	2	1.9	
24	62.35	23.8	30.2	19.5	25.2	26.4	26.3	26.4	27.3	28	76	16.5	17	52.6	4.1	3	
25	61.80	23.6	30.2	19.3	25.4	26	26.4	26.3	27.3	28	75.5	16.1	16.5	44.1	3.4	2.7	
26	62.17	23.2	31	17.2	24.5	25.8	26	26.2	27.3	28	74.5	15.5	14.3	50.1	5.5	3.9	
27	62.50	24.2	31.8	19.4	24.8	26.3	26	26.2	27.3	28	70.9	15.7	15.8	50.4	5.3	4.1	
28	61.78	23.8	31.1	17.4	24.8	26.3	26.1	26.3	27.3	28	71.8	15.5	14.7	52.5	4.8	3.6	
29	61.45	24.5	31	20.2	25.4	26.5	26.1	26.3	27.3	28	75.1	16.6	17.8	53.2	4.2	3.1	
30	61.35	24.5	32.3	18.8	25.5	26.5	26.3	26.5	27.2	27.8	75.5	17.1	16.2	56	5.4	3.9	
31	61.46	25.5	32.7	21.4	26	26.7	26.4	26.6	27.3	27.9	75.6	18.2	19	47.1	5.1	4	
Mean Total	763.24	23.7	30.4	19	25.3	26.4	26.4	26.7	27.6	28	76.2	16.5	16.4	49.9	4.1	3.1	
Departure from normal	+ 2.08	- 1.2	+ 0.3	- 1.4							-1.9	-1.6		126.1	96.5		

Day.	Wind.				Amount (mean).	Clouds.				Sunshine.	Rain, 24 hours beginning mid-night.	Miscellaneous.
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.		Form and direction.						
						Upper.		Lower.				
						Km.	Km.	0-10.	Upper.			
1	N	121.5	14	WNW	5.2	A.-Cu.	WSW	Cu.	NEbyE	6	55	
2	N	173.5	20	NNE	4	Ci.		Cu.	E	6	50	
3	N, NNE	220	28	NNE	8.8	Ci.-S.		Cu.	ENE	3	15	
4	E quad.	155.5	19.5	ENE	6.9	A.-Cu.	SSE	Cu.	E	7	15	
5	E, SE	188.5	17	SE	6	A.-Cu.		Cu.	E	5	00	
6	SE	194	16	SE	2.4	A.-Cu.		Cu.	E	8	15	
7	NE	167.5	17	WSW	3.8	Ci.		Cu.	E	8	25	
8	N	101.5	13	N	9.2	A.-Cu.		Cu.-N.	E	1	50	1.7 d° a. ● p.
9	E, NNW	222	27	E	4.9	A.-Cu.		Cu.	E	6	35	
10	E, NW	137	14.5	NW	3.6	Ci.		Cu.	E	7	00	
11	W quad.	157	17	SE	3.9	Ci.		Cu.	E	8	05	
12	W quad.	150	19	NW	5.8	Ci.-S., A.-Cu.		Cu.	E	6	05	
13	WNW	130	15	W	6.8	A.-Cu.		Cu.	E	4	25	
14	N quad.	118.5	12.5	SE	7.2	Ci.-S., Ci.		Cu.	E	2	05	
15	W, E	115.5	16	WbyS	4.8	Ci.		Cu.	E	7	20	
16	Variable	82.5	12	ENE, NNW	8.6	Ci.-S.		Cu.-N.	E	2	05	
17	WNW, ENE	151	18	NW	5.2	Ci.		Cu.	E	7	15	
18	E quad.	169	15	WNW, W	1.7	Ci.		Cu.	E	8	35	≡ a.
19	E quad.	161	18	WNW	3.7	Ci.		Cu.	E	8	25	
20	ESE	201	20	SE	1.8	Ci.		Cu.	E	8	15	
21	E quad.	163	16	SE	2.5	Ci.		Cu.	E	7	25	
22	E	134	16.5	ESE	8.9	Ci.-S.		Cu.	E	3	20	d° p.
23	N	94.5	10	NbyE	9.6	Ci.-S.		Cu.-N.	E	0	00	● p.
24	N, SE	166.5	16	ESE	5.5	Ci.-S.		Cu.	E	5	35	
25	ESE	139.5	16.5	ENE	7.8	A.-Cu.		Cu.	E	2	55	d° a.
26	ESE	190.5	18.5	ESE	4.3	Ci.		Cu.	E	7	45	
27	E quad.	194	16	SE	4.9	Ci., A.-Cu.		Cu.	E	6	50	
28	E quad.	177	16	NW, EbyN	5.5	Ci.		Cu.	E	7	20	
29	SE	153	15	SE	5.9	A.-Cu.		Cu.	E	7	10	
30	SE	219	26	SE	5.9	Ci.		Cu.	E	8	10	
31	SE, ESE	178	15	WNW, ESE	6.9	Ci.		Cu.	E	5	50	
Mean Total		4,925.5	17.1		5.5					6	00	
Departure from normal		- 204.6			- 0.2					-5	26	- 23.8

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pres- sure ^b (mean)	Air temperature at Mirador (on the top of the mountain).				Air temperature in the valley (near the city hall).				Relative humid- ity (mean)	Vapor pres- sure (mean)	Radiation.		Evaporation.		
		Mean.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Maxi- mum.	Hour.	Mini- mum.			Hour.	Mini- mum on grass.	Maxi- mum in sun. Black bulb in vacuo.	Free expos- ure (total)	Shel- ter (total)
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	P. ct.	mm.	°C.	°C.	mm.	mm.	
1	640.40	16.0	23.8	0.15p.	13.1	5.55a.	23.5	11.55a.	12.1	6.50a.	75.0	10.1	11.5	43.7	5.2	2.7
2	40.47	16.8	23.7	11.55a.	13	1.10a.	24.3	0.40p.	11.6	5.55a.	75.5	10.6	12.8	42.8	6.3	3.4
3	40.71	16.3	23.5	2.20p.	12.9	5.55a.	23.6	1.50p.	11.7	3.35a.	71.2	9.7	11	44	7.2	3.7
4	40.25	15	22.5	11.50a.	12.3	6.10a.	23.4	11.05a.	12.1	6.10a.	83.5	10.6	10.6	45	4.7	2.8
5	40.39	17.5	23.1	2.05p.	13.1	10.35a.	23.5	2.35p.	12.5	1.30a.	77.3	11.4	11.5	44.5	3.3	3
6	40.45	16.9	23.3	0.35p.	12.9	6.25a.	23.8	1.05p.	11.5	7.05a.	78.7	11.2	10.5	50.8	3.5	2.2
7	40.27	15.6	21.7	1.55p.	12.3	6.40a.	21.5	2.55p.	10.3	6.15a.	74.8	9.6	9.5	45.6	5	2.5
8	40.74	14.1	20.5	11.50a.	10.1	12 m. n.	22.2	1.45p.	10.5	12 m. n.	75.3	9	9.2	41.2	6.6	3.2
9	41.30	13.5	22.5	1.05p.	9	6.30a.	21.5	0.55p.	8.5	6.05a.	72.8	8.3	6.9	44	5.7	3.2
10	40.84	14	20.8	0.30p.	10.3	3.50a.	21.8	10.55a.	9.3	5.45a.	77.3	9	7.1	44.2	3.8	2.3
11	39.55	14	20.7	1.15p.	10	6.10a.	20.3	11.05a.	8.5	6.05a.	71.2	8.3	5.5	42.8	6.6	4
12	38.72	15	21.7	11.05a.	10.9	6.05a.	22.3	11.55a.	9.9	2.30a.	71.2	9	8.2	44	8.4	4.6
13	38.86	16.9	23.3	11.45a.	12.7	6.40a.	25	1.05p.	11.4	7.05a.	73.2	10.5	9.5	45	4.3	3.1
14	39.20	16.4	23.8	2.10p.	11.9	5.45a.	24.5	3.55p.	10.7	6.35a.	80.3	10.8	8.2	42.4	4.2	2.8
15	39.41	16.1	22.9	0.05p.	12.2	6.55a.	23.6	0.30p.	10.4	6.30a.	72.5	9.8	9.2	45.3	5.6	3
16	39.66	16.2	23.4	10.10a.	12.7	4.05a.	23.4	11.10a.	11.5	6.35a.	84.2	11.3	7.8	45.3	3	1.9
17	39.52	16.6	23.7	10.50a.	13.2	12 m. n.	23.8	0.05p.	12.2	6.05a.	82.7	11.5	11.6	45.1	2.7	1.7
18	39.29	16.2	22.2	0.10p.	12.5	1.10a.	22.5	1.15p.	11.4	6.15a.	83.8	11.3	11.6	47	3.4	2.2
19	38.30	16.6	22.3	1.55p.	12.7	2.55a.	22.6	10.55a.	11.8	6.45a.	81	11.3	10	43.7	2.7	1.8
20	38.01	15.7	22.1	0.45p.	12.5	6.05a.	22.7	2.55p.	10.7	7.10a.	86.2	11.5	7.4	44.5	3.7	1.8
21	37.75	16.4	24.3	11.25a.	12.3	5.20a.	24.2	0.10p.	10.8	5.55a.	73.5	10.2	10	45.7	5	3
22	38.52	16.2	23.5	11.50a.	12.5	4.35a.	24	0.05p.	11.1	6.10a.	80.7	10.9	9.6	48	5.2	2.7
23	38.63	15.8	22.8	10.50a.	12.8	6.10a.	23.8	10.55a.	11.7	6.10a.	82.2	10.8	11.3	41.6	3.2	1.7
24	38.61	15.6	23.6	0.15p.	13	4.05a.	23.3	0.20p.	11.9	6.05a.	83.5	11	10.5	50	3.2	1.6
25	37.76	15.9	22	9.55a.	12.6	6.05a.	21.3	10.55a.	11	6.05a.	79	10.4	10	43.7	3.2	2
26	38.32	15.2	23.3	11.10a.	11.7	5.05a.	23	0.25p.	11.1	5.30a.	80.7	10.3	9	46.8	3.7	2.4
27	38.86	16.5	23	1.05p.	11.7	6.15a.	23.7	3.15p.	10.7	6.35a.	76.3	10.5	9.5	45.3	4.9	3.1
28	38.12	16.4	22.9	0.20p.	13	4.50a.	22.6	1.50p.	11.5	6.35a.	75.3	10.4	10.5	50	3.4	2.2
29	37.95	16.7	23.7	10.40a.	13.1	5.55a.	24	11.10a.	12.4	6.50a.	80.5	11.2	10.8	46.7	3	2.3
30	38.04	17.2	24	10.35a.	13.7	4.05a.	24.8	11.05a.	13.7	6.30a.	82.7	11.8	11.2	50.2	2.5	1.7
31	38.08	16.8	22.3	10.30a.	14.2	6.15a.	23.9	11.15a.	13.8	6.15a.	89.3	12.6	12.5	42.1	2.1	1.1
Mean	639.26	15.9	22.8		12.3		23.2		11.2		78.4	10.5	9.8	45.2	4.4	2.6
Total															135.3	79.7

Day.	Wind.				Amount (mean).		Clouds.		Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.
	Prevailing direction.	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	0-10.	Form and direction.	Upper.	Lower.			
1	E, SE	430.6	26.2	SE	6.1	Ci.	S.-Cu.	h. m.	mm.	≡ p.	
2	E	404.6	28.8	E	1.3	Ci., A.-Cu.	Cu.	5 00		≡ p.	
3	E	486.5	28.7	E	2	Ci.	Cu.	8 25		≡ a. ≡ p.	
4	E	419.7	24.1	E	7.6	A.-Cu.	S.-Cu., Cu.	8 40		≡ p.	
5	E, SW	307.9	23.5	E	5	Ci.	Cu.	3 20		≡ p.	
6	W, NE	307.5	21.1	W	2	Ci.	Cu.	7 10		≡ p.	
7	SE, W	396.7	27.7	W	2.9	A.-Cu.	S.-Cu.	8 50		≡ a. ≡ p.	
8	SE, E	497.8	31.9	SE	3.4	Ci., A.-Cu.	Cu.	8 05		≡ a. ≡ p.	
9	E	538.2	33.8	E	3.6	Ci.	Cu.	7 25		≡ p.	
10	W	329.7	27.1	W	4.9	Ci.-S.	Cu.	7 10		≡ p.	
11	E quad.	337.9	34.6	SE	1.3	Ci.	Cu.	6 40		≡ a. ≡ p.	
12	SE, E	631	43.1	E	.7	Ci.	Cu.	7 55		≡ p.	
13	E	420.7	31.4	E	3	Ci.	Cu.	8 45		≡ p.	
14	W, NE	284.2	21.7	W	2.9	Ci.	Cu.	7 10		≡ a. ≡ p.	
15	E	388.1	25.5	E	3.9	Ci.	Cu.	7 25		≡ p.	
16	E	320.7	27.9	E	5.7	Ci.	Cu.-N. S, SSE	4 50		≡ p.	
17	SE	382.8	24.3	SE	5	Ci.	Cu.-N. S, SSW	5 45		≡ p.	
18	E quad.	327.1	25.1	W	5	Ci.	Cu.	6 15		≡ a. ≡ p.	
19	E, W	303	23.1	NW	5.7	Ci.	Cu.	6 20		≡ p.	
20	SE	308.6	23	SE	4.1	Ci.	Cu.	6 05		≡ a. ≡ p.	
21	E	379.6	23.3	E	3.9	Ci.	Cu.	6 45		≡ p.	
22	E	414.5	26.4	E	6	Ci.	Cu.	7 10		≡ p.	
23	E, W	333	24.4	E	6	Ci.	Cu.-N.	4 00		≡ a. d ^o ≡ p.	
24	E, W	340.2	21.9	W	7.1	A.-Cu.	Cu.	6 00		≡ d ² p.	
25	SE, E	372.6	25.5	E	4.9	A.-Cu.	Cu.	5 25		≡ p.	
26	E	383.5	30.4	E	3.3	Ci.	Cu.	8 30		≡ a. ≡ p.	
27	W, NE	313.6	22.8	W	3.9	Ci.	Cu.	7 55		≡ p.	
28	E, W	336.6	24.1	W	5.9	Ci.	Cu.	7 20		≡ a. ≡ p.	
29	E, W	266.3	23.9	W	5.4	Ci.	Cu.-N.	5 05		≡ a. ≡ p.	
30	E, SE	251.6	18.8	W	6.6	Ci.	Cu.-N.	5 20		≡ a. ≡ p.	
31	E, W	357.4	24.9	SE	5.9	Ci.	S.-Cu.	2 45		≡ a. d ^o ≡ p.	
Mean		373.3	26.4		4.4			6 37			
Total		11,572.2						204 55	0		

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d This element is based on hourly observations taken from a quadruple register, which gives eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, JANUARY, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Jolo										0.8		1				1.8
Isabela, Basilan		13	0.8													
Zamboanga																
Davao											2.8	19.3				
Cotabato														2		
Daupan	1	1.5		1.8	1				0.5		5	2.3		2.8	1.8	5.6
Butuan	2.5	.5	8.4	3.3	.5			1.8	1.8		17.3			2.3	6.4	5.1
Dumaguete		15.2			3.3		2.8		4.6			1				1.5
Yap, Western Carolines	.6		12.2	1.1		3.3	1.6	6.1	4.4	18.8	.8					
Tagbilaran				2.8									0.3			
Iwahig				.3	10.7		.3	1.1					23.6			
Maasin	9.9	14.5		15								22.8				9.9
Cebu	3.3	2	.5	11.2				.3	3			12.7				2
Iloilo	11.2	1.3		6.1								1.5				
San José Buenavista									.5				1.8			
Cuyo																
Ormoc	.6	1.5	1.3	8.9			4.1					16	1.3			
Guiuan	18		1.3	66.6					1.5		23.4	12.2			3.6	21.3
Tacloban	12.1	6.1	4.4	30.4				1.3	2.8		1.8	59.1	1.8	1.3		2.5
Capiz	6.2	.8	19.1	2.5			7.1	2.8	1			21.7			1.8	
Borongan	17.8	4.3	47.7	56.9	1		1.3	4.8	3.5	1	34.8	86.4	6.1	5.1	5.8	4.4
Calbayog	12.2			2.3				1.3			5	18.1	1	4.8		
Masbate	12.4	8.1	17				4.9	4.9	1			15.7	1.5			
Romblon	3.6	2.6	33.5	2.3			.3	13.2				11.2	6.9	9.9		.3
Batag	23.6	2.5	20.1	1.3	(a)			5.6			5.3	11.7	2.8	4.6	2.5	
Gubat	61.2	25.4	9.9		3.8			8.4				15.3	14.3	13.2		
Legaspi	41.2	79.5	21.1	9.1				11.4				11.9	4.8	7.3	1.8	
Sumay, Guam		.8		1.3	15.2	13.9	1.3	3.8					2.5	1.3	1.3	
Calapan	2	8.1	4.4	3				12.7	1	.3			1	.3	6.6	.5
Virac	32.5	72.1	12.7	1.3				15	.5			12.4	6.4	.3		
Nueva Caceres	37.2	12.8	12	.5				1.5					2.3	.3		
Batangas		3	5.1					1.5								.3
Atimonan	8.1	42.1	60.3	3.3				6.9	10.4	.3		7.6	23.1	1	12.4	.5
Ambulong, Tanauan								1						2.3		
Silang							3.8	8.9								
Paracale	1.8	108	94	24.6			11.7	4.3	4.1	.5	.5	21.1	.8	1.3	7.5	
Santa Cruz, Laguna		.5	.6				3	8					.3	.5		
Manila								1.7								
Antipolo																
Iba																
San Isidro							3									
Tarlac																
Baler				3			4.8	.6					2.3	.3		5 39.2
Dagupan																
Bolinao																
Baguio																
San Fernando, Union																
Echagüe	.3					1.8	2	1.5			.5				5	4.4
Candon																
Vigan																
Tuguegarao																4.8
Laoag																
Aparri	4.9					3	6	5.2								8.1
Santo Domingo, Batanes						1	13.7			1	5.1		.8	18.8	39.3	

* No observation.

Daily rainfall at the stations of the Weather Bureau, January, 1914—Continued.

Station.	Day of month.																Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.		
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
Jolo											0.8					2.5	22.9
Isabela, Basilan				2	3.3						3.8					5.1	37.9
Zamboanga				(a)	7.7						2.5					8.1	38.9
Davao		21.6		7.7				2.5		14						20.6	67.9
Cotabato			1.5								14.5					2.5	20.5
Dapitan		20.3							4.8		2					2.8	48.7
Butuan	8.4	8.1	.3	18.6	.3			8.1	0.8	2.3	20.8	4.8			8.3	.3	131
Dumaguete	5	9.3			1			1			1.5	1.5					43.2
Yap, Western Carolines	3			2.8		0.3		3.3									55.6
Tagbilaran	3	9.4		27.9				3.8			14.7						61.9
Iwahig									1								36.1
Maasin	7.6	6.6														32.2	118.5
Cebu	1	2.8			4.8			5.1	2.3		.5					7.6	59.1
Iloilo	1.3																21.9
San José Buenavista																.5	1.8
Cuyo																	.5
Ormoc	3			2.3							3.1						40.2
Guiuan	15.5		1.3	11.7		6.4	5.9			18.8	3.1	2.8		12.2	.5	2.8	233.5
Tacloban	1.8	.8	3.3	43.1	2.5		2.8		2.5	14			.5	7.3		.8	203
Capiz	1.6			3	1.8		2.4	2.3			.5	2					73.9
Borongan	7.9		26.4	14.5	2.8	2	9.1	.3	12.7	9.9	.5		3	3	2.8		375.8
Calbayog				2.5													42.7
Masbate				4.8	2.3		2	1.8			1.8						78.4
Romblon		17.8		.8		.8				1.3		1.3			.5		108.1
Batag	20.3		4.8	40.6	14												159.7
Gubat				1	2.5		3.3	1.3		7.1	2	1.5		3.6			173.8
Legaspi				3.8	7.1	.3	2	3.3		3.8	1.6					.5	210.5
Sumay, Guam										1.3							42.7
Calapan					3	3.3	1.5	.8			1					1.8	45.9
Virac				17	1.5	.5			1							1.3	177.2
Nueva Caceres																	66.6
Batangas						1.5	2.3										13.7
Atimonan					3.8	.3				1.5			1.8		.5		183.9
Ambulong, Tanauan					2.3												5.6
Silang					8.9	1.8											23.4
Paracale					.3	.5	2.5					2	3.3	.3			289.1
Santa Cruz, Laguna					5.1	3.5		.8									15.1
Manila						1.5		.3									3.5
Antipolo																	0
Iba																	0
San Isidro																	.3
Tarlac																	0
Baler	2.8		1		6.9	3	1.3	6.9	3.1				18.5	11.7	36.1		139.3
Dagupan																	0
Bolinao								50.8	40.1								90.9
Baguio																	0
San Fernando, Union																	0
Echagüe				.8	1.1						.8				(*)	4.3	18
Candon																	0
Vigan																	0
Tuguegarao	2							1	2							4.6	14.4
Laogag																	0
Aparri	1.5			47.3	5.9				9.5	.5	2.8	2.3	6.1	3.5			101.2
Santo Domingo, Batanes	51.8	74.4	4	4.5	.7			9.9	18.4		7	.8	3.5	3.5	2.5		260.7

* No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, JANUARY, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Dapitan.		Butuan.		Dumaguete.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.2	21.1	32.6	22.1	31.5	22.1	31.2	19.8	34.4	19	30	24.8	28.1	20.1	30.2	22.9
2	30.1	21.3	33	19.9?	30.9	21	28.3	22.8	33.6	21.1	29.9	22.8	27.8	23.7	28.2	24
3	31.9	22.8	33.1	23.5	31.4	24	31.7	22	34.7	21.6	29.8	25.6	27.8	21.6	29.5	23.8
4	31	20.8	33.1	21.9	30.4	22	31.2	19.9	33.6	19.2	29.7	24.5	28.5	20.1	30.1	23.3
5	30.1	21.8	32	21.5	29.9	21.4	30.2	21.5	34.2	21.2	30.3	24.1	28.1	21.9	28.9	22.9
6	31	21.9	32.6	21.6	30.9	22.1	30.7	21.8	34.4	19.9	29.4	24.3	28.5	21.6	29	23.8
7	30.6	24.2	32.6	21.6	30.1	21	31.7	18.9	35	18.9	29.6	22.2	27.2	21.1	29.8	22.4
8	30.8	22.5	32.4	20.5	30.9	21.1	30.5	19.3	33.7	19.7	29.9	23.4	28	20	29.3	22.1
9	30	19.4	32.6	20.6	30.5	21.2	31.1	19.6	34.3	20	29.8	24.5	26.8	21.7	27.5	23.9
10	29.6	20.9	32.6	22.7	29.9	22.4	30.2	21.3	35.1	19.7	28.1	23.6	27.2	19.8	27.8	22.1
11	29.9	23.1	31.8	19.8?	30.1	19.4	29.9	19.1	34.7	18.7	29.7	22.7	27	20	29	19.6
12	28.1	23.8	28.6	19.8	28.6	20.4	27.2	20.8	30.1	20.6	29.7	20.3	27.5	22.3	28	22.1
13	29.9	21.7	32.6	22.5	30.1	22.5	31.7	20.5	34.6	21	29.3	23.6	29	22.7	30	23.2
14	29.5	21.8	33.6	21.9	30.7	23	30.7	19.4	34.4	21.1	30.6	22.4	28.5	21.1	30.2	22
15	29.8	22.7	32.4	21.5	31.5	21.7	28.1	22.2	31.7	22.7	30.3	23.3	28.3	22.9	30.4	24
16	29.4	22.4	31.8	22.1	30.5	22.5	29.2	22	34	20.9	29.5	22.8	27.8	22.1	29.7	23.9
17	29.7	24.3	33.8	22.9	30.2	24.4	31.7	19.1	34.9	20.4	29.9	24.1	25.5	21.4	27.5	23.4
18	30	20.4	31.1	21.5	30.9	22.4	29.7	20	34.4	21	29.9	23.4	26.5	22.2	26.5	23
19	29.1	23	34	22.1	29.2	23	30.7	21.5	34.7	22.4	28.1	23.2	27.2	23.1	29.3	21.7
20	29.8	23.3	33.6	23.1	30.6	23.9	28.7	22.2	34.3	22.6	29.1	23.2	27.8	23.2	30	23.6
21	30.2	23.9	34.1	23.4	30.4	23.4	30.7	21.6	35.5	22.5	29.7	25.2	27.7	23.1	28.6	23.6
22	30	23.5	32.4	23.5	30.6	23.4	30.7	22.5	34.6	20.9	29.5	24.8	28.5	21.9	29.9	23.7
23	30.1	21.3	32.6	22.1	29.1	22.5	29.2	22.4	34.1	21.9	29.7	24.8	26.1	23.4	29.4	23.8
24	30.1	22.4	34.1	23.1	30.2	23.5	29.2	21.9	33.2	22.6	29.4	24.3	27	23	28.4	23
25	29.6	23.4	34.6	22.5	31.2	23.7	26.7	21.9	33.2	21.8	29.9	24.3	25.5	22.1	29.3	24.3
26	29.6	20.9	33.8	23.3	28.5	23.5	29.7	20.9	35.2	22.5	29.8	22.4	25.6	22	29.1	24
27	29.1	23.1	33.1	22.4	29.1	22.8	31.7	21.2	33.5	22.6	29.5	24.6	27.6	22.2	29.5	23.6
28	29.1	23.7	34.2	22.5	30.5	21.5	31.1	21.8	32.6	21.9	29.3	24.4	27.5	22.9	30.3	23.4
29	29.9	21.7	34.6	22.1	30.9	22.3	30.7	21.5	34.2	20.8	30.1	23.8	27.7	21.6	30.5	23.4
30	30	20.9	33.6	21.1	31	21.9	30.2	22.5	34.2	22.2	30.4	22.6	27	23.1	29.4	22.9
31	27.9	21.9	33.4	22.6	29.5	22.9	29.2	21.9	33.5	21.8	30	24.1	27.8	22.1	28.6	24.6
Mean	29.9	22.3	32.9	22	30.3	22.4	30.1	21.1	34	21.1	29.6	23.7	27.5	21.9	29.2	23.2

Day.	Yap, Western Carolines.		Tagbilaran.		Iwahig.		Maasin.		Cebu.		Iloilo.		San José Buenavista.		Cuyo.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.5	24.7	32.3	21.3	30.6	22	21.8	21.8	30.1	23.5	28.5	23	31.6	20.6	28.6	24.8
2	31.7	23.2	31	22.8	31	22.5	23	23	28.4	23.8	29.3	23	31.7	21.5	28.6	25.1
3	31.2	25.1	30.8	21.5	31.1	22.7	23.1	23.1	29.5	24	29.5	23	34.8	21	29.5	25.4
4	30.8	22	31.6	21.2	30.8	21.1	22	22	28.6	23	26.6	22.4	33.2	19.5	28.5	24.6
5	30.2	23.6	31.7	21.7	31.1	21.8	29.5	22.4	29.6	23.3	29.1	22.6	32.6	21.9	29.6	24.8
6	30.2	24	30.3	21	31	20.4	29.4	21.6	29.5	23	29.6	22.2	31.8	20	29.7	25
7	31.7	24	30	20.1	31.8	19.5	29.8	21.4	29.5	22	28.9	20.9	32.3	19.6	29.2	24.9
8	30.7	25	30.6	18.5	29.6	21.4	28	20.1	29.1	22.6	29	22	31.7	18.5	29.6	24.5
9	30.7	24.9	28.6	20.2	29.8	20.7	28.4	21.8	28.6	22	28	22.2	33.4	21.5	27.2	24.4
10	29.6	24	31.1	20.7	29.6	23.4	29	21.6	28	22.5	27.5	21	32.9	20	27.9	23.9
11	30.7	24.2	31.7	17.5	30.4	18.7	28.5	18.4	28	21.4	28.5	19.5	31.2	17.6	27.7	23.2
12	30.4	24.7	29.9	22.4	29.8	17.5	28	23.2	26.9	21.5	26.4	20.7	29.2	17	28.7	23.6
13	31.3	24.3	30.4	20.7	30.3	21.2	29.5	22.7	29	24	29.4	23.2	29.9	20.5	30	24.8
14	30.7	25.3	31.7	20.4	30.8	23	29.5	21.5	30	23	30.5	22.9	31.9	21	30	24.9
15	30.7	24	32.4	22.5	30.4	20.7	29.1	21.5	29.8	22.9	29	22.8	32.2	20.6	29	24.4
16	30.8	25	32.3	21.4	30.6	21.4	29.5	22.4	29.6	23.3	28.2	22	32.2	18.1	29.2	24.8
17	30.7	25	27.6	22.1	30.6	20.9	27.6	22.2	28.5	22.8	29.9	22	32.7	19	28.9	24.8
18	30.7	24.3	26.3	21	30.9	21.5	27.6	22.6	25.7	22.5	29.5	21.9	33.2	20.8	28.7	24.8
19	31	24.9	30.9	21.7	31.3	20.5	29	22.6	29.5	23.3	29	23.2	32.7	21.7	29.5	24.8
20	30.4	25.3	31.9	22.6	32	20.7	29	22.6	30	23.5	29.5	22.4	33	20.6	29.1	24.8
21	31	24.1	30	23	30.6	21.1	30	23.4	29	23.5	29.5	23.7	32.9	21.7	29.2	25.3
22	31.1	25.3	31.2	21.8	31.4	22	29.6	22	29.5	24.1	29.4	23.3	32.9	21.5	29.5	25.1
23	31.3	23.8	30.2	22.7	31.5	20.7	30	22.4	28.4	23.4	29.5	22.1	33.3	20.3	29.5	24.6
24	31	24.2	30.6	21.3	31.5	20.5	29.8	22.9	29.9	23.1	29.9	22.4	32.9	23.7	29.3	25.4
25	31.8	24.5	30.6	19.4	31.3	20.5	30.6	20.9	29.5	22	28.9	22.1	33.9	20.5	29.8	25.1
26	31.2	25	29.3	22.5	31.1	20	28.3	22.9	28.2	24.1	26.7	22.4	33.2	19.1	28.9	24.6
27	31.2	24.7	30	22	31.6	21.8	29	22.4	29.5	23.7	29.1	23	32.7	21.1	29.5	25.2
28	32.2	24.2	31.3	21.2	30.6	22.8	29	21.6	29.5	22.4	28.5	22.3	33.2	20.6	29	24.8
29	31.7	24.2	30.7	19.2	31	19.5	29.5	20.8	29.5	22.7	28.5	21.4	33.3	19.5	29.7	24.6
30	31.9	24	28.9	21.4	30.8	19.5	28.6	21	28	22.4	30.1	21.7	32.3	18.5	30.3	24.5
31	31.3	23.3	32.5	22.6	30.2	19.3	29.5	24.2	29	23.9	30.2	24	32.7	23	30.1	25.4
Mean	31	24.3	30.6	21.2	30.8	21	29.1	22	29	23	28.9	22.3	32.5	20.3	29.2	24.7

Maximum and minimum temperatures at the stations of the Weather Bureau, January, 1914—Continued.

Day.	Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.		Romblon.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.6	21.2	30.2	22.5	31.1	23	28	23.1	29.9	21.6	30.7	22.8	27.8	23.4	30.9	22.5
2	31.1	23.5	30.3	24.2	30	22.8	29.5	23.6	29.8	23.5	31.9	22.7	29	24	29.4	22.9
3	31.4	22.3	30.9	24.2	31	22.3	29.7	23.7	30.4	24	31.9	21.2	28.8	24	30.1	22
4	28.1	21.7	27.7	23	26	22	27.2	22.5	26.7	23.2	26.7	22.3	26.6	23.5	28	21.8
5	31.4	21.5	30.3	24.2	30.4	22.2	30	23.4	29.6	23.9	30.9	21.5	31	23.2	30.3	23
6	31.1	20.6	29.3	24	30.8	22	29.3	22.1	29.5	23.4	31.7	19.8	31	22.8	30.8	21.7
7	30.1	18.5	29.5	23.4	29.7	21.4	28.8	21.4	29.6	19.5	31.7	19.4	28.6	21.2	30.2	20.6
8	31	20	30.4	24.1	28.7	21.8	28.9	22.5	29	19.7	31.3	19.5	29	23.6	32.1	22.4
9	30.8	24	29.3	24.2	28.5	22.8	27.3	22.2	28.1	23.6	27.1	20.8	28.5	23	32	21.7
10	29.6	20.2	28.9	22	27.5	20.6	28.9	21.8	28.1	20.7	30.1	19.2	28.2	23	28.6	21.7
11	30	17.1	29.2	20.7	29.6	19.7	28.8	19.3	29.5	17.4	30.6	17.3	28.4	24.2?	28.9	21.7
12	25.9	22.9	29.9	23.8	26.5	22.1	27.2	23.1	28.1	23.6	29.5	21.2	28.2	24.2?	29.9	19.6
13	31.1	22.1	30.4	24.3	30.5	22.4	29.9	23.6	29.9	22.9	30.2	22.5	29.6	23.8	30	23
14	30.1	20.6	29.9	24	30.4	22.2	30	22.8	29.5	22.2	28.6	20.5	29	23.4	31.6	23.3
15	31.7	20.9	29.3	24.5	30.4	22.2	28.9	23	29.5	21	31.4	20.4	30.6	23.5	30.5	21.9
16	31.7	22.5	29.6	23.7	31.3	23	27.4	21.6	29.6	22.2	31.2	20.8	30.4	24	30.6	22.2
17	30.2	23	29.4	22.8	28.7	22.9	28.9	20.6	29.1	22.3	30.3	21.5	30.2	23.8	30.8	21.5
18	28.8	23.1	30	23.1	28.7	23.2	29.3	22.4	29.3	23.5	30.6	22.3	29.6	22.8?	31.4	21.8
19	30.6	21.4	29.5	25	31.5	22	30	22.4	29.5	21	31.4	20.7	30.4	24	30.6	22
20	29.9	23	29.9	23.9	29.7	22.4	27.8	22	27.3	23.2	30.2	22.8	28	23.5	30.5	21
21	30.8	23.2	29.8	23.7	29	23.2	28.4	23.7	29.3	22.4	28.4	22.8	27.8	22.8	29.6	23.8
22	31.9	22	29.6	25	30.6	22.2	29.8	23.8	29.2	21.2	31.7	22.7	31.2	24.5	31.4	23
23	30.1	21.9	28.6	23.9	27.7	22.4	29.8	22.3	28.5	23.3	29.2	21.6	28.8	22.8	31.2	23.4
24	32.3	21.5	29.4	23.5	30	21	23.3	25	29.3	23.9	30.7	20	24.2	31.4	23.2	
25	32	20.5	29	24.4	30	21	23.9	23.2	29.1	19.6	31.7	19.2	30.8	22	31.1	22.9
26	28.6	23	29.9	24.2	26.8	21.6	29.2	23.1	28.1	22.8	28.1	22.1	28.5	24.4?	31.1	22.7
27	31.3	21.6	29.3	24.5	30.2	22.7	29.1	24.2	29.6	23.9	32.2	20.9	28.8	23.5	31.1	22.3
28	31.8	19.2	29.5	24.5	30.8	21.6	29.5	21.5	29	20.9	31.9	19.2	31.2	23.8	30.9	22.8
29	31.1	17.8	29.1	23.8	31	20.9	29.5	20.9	29.5	19.3	31.8	18.2	30.6	21.8	30.2	20.9
30	27.4	21.8	29.7	23.6	27.6	22.8	30	20.6	28.8	22.5	31.6	21.2	30.6	21.4	30.7	20.4
31	31.1	22.7	30	25.1	30	22.6	30.5	23.4	28.5	25.3	32.5	21.4	31.4	24.5	31.7	22.9
Mean	30.4	21.5	29.6	23.8	29.5	22.1	29.1	22.5	29.1	22.2	30.6	20.9	29.4	23.3	30.6	22.1

Day.	Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	26.6	21.4	22.8	25.7	22.5	27.4	23.6	27.5	22.3	27.2	21.5	27.6	20.9	28.3	20.4	
2	28	22.5	23.5	27.2	21.9	28	25.2	27	22	28	22.1	26.5	21.1	28.6	20	
3	27.9	21.4	22	28.1	21.8	28	24.6	24.7	22.2	28.3	20.7	28	21	25.3	21.6	
4	25.5	21.1	23.1	27.7	22.4	28	23.8	24.5	21.6	28.9	21	26	20.4	27.8	21	
5		22	24.6?	30.9	22.5	26.2	24	27.8	21.5	30.2	21.1	31	18	31.3	21.5	
6			25	31.3	20.4	26.2	23	28.4	20	30	20	30.5	18.1	32.2	20.2	
7	29	21.5	20	30.1	18.1	27.4	22.6	28.8	19	29.1	17.9	29.1	17	30.3	19.2	
8	28	21.2	23.4	30.7	22.7	28.2	25.8	27	21.1	28.7	20.3	29.7	20.1	27.6	20.5	
9	26	20.9	22.4	26.6	21.5	29.2	24.6	24.1	21.5	27.6	18.5	29.8	18.2	27.8	20	
10	28	21.5	21.8	28.6	21.5	29	24.2	27	21	28.6	17.4	28	17.8	29.4	18.3	
11	29	20	23.8	29.5	20.9	29.4	24	26	19.1	29	17.6	28.7	15	29.8	15.2	
12	27.5	21.5	21.4	28.4	23.3	28	23.8	28.7	18.8	30.5	20.1	28.6	18.2	31.3	17	
13	28	21.9	21.4	27.6	22.9	28	24.4	28	23	29.6	21.4	29.1	20.1	31.4	22	
14	28	21.4	23	28.4	21.3	27.8	23	28.8	21.6	30.1	20.8	29.3	18.4	29.3	21.6	
15	28	22	21.9	29.7	21.8	28.8	23.8	28.5	21.5	30.9	20.9	30.5	20	31.3	19.8	
16	28	20.9	22.2	29.8	23.4	27.8	24.4	29.2	21.5	31	19	30.7	16.9	31.2	21.6	
17	29	22.7	22.8	29.6	23.2	28.4	24.4	28.6	20.8	31.4	20.2	30.9	15.6	31.4	19.8	
18	27.5	20.4	22	30.8	23.1	29	24	29.1	21.5	31.6	19.4	30.2	15.4	33.1	19	
19	28.5	22.1	24.4	31.1	21.5	28	24	28	20	30	19.6	30.3	17.4?	32.1	18.5	
20	27	22.5	21.9	30.7	19.4	28.4	24.8	28.1	18	30.4	19.3	31.7	15.8?	31.7	17.2	
21	28	20.5	23.6	26.8	22.3	30.6	24.4	28.2	22.5	29.9	21	29	20.6	31.2	20	
22	28	21.3	23.4	30.1	21.8	29.2	25	28.4	21.5	31.2	21	30.7	19.1	31.4	20.5	
23	27	22.4	24.4	29.7	23.5	30.8	24.6	26.9	22	29.8	21.5	30.4	17.2	30.8	21.6	
24	27.5	23	23.6	26.7	22.1	29.8	23	28.6	20.9	29.8	20.7	31.1	17.9	32.3	20.4	
25	29	21.7	23.9	29.9	23	30	23	29	21.8	30.1	18.9	31.9	16.3	31.3	20	
26	26.5	22.4	22.3	28.9	23.1	28	24	29	23.1	30	18.4	30.3	16	31.1	20.5	
27	29	22.7	23.5	30.1	23.1	29	23.6	28.2	22.4	29.5	20.8	30.4	19.9?	32.2	20.4	
28	28.2	22	21.3	30.2	22.2	29.4	23.8	29.4	20.4	29.6	18.3	30.2	14.9	31	19	
29	28.9	21	24.1?	31	20.3	28.2	24	28.7	19	31.3	19.5	30.3	15.9	32.3	19.4	
30	27.8	21.3	20.7	30.3	20	28.2	24.2	29	20	29.9	18.8	31.7	14.1	33.3	20.6	
31	28.4	21.5	24.2	31	24.1	28	24	30	21	31.5	19.8	31.2	18.8	33.8	21.2	
Mean	27.9	21.6	22.9	29.3	22	28.5	24.1	27.9	21.1	29.8	19.9	29.8	17.9	30.7	19.9	

Maximum and minimum temperatures at the stations of the Weather Bureau, January, 1914—Continued.

Day.	Atimonan.		Ambulong. Tanauan.		Silang.		Paracale.		Sta. Cruz. Laguna.		Manila.		Antipolo.		Iba.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	25.4	22.5	28.5	22.4	30	19.4	27.6	23	26.9	22.3	31.7	20	30.2	19.1	31	21.2
2	24.9	22.8	30	22.8	30.3	19.7	25	23	27.4	22.5	31.4	20	31.7	19.1	31	18.5
3	24.2	22	27.7	21.8	30.8	19.2	25.7	21.8	25.5	22.5	29.9	21.3	28.9	21	31.3	22.9
4	23.5	21.9	28.1	21.5	31.2	20	24.6	22.2	25.8	21	30.4	20	29.4	20	32	23.9
5	27.3	21.4	31	21.5	30.4	19.6	28.8	21.4	29.5	21.4	29.5	20.9	31.4	20.1	31.4	22
6	27	20.3	31.5	21	30.1	19.2	28.7	20.2	30.5	19.2	31.9	19.3	32.2	19.5	30.9	21.1
7	26.3	22.2	31.2	20.1	29.4	19.5	27.8	19.6	29.5	20.3	30.9	20	30.7	19.8	32.4	17.7
8	27.8	21.5	27.8	21.2	29	19	26	22.3	27	20.5	28.3	20.4	27.9	19.5	31.5	17.7
9	24.8	21	26.8	21	28.4	19.6	24.3	21	26.1	20.2	29.2	18.7	27.6	19.6	30.5	19.5
10	26.4	22	28.6	20.5	28.3	18.2	26.8	21.6	28.5	19.8	28.6	15.7	28.3	18.4	29.9	20
11	26.9	21.8	28	18.2	28.2	18.8	27.4	20	30.1	15	28.9	14.5	29.5	16.2	30.9	19.5
12	27.6	22.8	30	18	28.9	19	28.3	20.7	29.8	19.2	29.8	17.4	30.1	17.8	29.3	15
13	27.1	23.1	28.5	21.9	29.3	17.1	28.8	23.5	29.7	22	29.9	18.6	31.6	18.9	29.7	16.7
14	27.3	23.3	29	22	30.5	16.6	29	23.8	28.2	22	29.6	19	31.6	18.8	30.9	21.6
15	25.4	22.6	29.8	22.7	30.7	16.2	28.4	23	28.5	22.6	30.7	18.6	31.5	18.7	31.8	16.8
16	28	23	30	20.5	30.9	16.8	28.7	23.8	30.9	19.2	30.5	20.5	30.4	20	31.5	18
17	27.8	23.5	30.3	19.9	30.3	16.5	28.7	23.6	29.4	21.2	29.9	19.4	31.3	19.3	31	17.9
18	27.4	23.8	31.2	21	30.7	16.1	28.8	20.3	30	18	30.6	17.8	32.2	17.5	30.7	17.2
19	28.2	24	30.9	18	29.2	16.3	29.2	21.4	29.5	20	29.8	16	31.5	17.6	29.8	
20	27.1	23.6	30.2	19	29	16	28.5	19.9	29.5	18	30.9	17.1	31.7	17.4	30.6	16.9
21	28.1	24.1	30.6	22.5	29.1	16	28.6	23.2	29.5	20.7	31.8	17.2	32.6	18.3	30.8	17.4
22	27.8	23.7	30	22.5	28.4	15.6	28.8	23	28.3	21.5	29.7	20.7	31.2	20.2	31.7	18
23	28	22.7	28	22.2	28	15.7	28.2	23.6	27.9	21.1	28.8	21.2	28.3	20.8	30.4	18.5
24	28.5	24.1	30.3	21.9	27.7	16.2	29.7	23.8	28.7	20.1	30.2	19.5	31.3	19.3	31	19
25	28.4	20	30	20	28.8	16.9	29.6	23.5	28.5	20.7	30.2	19.3	30.4	19	31.3	18.1
26	28.5	23.9	30	22.5	29.4	17.8	29	23.3	28.9	20.5	31	17.2	31.2	18.8	31.5	16.7
27	28	23.7	30	23	29.6	17.3	29.2	24.5	29.4	21.5	31.8	19.4	31.4	19.3	31.6	17
28	28.6	24	30.1	20.3	29.1	17	29.2	21.5	29.3	20.5	31.1	17.4	30.8	18.7	31.1	18
29	27.1	20.7	29.5	20.3	28.9	17.6	28.2	19.5	29.7	18.5	31	20.2	31.2	20.4	30.4	20.6
30	28	20.1	31	20	29.5	17.9	28.8	20.5	30.3	20	32.3	18.8	31.7	19.3	31.7	20
31	29.7	22.5	32.2	20.1	30.3	18.4	29.4	23.2	30.9	22.4	32.7	21.4	32.3	20.7	33	22
Mean	27.1	22.5	29.7	21	29.5	17.7	28.1	22.1	28.8	20.5	30.4	19	30.6	19.1	31.1	19

Day.	San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio. ^a		San Fernan- do, Union.		Echague.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.8	18.1	31.6	18.8	28.8	19	33.3	21.9	30.7	21.7	23.8	13.1	31.4	20.9	25.3	17.2
2	32.5	17.9	32.8	18.2	29.2	19.7	30.3	19.6	30.5	20.4	23.7	13	33.3	20.1	26.1	19.1
3	29	19.1	31.1	21.7	31.5	21.3	30.9	21.1	31	19.1	23.5	12.9	32.1	19.7	25.1	18
4	30.6	20.1	30.6	21.8	28	22.8	33.7	22	31	22.4	22.5	12.3	31.8	20.9	26.3	18
5	31.9	20.1	33.1	19.3	30.2	20.5	33.7	21	31.3	22.4	23.1	13.1	31.9	21.7	30.2	18.6
6	33	19.4	33.6	19	29	19	32.3	21	30.5	22.7	23.3	12.9	32.4	20.8	30.9	18
7	31.7	19	32.6	19.4	29.7	20	29.8	23.2	29.1	23.4	21.7	12.3	32.9	21	28.8	19.9
8	26.9	19.4	29.5	19.8	29.5	19.7	31.7	19.1	29.8	19	20.5	10.1	29.1	17.9	22.3	18.3
9	28.5	14.7	28.6	18.8	25.9	20.4	31.8	19.2	29.7	20.5	22.5	9	29.9	17.8	22.8	15.6
10	28.4	14.6	30.6	18.4	27	17.1	31.3	18.1	28.5	20.4	20.8	10.3	28.6	18.4	25.8	15
11	29.1	14.4	30.9	14.7	30.1	15.2	32.8	18.5	29.9	19.5	20.7	10	29.3	16.5	26.9	13.4
12	29.3	17.2	31.5	15.9	28	18.5	29.7	17.6	30.5	19.4	21.7	10.9	29.9	16.7	27.8	18.5
13	31.5	17.3	32.7	17	30.5	21	29.4	18	30.5	17.8	23.3	12.7	29.3	16.8	29.1	18.9
14	32.8	17.5	33.2	17.5	29.6	19.9	32.1	19.6	30.5	24.1	23.8	11.9	31.9	19.1	30.3	19.5
15	31.2	18.5	33	17.5	29.7	20	34.5	19.6	32.5	19.9	22.9	12.2	30.8	20.4	27.8	17.8
16	30.9	20	30	20.5	27.5	21.7	33.5	20	32.6	19.7	23.4	12.7	30.7	19.3	26.2	20.4
17	29.5	18.8	30.8	18.6	30.5	20.7	33.4	21	30.5	22.6	23.7	13.2	28.9	18.8	29	19.8
18	31.6	16.7	33.5	17.6	27.5	17.8	32	19.1	31	21.4	22.2	12.5	31.8	20.1	29.5	16.4
19	32.1	17.8	33.2	17.4	28.6	18.7	32.2	19.5	30.7	21.9	22.3	12.7	30.2	20.3	30.2	17.6
20	32.5	18	33.5	20	29.6	20	29.3	21	29	23.3	22.1	12.5	29.7	19.6	29.3	18.7
21	32.1	18.2	31.9	18.4	29.3	19.6	32.2	19.6	30.5	19.4	24.3	12.3	29.9	18.9	26.1	19.7
22	31.1	18.1	32.5	16.4	30.6	21.1	33.2	19.5	31.5	20.9	23.5	12.5	29.5	19.7	27.9	19
23	29.7	20.8	31	19.6	26.8	21.1	32.2	20.1	31.3	19.3	22.8	12.8	30.3	19.6	24.9	19.3
24	30.4	18.4	33.2	17.4	29.9	20.2	31.8	20.6	31.5	21.9	23.6	13	29.4	19.5	28.9	18.5
25	30.9	19.5	32.2	17.8	26	20.8	31.9	21	28.6	21	22	12.6	29.3	22.4	28.3	19.4
26	31.4	17.4	32.7	17.5	29.5	19.7	32.6	20.6	29.9	18.9	23.3	11.7	29.4	18.1	28.4	19.4
27	32.6	17.5	34	16.8	28.5	18.5	30.6	19	29.1	20.7	23	11.7	29.9	18.3	29.8	17.3
28	30.4	19	33	18.4	27.5	21.5	33.9	21.4	29.9	20.6	22.9	13	29.9	19.1	26.8	19.7
29	31.4	18	33.5	18.4	30.9	18.3	33.7	21.1	30.6	20.8	23.7	13.1	31.3	20.7	29.5	19.4
30	31.9	20.6	33.5	20.8	31	21.4	31.7	22.6	30.1	21.1	24	13.7	30.2	23.5		
31	30.5	22.4	32	22.5	27.5	21.8	33.3	22.9	31.5	21.6	22.3	14.2	32.1	22.3		
Mean	30.8	18.3	32.1	18.6	29	19.9	32.1	20.3	30.5	20.9	22.8	12.3	30.5	19.6	27.6	18.3

^a On the top of Mount Mirador.

Maximum and minimum temperatures at the stations of the Weather Bureau, January, 1914—Continued.

Day.	Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo Batanes.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.2	22.9	28.7	21.4	25.5	18.2	31.7	21.7	23.2	18.5	22.7	17.7
2	30.2	22.1	29.8	21.7	25.2	18.4	31.6	19.4	24.5	17.8	24	19.5
3	30.6	21	32.4	23	26.2	16.1	31.8	16	24.4	17.5	24.2	19
4	29.2	22.4	30.2	23.7	26.3	18.6	32.5	20	24.1	18.4	27.5	21.4
5	29.8	22.4	29.7	22.3	31.7	19.4	32.6	20.1	28.4	19.1	26.7	21.4
6	30.1	21.5	30	21.5	31.5	19.3	32.2	19	28.8	19.6	26.3	20.9
7	28.4	19.8	27.7	19.9	30	19	28.2	17.9	26.2	19.6	22.6	21.8
8	29.3	20	29.6	19.5	23.1	18	29.1	20	21	17.9	21	17
9	28.9	19.6	29.5	21.5	26.4	16.5	30.7	16.5	23	17.1	22.4	17.5
10	28.5	19	29.2	20.2	29.1	12.5	30.5	13.9	25	16.1	24.5	18
11	26.8	18	28.5	19.4	29.5	13.2	29.6	15.3	26.6	15.6	25.3	20
12	27.9	17.5	30.1	17.6	26.3	18.2	31.8	14.9	24.9	19	25.8	20.8
13	28.4	18.5	29.3	20	31.5	17	31.2	17.4	27.5	17.8	26.6	21.9
14	29.7	21.5	30.5	19.5	32	16.9	31	18	28.7	19.5	27	21.7
15	28.9	19.9	30.1	20.1	29.4	16.6	32.3	16.1	26.5	19.2	22.6	18.9
16	29.9	20.7	30.2	20.4	26	19.3	32.7	17.4	25	20.6	22.8	18.9
17	28.7	21.2	29	22.7	26	19	32.5	18.1	25.5	20.6	24.9	20.8
18	28.9	21.6	29.2	21.9	31.7	17.6	30.4	19.2	27	18.6	22	19.6
19	28.2	21.4	29.3	20.8	31.4	19.7	30.2	19	28	20	23.4	19.9
20	28.9	20.5	28.3	20.5	28.2	20.6	30.6	18.9	24.9	20.2	22	19.8
21	29	21	29.7	19.7	26	19.5	32.5	19.8	23	19.6	22.6	19.5
22	28.9	21.4	29	22	27	18.7	32.7	17.6	25.2	19.1	24.9	19.2
23	28.9	21	28.2	21.3	27.4	18.2	33.9	16.8	24.5	20.4	25.5	19.6
24	28.9	22	28.8	22.2	31	17	31.4	18.5	27	19.4	26.8	20.7
25	28.6	20.5	28.7	20	25.3	20	31.5	17.5	24	19.6	21.7	18.8
26	29.2	21.5	28.2	21.3	30.6	19.5	31	18.3	25.5	20	25.2	18.9
27	28.3	19.5	29.5	20.1	31.7	16.5	32.3	17.8	27	18.6	22.3	19.6
28	29.5	21	29.4	23.4	28.5	19.5	30.7	16.9	25.8	20.3	24.6	19.5
29	28.9	21.5	29.5	21.5	28	19.6	31.1	18.8	23	20.2	22.5	20.4
30	29.6	23	30.5	21.1	30	21.3	31.9	19.2	24.1	20.6	21.9	18.8
31	29.7	22.5	30.2	22.8	28.1	21.1	32.1	20.6	25.6	20.4	23.9	18.9
Mean	29	20.9	29.5	21.1	28.4	18.2	31.4	18.1	25.4	19.1	24.1	19.7

SEISMOLOGICAL BULLETIN FOR JANUARY, 1914.

By the Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

6, 13^h 18^m 07^s * [6, 21^h 18^m 07^s]. **S of Luzon.** Earthquake of intensity III-IV, duration 3 seconds. It was perceptible with practically the same intensity in Manila and in the Provinces of Cavite and Batangas. Its origin was probably in the Taal Volcano system, though in the neighborhood of the volcano itself it had not any greater intensity.

6, 15^h 52^m [6, 23^h 52^m]. **Tacloban (NE of Leyte).** Earthquake of intensity II-III.

8, 5^h 20^m 15^s * [8, 13^h 20^m 15^s]. **Batangas (S of Luzon).** Oscillatory earthquake, direction NW-SE, intensity III, duration 2 seconds.

11, 13^h 09^m [11, 22^h 39^m]. **Yap (Western Carolines).** Earthquake of intensity III, duration 3 seconds.

11, 13^h 40^m 00^s * [11, 21^h 40^m 00^s]. **Ormoc (W of Leyte).** Oscillatory earthquake, direction W-E, intensity IV, duration 4 seconds. There were repetitions of intensity III at 13^h 44^m and at 14^h 05^m [21^h 44^m and 22^h 05^m].

11, 21^h 02^m 42^s * [12, 5^h 02^m 42^s]. **Aparri (NE of Luzon).** Oscillatory earthquake, direction E-W, intensity IV, duration 4 seconds.

12, 12^h 26^m 37^s * [12, 20^h 26^m 37^s]. **N of Luzon.** Earthquake of intensity IV felt throughout the whole of the extreme north of the island of Luzon which comprises the Provinces of Ilocos Norte, Mountain, and Cagayan. Its origin was probably in the central cordillera.

14, 4^h 39^m 16^s * [14, 12^h 39^m 16^s]. **Jolo.** Oscillatory earthquake, direction WSW-ENE, intensity V, duration 5 seconds. It was preceded by a subterranean noise.

18, 10^h 47^m 00^s * [18, 18^h 47^m 00^s]. **SW of Leyte.** Oscillatory earthquake, direction W-E, intensity III, duration 8 seconds in Ormoc; intensity II-III in Maasin.

20, 16^h 43^m 35^s * [21, 0^h 43^m 35^s]. **N of Samar and SE of Luzon.** Earthquake of intensity V, felt in the north of the Island of Samar, in Catanduanes Island, and in the Provinces of Albay and Sorsogon in Luzon. Its seat of origin was to the north of the San Bernardino Strait not far from Catanduanes Island where the shock had greater intensity and was accompanied by subterranean noises.

20, 20^h 51^m [21, 4^h 51^m]. **Jolo.** Oscillatory earthquake, direction S-N, intensity IV-V, duration 7 seconds. It was also felt but with less intensity in the Island of Basilan. Its origin was probably in the NE of the Celebes Sea.

23, 20^h 11^m 27^s * [24, 4^h 11^m 27^s]. **Batangas (S of Luzon).** Oscillatory earthquake, direction NW-SE, intensity III, duration 4 seconds.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory, whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

28, 13^h 47^m [28, 21^h 47^m]. SW of Mindanao. Earthquake felt in Cotabato with intensity IV-V, and in Zamboanga with intensity III. In Cotabato the shock was accompanied by subterranean noises. Its origin was very probably in the sea to the south of Illana Bay.

28, 19^h 17^m [29, 4^h 47^m]. Yap (Western Carolines). Earthquake of intensity III.

31, 2^h 05^m 31^s* [31, 10^h 05^m 31^s]. S of Luzon. Earthquake of intensity IV-V felt in the Provinces of Batangas, Cavite, Rizal, Bataan, the southern part of Zambales, Bulacan, Nueva Ecija, and the N of Tayabas. Its origin was probably in the Pacific to the ENE of Manila, close to the eastern coast where there exists one of the centers which affects Manila. It is very likely that in the eastern cordillera or Sierra Madre, the intensity passed number V of the scale, but as in the whole of that extensive region there is no town, it has been impossible to obtain any confirmation of this supposition. The area affected, had a prolongation of 300 kilometers in the SW-NE direction and little more than 100 kilometers in the NW-SE.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Mean Greenwich. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N : $T_0=6.4$, $\epsilon=4.4$, $\frac{r}{T_0^2}=0.045$;
 A_E : $T_0=6.3$, $\epsilon=3.5$, $\frac{r}{T_0^2}=0.052$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
1	6	IIa	eP	h. m. s.				Southern Luzon.
			L	13 18 07				
			M _N	18 29	1	1,500		
			M _E	18 29	1		1,939	
		F	24					
2	8	Iv	iP	5 20 15				Batangas (S of Luzon).
			L	20 32				
			M _N	20 35	1	575		
			F	30				
3	11	I	e	9 17 41				
			F	32				
4	11	Iv	eP	13 40 00				Ormoc (W of Leyte).
			F	46				
5	11	Iv	eP	21 02 42				Aparri (NE of Luzon).
			F	07				
6	12	Ir	eP	9 32 33				Japan.
			eS	36 17	5-6			
			eL	40 00	7-8			
			M _N	46 12	10	55		
			M _E	49 19	11		73	
		F	10 52					
7	12	Iv	eP	11 12 43				
			L	13 05				
			M _N	13 10	2-3	42		
			F	15				
8	12	Iv	eP	12 26 37				Northern Luzon.
			L	27 32				
			M _N	27 44	3	32		
			F	33				
9	14	Ir	eP	4 39 16				Jolo Island.
			eS	41 51				
			eL	43 45				
			M _N	44 31	9	40		
			M _E	45 51	10		33	
		F	5 07					
10	15	I	e	19 28 48				
			F	20 04				
11	16	I	e	12 14				
			F	28				
12	18	I	e	10 47 00				Southwestern Leyte.
			F	11 02				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.			Period.	Amplitude.		Remarks.
								A _N μ	A _E μ	
13	20	Ir	e	h.	m.	s.	9	16		
			L	12	09	00				
			M _E	18	00					
			F	19	57					
14	20	Iv	eP	16	43	35	3	152	177	
			L	44	16					
			M _N	44	36					
			F	45	12					
15	21	I	e	17	33					
			F	55						
16	23	I	e	0	12	45				
			F	20						
17	23	II _d	eP	20	11	27	3	780		Batangas (S of Luzon).
			L	11	45					
			M _N	12	07					
			F	22						
18	26	I	e	22	28	22				
			F	23	07					
19	28	Iv	eP	7	41	32				
			F	44						
20	30	Ir	e	3	56	05				
			F	6	17					
21	31	II _d	eP	2	05	31				In the Pacific Ocean, ENE of Manila.—Maximum and end lost by the pens thrown off by the force of shock.
22	31	I	e	13	17	51				
			F	46						

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

6, 13^h 18^m 07^s * [6, 21^h 18^m 07^s]. **S de Luzón.** Temblor de tierra de intensidad III-IV, duración 3^s. Fué perceptible con casi la misma intensidad en Manila y en las Provincias de Cavite y Batangas. Probablemente su origen se hallaba en el sistema volcánico del Taal; pero no tuvo sin embargo mayor intensidad en las cercanías del volcán.

6, 15^h 52^m [6, 23^h 52^m]. **Tacloban (NE de Leyte).** Temblor de tierra de intensidad II-III.

8, 5^h 20^m 15^s * [8, 13^h 20^m 15^s]. **Batangas (S de Luzón).** Temblor oscilatorio, dirección NW-SE, intensidad III, duración 2^s.

11, 13^h 09^m [11, 22^h 39^m]. **Yap (Carolinas Occidentales).** Temblor de tierra de intensidad III, duración 3^s.

11, 13^h 40^m 00^s * [11, 21^h 40^m 00^s]. **Ormoc (W de Leyte).** Temblor oscilatorio, dirección W-E, intensidad IV, duración 4^s. Repitió a 13^h 44^m y a 14^h 05^m [21^h 44^m y 22^h 05^m], con intensidad III.

11, 21^h 02^m 42^s * [12, 5^h 02^m 42^s]. **Aparri (NE de Luzón).** Temblor oscilatorio, dirección E-W, intensidad IV, duración 4^s.

12, 12^h 26^m 37^s * [12, 20^h 26^m 37^s]. **N de Luzón.** Temblor de tierra de intensidad IV sentido en todo el extremo N de la Isla de Luzón comprendido por las Provincias de Ilocos Norte, Montañosa y Cagayán. Su origen se hallaba probablemente en la cordillera central.

14, 4^h 39^m 16^s * [14, 12^h 39^m 16^s]. **Joló.** Temblor oscilatorio, dirección WSW-ENE, intensidad V, duración 5^s. Precedido de ruido subterráneo.

18, 10^h 47^m 00^s * [18, 18^h 47^m 00^s]. **SW de Leyte.** Temblor oscilatorio, dirección W-E, intensidad III, duración 8^s, en Ormoc; y de intensidad II-III en Maasin.

20, 16^h 43^m 35^s * [21, 0^h 43^m 35^s]. **N de Sámar y SE de Luzón.** Temblor de tierra de intensidad V, sentido en la parte N de la Isla de Sámar, Isla Catanduanes y el extremo SE de Luzón, comprendido por las Provincias de Albay y Sorsogón. Su origen se hallaba al N del estrecho de San Bernardino, no lejos de Catanduanes donde se sintió con mayor intensidad y fué acompañado de ruido subterráneo.

20, 20^h 51^m [21, 4^h 51^m]. **Joló.** Temblor oscilatorio, dirección S-N, intensidad IV-V, duración 7^s. Sintióse también pero con menos intensidad en la Isla de Basilan; su origen se hallaría probablemente en la parte NE del mar de Célebes.

23, 20^h 11^m 27^s * [24, 4^h 11^m 27^s]. **Batangas (S de Luzón).** Temblor oscilatorio, dirección NW-SE, intensidad III, duración 4^s.

28, 13^h 47^m [28, 21^h 47^m]. **SW de Mindanao.** Temblor de tierra sentido en Cotabato con intensidad IV-V, acompañado de ruido subterráneo, y en Zamboanga con intensidad III. Su origen se hallaba probablemente en el mar al sur de la bahía Illana.

28, 19^h 17^m [29, 4^h 47^m]. **Yap (Carolinas Occidentales).** Temblor de tierra de intensidad III.

31, 2^h 05^m 31^s * [31, 10^h 05^m 31^s]. **S de Luzón.** Temblor de tierra de intensidad IV-V, sentido en las Provincias de Batangas, Cavite, Rizal, Bataan, parte S de Zambales, Bulacán, Nueva Écija y N de Tayabas. Su origen se hallaba probablemente en el Pacífico al ENE de Manila cerca de la costa oriental, donde existe uno de los centros que más afectan a la capital. Es muy probable que en la cordillera del E, o Sierra Madre su intensidad pasase del grado V, mas es imposible cerciorarse de ello por no existir allí pueblo ninguno en una grande extensión. El área afectada se prolongaba unos 300 kilómetros en la dirección SW-NE y poco más de 100 en la de NW-SE.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de De Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

BULLETIN FOR FEBRUARY, 1914.

METEOROLOGICAL BULLETIN FOR FEBRUARY, 1914.

By Rev. JOSÉ CORONAS, S. J.,
Chief, Meteorological Department of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was greater than last year in all the stations of the Philippines, the greatest differences being in the stations of the Visayas and Mindanao. In Manila it was greater than the normal by 0.93 mm., and greater than the mean for February, 1913, by 0.84 mm. The highest pressure was observed generally from the 12th to the 14th, the lowest on the 1st or 2d in the S of Luzon, in the Visayas, and Mindanao, and on the 7th or the 22d in the N of Luzon.

The mean monthly temperature was slightly lower than last year in all the stations. The greatest difference was -1.1° C. in Paracale and Bolinao. The extreme temperatures in Manila were 33.1° C. on the 28th, and 16.3° C. on the 19th. The mean monthly temperature in Manila was less than the normal by 1.1° C., and less than the temperature of last February by 0.8° C. The minimum temperatures in Baguio were 10.2° C. at the top of Mirador and 9.1° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND-CLASS STATIONS FOR FEBRUARY, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from Feb., 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Feb., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		$^{\circ}$ C.	$^{\circ}$ C.	$^{\circ}$ C.		$^{\circ}$ C.	
Tagbilaran ^a	761.28	+0.97	762.55	13	759.65	2	^b 24.5	-----	^b 31.9	1	^b 17.4	11
Surigao.....	61.53	+1.28	62.92	13	59.72	2	25	-.6	30.4	20,26,28	19.6	14
Cebu.....	61.57	-----	62.87	13, 14	60.02	2	26	-----	30.9	23	21.5	24
Iloilo.....	61.29	+1.17	62.62	14	59.86	2	25.4	-.8	33.6	23	19.8	19
Ormoc.....	61.73	+1.13	63.23	14	60.27	2	25.1	-.5	33.2	3	16.6	19
Tacloban.....	62.07	+1.09	63.52	13	60.38	2	25.4	-.1	32.8	25	18.9	18
Capiz.....	62.12	+1.24	63.43	14	60.90	2	24.8	-.9	31.9	28	17.4	19
Calbayog.....	62.12	+1.27	63.62	14	60.52	2	24.4	-.5	34.5	27	16.7	19
Legaspi.....	62.25	+.90	63.69	13	60.81	2	25.4	-.6	32.2	24	16.7	19
Atimonan.....	62.52	+.84	63.98	14	61.23	1	24.7	-.7	30	20	18.3	18, 19
Ambulong, Tanauan.....	61.84	-----	63.41	13	60.62	2	25.1	-----	35.7	24	17.5	20
Paracale.....	62.63	+.65	64.21	14	61.22	1	24.2	-1.1	30.3	3	18	22
Manila.....	62.26	+.84	63.86	14	61.02	1	24.2	-.8	33.1	28	16.3	19
San Isidro.....	62.39	+.78	64.08	14	61.13	1	25	-.3	34.5	25	16.4	16
Dagupan.....	61.53	+.71	63.06	12	60.22	7	25.7	-.4	34.6	22	18.4	20
Bolinao.....	61.85	+.89	63.46	12	60.40	7	25.3	-1.1	32.5	27	16.9	13
Baguio ^c	638.45	+.35	639.55	28	637.33	22	16.2	-.8	24.2	3	10.2	21
Vigan.....	761.95	+.89	63.48	12	60.63	7	25.1	-.9	31.4	10	17.5	24
Tuguegarao.....	63.16	+.63	65.93	13	61.18	22	24	+.1	36.1	28	15.3	17
Aparri.....	63.22	+.58	66.14	13	60.96	22	22.9	-.7	30.4	23	17.6	20

^a For this station the barometric readings from February 17 to 28, and the temperature from 17 to 24 are taken from the self-recording instruments.

^b 24 days of observation.

^c The barometric readings of this station are not reduced to sea level.

Rainfall.—The scarcity of rain observed during the previous month continued also during this month. In the following table of rainfalls, it will be seen how very few were the stations that had more rain than last year or more than the February normal. The greater number of the stations had less amounts. In 12 stations there was no rain at all—7 in Luzon, 4 in the Visayas, and 1 in Palawan. In Manila the rainfall was 7.3 mm., which is greater than last year by 7.3 mm., and less than the normal by 3.1 mm. Baguio was one of the stations in which no rain fell.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF FEBRUARY, 1914.

Station.	Total.	Departure from February, 1913.	Departure from normal.	Rainy days.	Departure from February, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from February, 1913.	Departure from normal.	Rainy days.	Departure from February, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	0.5	-152.9	-91.3	1	-9	0.5	1	Sumay, Guam	102.3	+65.5		11	+1	20.3	28
Isabela, Basilan	.8	-30.5	-81.1	2	-2	.8	4	Calapan	74.5	-10.6		11	-7	23	11
Zamboanga	3.6	7.1	-49.2	1	0	3.6	4	Virac	13.8	-86.4		7	-6	5.3	13
Davao	21.5	-19.2	-109.1	2	-1	12.4	15	Nueva Caceres	5.8	-10.9	-77.6	3	-3	5.6	11
Cotabato	8.6	-78.9	-76	1	-9	8.6	3	Batangas	21.6	+17		4	0	18.6	10
Dapitan	6.3	-115.1	-113.4	3	-11	3.3	1	Atimonan	66.7	+2.5	-54.1	7	-8	26.2	11
Butuan	46.6	-157.7	-177.8	10	-7	14.7	3	Ambulong, Tanauan ^b	2.3					2.3	4
Dumaguete	9.7	-55.3		3	-5	7.9	12	Silang	16.8	-7	-3.2	4	-2	7.6	14
Yap, W. Carolines	229.8	+145.6		21	+7	125.5	7	Paracale	123.8	-85.6		11	-6	33.3	10
Tagbilaran ^a	0							Santa Cruz, Laguna	22.4	-1.9		5	-9	13.2	26
Iwahig	0			0		0	0	Manila	7.3	+7.3	-3.1	4	+4	3.3	14
Surigao	82.7	-280.9	-293.1	11	-11	18	14	Antipolo	3	+2.2		1	0	3	11
Maasin	10.2	-126.7	-158.7	1	-4	10.2	14	Iba	0	-10.2		0	-1	0	0
Cebu	5		61	2		3	14	San Isidro	.6	0	-4.4	2	0	.3	14, 27
Iloilo	0	-15.3	-26.4	1	-1	0	0	Tarlac	.3	+3	-8.5	1	+1	.3	26
San Jose Buenavista	0	-1.8	-12.4	0	-1	0	0	Baler	239.6	+133.8	+105.8	18	-2	49	4
Cuyo	0	-1.3	-12.8	0	-1	0	0	Dagupan	0	-12.4	-17.6	0	-2	0	0
Ormoc	2.5	-68.4	-90.6	3	-8	1.1	14	Bolinao	72.1	+70.8	+63	4	+3	41.1	7
Guiuan	41			6		19	28	Baguio	0	-40.3	-14.3	0	-4	0	0
Tacloban	12.1	-305.1	-192.5	6	-7	5.1	14	San Fernando, Union	0	+6	-5.5	0	-2	0	0
Capiz	1.9	-30.1	-97.8	2	-6	1.1	13	Echagüe	9.7	+3.1		6	+3	3.8	9
Borongon	72.4	-465.6	-334.9	11	-13	20.8	9	Candon	14	+14	+7	1	+1	14	7
Calbayog	4.4	-151.6	-159.4	2	-15	2.3	11	Vigan	0	0	-1.6	0	0	0	0
Masbate	6.4	-115.1	-140.1	3	-7	3.1	13	Tuguegarao	0	-16	-17.6	0	-4	0	0
Romblon	59.1	-18.4	-7.8	5	-6	29.5	12	Laog	0	0		0	0	0	0
Batag	28.7			2		16	28	Aparri	72.1	+7.5	-20.5	13	+4	23.9	24
Gubat	81.6		-185.6	7		42.2	28	Santo Domingo, Ba-							
Legaspi	42.6	-140	-237.5	7	-9	15.5	11	tanes	159.4	+ .7	+38.8	13	0	67.6	23

^a 16 days of observation.^b 24 days of observation.

DEPRESSIONS AND TYPHOONS.

During the whole of the month there was no depression or typhoon of any importance for the Philippines.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes resulta para todas las estaciones de Filipinas mayor que la del año pasado, correspondiendo las diferencias más notables a las estaciones de Visayas y Mindanao. La de Manila difiere de la normal de este mes en $+0.93$ mm., y de la media de Febrero, 1913, en $+0.84$ mm. Las presiones más altas se observaron generalmente del 12 al 14: las más bajas tuvieron lugar el 1 ó el 2 en el S de Luzón, en Visayas y Mindanao, y el 7 ó el 22 en el N de Luzón.

La temperatura media mensual es para todas las estaciones algo menor que la del año pasado. La diferencia más notable es -1.1° C. y corresponde a las estaciones de Paracale y Bolinao. Las temperaturas extremas de Manila fueron 33.1° C. y 16.3° C. registradas respectivamente los días 28 y 19. La temperatura media mensual de Manila se diferencia de la normal de este mes en -1.1° C. y de la de Febrero, 1913, en -0.8° C. Las temperaturas mínimas observadas en Baguio fueron 10.2° C. en la cumbre del *Mirador* y 9.1° C. en el valle.

Precipitación acuosa.—Continuó este mes la falta de lluvia observada en el mes anterior. En la tabla de lluvia que según costumbre acompaña el texto inglés se echa de ver cuán contadísimas son las estaciones que tuvieron un total de lluvia mayor que la del año pasado o mayor que la normal de Febrero. La gran mayoría de las estaciones nos dan para ambas comparaciones diferencias negativas. Doce son las estaciones en que no llovió absolutamente nada en todo el mes—7 en Luzón, 4 en Visayas y 1 en la Paragua. En Manila se recogieron 7.3 mm. de agua, cantidad que difiere de la del año pasado en $+7.3$ mm. y de la normal de Febrero en -3.1 mm. Baguio es una de las estaciones en que no llovió nada.

DEPRESIONES Y TIFONES.

En todo este mes de Febrero lo mismo que el mes anterior no ha habido necesidad de anunciar ninguna depresión o tifón que fuese de importancia para Filipinas.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Air temperature. ^b				Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.		Evaporation. ^b			
	Pressure (mean).	Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.	8 a.m.				
					°C.		°C.				°C.	°C.				
1	761.02	25.2	31.1	21.4	25.8	27	26.6	26.8	27.3	28	75	17.7	18.6	41.8	4.9	3.8
2	61.12	23.7	28.6	19.2	25.7	26.5	26.7	26.8	27.3	27.8	76.3	16.6	15.9	38.8	3.2	2.5
3	61.66	23.9	28.8	19.1	25.3	26.5	26.5	26.8	27.3	27.8	79.2	17.5	16.3	47.1	3.2	2.4
4	61.48	24.6	28.8	21.9	25.6	26.5	26.5	26.5	27.3	27.9	81.7	18.7	18.7	46.6	2.7	2.2
5	61.49	25.4	32.2	20.5	25.5	27	26.4	26.7	27.3	27.8	71.4	16.7	18.2	53.5	7	5.2
6	61.74	24.4	31.9	18.1	25	26.7	26.3	26.8	27.3	27.7	70.6	15.7	14.6	53.9	6.4	4.8
7	61.47	23.4	29.6	19	25.8	26.3	26.6	26.6	27.2	27.9	78.3	16.6	15.5	42.6	3.2	2.7
8	61.85	24.2	31.2	18.4	25.1	26.4	26.4	26.5	27.2	27.9	72	15.8	15.4	52.6	5.6	4.1
9	62.32	25.1	32.4	20	25.7	27.2	26.5	26.7	27.3	27.8	74.9	17.4	16.7	52.2	5.8	4.1
10	62.41	24.6	28.7	21.9	26.2	26.5	26.7	26.9	27.2	27.8	73	16.6	18.4	45.9	4.1	3.4
11	62.83	24.6	31.5	20.4	25.5	26.6	26.7	26.8	27.2	27.9	75.8	17.3	17.7	58.5	4.1	3.2
12	63.43	23.7	29.1	20.9	25.7	26.5	26.7	26.8	27.2	27.8	76.2	16.5	18.2	39.2	3.5	2.7
13	63.81	23.3	29.3	19.5	25.3	26.3	26.5	26.6	27.2	27.8	77.2	16.2	16.2	47.1	2.6	2.4
14	63.86	22.9	28.4	19.3	25.2	25.9	26.4	26.4	27.2	27.7	81	16.8	16.3	48.1	1.8	1.9
15	63.23	23.3	31.5	18.2	24.9	25.6	26.2	26.2	27.2	27.8	74.2	15.5	15.2	46	5.2	4.1
16	63.09	23.7	31.2	16.9	24.5	25.8	26	26.1	27.2	27.9	66.4	14	13.2	50.8	6.3	4.8
17	62.96	23.4	31.9	17.2	24.5	25.7	25.9	26.1	27.1	27.7	70.2	14.7	13.7	49.8	5.3	4.2
18	62.74	23.9	32	17	24.5	26.1	25.9	26.1	27.2	27.8	67.9	14.8	13.2	50.3	6.5	4.8
19	62.58	23.8	32	16.3	24.7	26.4	26	26.1	27.1	27.7	69.7	15.1	12.2	50.3	6.3	4.7
20	62.08	24.7	32.4	17.4	25.1	26.8	26.2	26.5	27.1	27.8	68.6	15.4	12.7	53.9	7.9	5.7
21	61.71	24.1	31.8	17.3	25.5	27	26.4	26.9	27.1	27.7	71.7	15.6	13.7	53.8	6.4	4.7
22	61.16	24.6	32.3	17	25.7	27.5	26.6	27.4	27	27.6	66.6	14.6	13.2	52.8	7.5	5.6
23	61.68	24.5	30.8	18.3	26.5	27.4	26.8	27	27.2	27.8	74.1	16.8	14.2	51	5.7	4.1
24	61.62	24.6	32.4	18.4	26.5	28	27.1	27.2	27.1	27.9	75.1	17.1	14.3	52	5	3.5
25	61.48	24.9	32	19.5	26.8	28.5	27.3	27.7	27	27.8	76.1	17.5	16	51.3	5	3.6
26	62.55	23.7	28.2	19.4	27.1	27.5	27.4	27.7	27.1	27.8	80.6	17.5	15.9	40	2.6	2.2
27	62.83	24.8	32.4	20	26.5	27.3	27.2	27.4	27.1	27.8	73.5	16.8	17.1	58	5.6	4.2
28	63.16	24.9	33.1	17.4	25.8	27.3	27	27.1	27.1	27.7	69.7	15.8	14.3	54.8	6.7	5
Mean Total	762.26	24.2	30.9	18.9	25.6	26.7	26.6	26.8	27.2	27.8	73.8	16.3	15.6	49.4	5	3.8
Departure from normal	+0.93	-1.1	+0.1	-1.4							-0.1	-1.2				

Day.	Wind.				Amount (mean).	Clouds.		Sunshine.	Rain, 24 hours beginning midnight.	Miscellaneous.
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.		Form and direction.				
						Upper.	Lower.			
1	SE quad.	195	16.5	SE	6.2	A.-Cu.	Cu.	E	5 50	
2	ESE	128	10	ESE	7.7	A.-Cu.	Cu.	E	0 50	
3	SE	104	17	SE	8.8	A.-Cu.	Cu.-N.	E	1 45	
4	E	167	18.5	E	8.6	A.-Cu., Ci.	Cu.	E	1 00	0.6
5	ESE	284	26	ESE	6.2	Ci.	Cu.	E	8 50	
6	SE	252	23	SE, SSE	3	Ci.	Cu.	E	9 05	
7	E quad.	152	15	WNW	7.4	A.-Cu.	Cu.	E	2 45	d° p.
8	SE	160	16	SSE	7.7	Ci.-S.	Cu.	E	5 05	≡° a.
9	SE, ESE	172	16.5	W	5.3	Ci.	Cu.	E	7 40	
10	NNE	147	20	NNE	9.1	Ci.-S.	Cu.	E	0 55	
11	E quad.	111	15.5	W	8.6	A.-Cu., Ci.-S.	Cu.	E	4 40	d° a.
12	N	166	13	SSE	8.2	A.-Cu.	Cu.	E	1 15	
13	ESE, ENE	105.5	9.5	NW, ESE	8.7	A.-Cu.	Cu.	E	2 45	1.9
14	ENE	137.5	12.5	ESE, ENE	7.6	A.-Cu.	Cu.	E	3 30	3.3
15	ESE	195.5	21	ESE	5.5	A.-Cu.	Cu.	ESE	6 35	●° p.
16	E quad.	229.5	22	SE	4.9	Ci.	Cu.	E	8 50	●° a. d° p.
17	ESE	199.5	17.5	ESE	5.9	A.-Cu.	Cu.	ESE	5 40	
18	SE	256.5	25.5	SSE	1.9	Ci.	Cu.	E	9 40	
19	SE	227.5	21	SEbyS	3	A.-Cu.	Cu.	ESE	10 10	
20	SE	304.5	26	SE	3.5	Ci.	Cu.	E	10 50	
21	SE	260	24	SE	3.8		Cu.	E	9 25	
22	SE	212.5	25	SE	6		Cu.	E	10 25	
23	W quad.	226	21	WNW	2.9	Ci., Ci.-S.	Cu.	E	9 50	≡° a.
24	W quad.	184	16	WNW	1		Cu.	E	9 50	
25	SW quad.	137.5	16	S	2.5	Ci.	Cu.	E	8 45	
26	E quad.	126.5	15.5	NE	8.4	Ci.	Cu.	E	1 55	1.5
27	ESE	212	22	ESE	5.3	Ci.	Cu.	E	7 05	d p.
28	SE	208	22.5	NW	5.8	Ci.	Cu.	E	9 10	
Mean Total		187.7	18.7		5.6				6 13	
Departure from normal		-134.3			+0.7				-23 49	-3.1

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pres- sure ^b (mean).	Air temperature at Mirador (on the top of the mountain).					Air temperature in the valley (near the city hall).					Relative humid- ity (mean).	Vapor pres- sure (mean)	Radiation.			Evaporation.	
		Mean.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Mini- mum on grass.			Maxi- mum in sun. Black bulb in va- cuo. ^c	Free expo- sure (total)	Shel- ter (total)		
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.	mm.	°C.	°C.	mm.	mm.			
1	637.76	16.3	22.4	0.50p.	13.5	6.25a.	22.4	0.30p.	13.2	6.50a.	91.8	12.6	12.4	45.2	1.9	1.4		
2	37.70	16.6	22.2	0.10p.	12.7	6.35a.	23.3	3.30p.	12.3	6.30a.	87	12.2	10.3	46.6	2.4	1.4		
3	38.22	17.2	24.2	11.30a.	13.7	4.45a.	24.6	0.25p.	12.3	7.00a.	75	10.8	11.2	43	6.5	3.6		
4	37.88	17	23.8	11.30a.	13.6	4.00a.	24.4	Noon.	13.4	5.50a.	79.7	11.5	11.6	44.9	4	2.4		
5	38.26	16.3	22.8	11.15a.	13.1	6.40a.	24.5	11.55a.	12.6	6.30a.	87.3	11.8	12	44.6	2.5	1.4		
6	38.28	16.7	23.2	0.50p.	13	5.35a.	23	2.55p.	12.5?	6.30a.	83.2	11.6	9.2	45.5	3	1.9		
7	37.49	16.5	22.8	0.05p.	12.7	4.30a.	22	11.15a.	12	6.55a.	81.8	11.3	11.6	45.7	2.6	1.6		
8	38.21	16.1	21.2	0.05p.	13.3	5.40a.	23.7	0.20p.	12.4	6.00a.	86	11.6	11.2	36	1.6	1		
9	38.70	16.2	23.7	1.40p.	12.5	3.15a.	24.5	1.15p.	11.5	6.30a.	84.7	11.5	10.7	47	4.6	2.6		
10	38.70	16.5	23	10.25a.	12.3	6.55a.	23.3	10.50a.	11.3	6.30a.	80	11	11	41	3.4	2.3		
11	39.21	16.4	23.6	11.15a.	12.7	5.55a.	24.5	11.25a.	11.5	6.30a.	71	9.7	10.4	46.6	6.5	4.3		
12	39.24	15.8	22.8	0.50p.	12.2	5.10a.	22.6	2.00p.	9.6	6.35a.	66.2	8.8	9.6	43.5	6.9	4		
13	39.22	15.5	23.3	11.10a.	10.7	6.20a.	22.4	11.00a.	9.4	6.05a.	72.2	9.3	9.6	44	5.3	2.9		
14	39.15	14.8	20.8	10.05a.	11.2	5.20a.	20.6	10.00a.	10.5	6.00a.	80	9.9	9	42.1	3	2.2		
15	38.95	15.1	21.3	0.45p.	11.6	3.40a.	22.3	11.10a.	11.2	6.00a.	82.2	10.3	10.2	43.2	3.6	2.2		
16	38.92	15.9	23.2	11.20a.	12.2	5.00a.	23.5	11.15a.	10.6	6.40a.	72.7	9.6	10.6	46.9	8.3	4.2		
17	38.89	16.4	23.7	11.05a.	12.2	5.25a.	24.4	Noon.	10.3	6.00a.	68.2	9.5	10.6	47.2	5.6	3.3		
18	38.88	16.5	23.1	0.20p.	12.2	4.15a.	23.1	1.25p.	10.7	5.20a.	80.7	11	10.3	43	3.5	2		
19	38.72	16	23	1.30p.	11.3	6.35a.	23.8	1.15p.	10.9	6.30a.	80.5	10.8	10.6	44.8	6.2	3.2		
20	38.32	17.4	23.1	2.50p.	14	12 m. n.	24.6	2.00p.	10.1	6.35a.	65.8	9.8	9.7	44	5	3.1		
21	38.05	16.2	22.2	0.55p.	10.2	5.00a.	23.9	11.45a.	9.9	6.30a.	83.5	11.4	11.5	44.2	4.2	2.4		
22	37.33	16.4	22.8	0.30p.	12.2	4.35a.	23.9	11.35a.	11.4	6.40a.	75.3	10.2	11.7	44.8	5.9	2.9		
23	38.12	15.7	23.5	1.15p.	11.7	6.25a.	23	2.40p.	9.1	7.00a.	77.5	9.8	9.5	45.4	5.2	3.2		
24	37.95	15.6	22.2	1.30p.	12	6.25a.	22.1	1.20p.	10.8	6.30a.	78.3	10.3	9.2	47.3	3.7	2.4		
25	37.68	15.8	23.1	1.35p.	12	6.55a.	22.3		11.2	6.40a.	73.5	9.6	9.3	45.4	5.7	3.7		
26	38.20	15.2	20.8	1.05p.	12.5	6.35a.	21.2	1.30p.	11.2	6.35a.	86.8	11.2	11	35	3.8	1.7		
27	38.90	16	23.1	11.30a.	12.4	6.10a.	23.5		12.2	7.00a.	83.8	11.2	11.2	42.2	3.6	1.8		
28	39.55	16.9	23.4	1.25p.	12.5	6.35a.	24.4		11.5	6.40a.	77.8	10.9	10.2	45.7	4.5	2.7		
Mean	638.45	16.2	22.8		12.4		23.3		11.3		79	10.7	10.6	44.1	4.4	2.6		
Total															123	71.8		

Day.	Wind.				Clouds.		Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.	
	Prevailing direction. ^d	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	Amount (mean). 0-10.	Form and direction.				
						Upper.				Lower.
1	NE, W	252.2	24.4	W	7.3	Ci.	Cu. WNW	7 05	Q2 = a. = d p.	
2	E, W	268	20.3	W	7		Cu.-N. SSE	5 50	D2 a. = a. p.	
3	SE, E	445.1	39.2	E	2.4	Ci.	Cu. S	9 15	D0 = a. p.	
4	E	481.3	44	E	4.7	Ci.	Cu. S	6 25	O a. = p.	
5	E	376.4	24.1	W	6.3	Ci.	Cu. E	6 25	D a. = p.	
6	W quad.	311.5	29.3	NW	5.1	Ci.	Cu. W	8 50	D2 a. = a. p.	
7	W	363.8	22.3	W	5.7	Ci.	Cu. SE		L2 = a. = p.	
8	W, NW	270.2	21.9	W	8.1	Ci.	Cu. N, NNE	4 40	L2 = a. = p.	
9	E quad.	347	26.6	SW	4.4	Ci.	Cu. NNW	8 10	L2 = a. = p.	
10	E, W	363.5	27.4	SE	5.6	Ci.	Cu.	5 30	D2 = a. = p.	
11	NE	374.4	29	W	2.9	Ci.	Cu. NW, NNW	8 40	D = p.	
12	W	391.1	27.2	W	2.4	Ci.	Cu. S	8 25	O a.	
13	E	407.3	25.7	E, W	3.7	Ci.	Cu. S, SW	7 05	= p.	
14	E	291.7	23.6	SE	6.9	Ci.	Cu. S	4 30	D0 a. = p.	
15	E	433.2	32.5	SE	6.1	Ci.	Cu. S	6 45	D a.	
16	E, W	467.3	29.3	W	3.6	Ci.	Cu.	8 45	D0 = a.	
17	E, SE	421.5	28	SE	3.6		Cu. S	8 15	D0 a. = p.	
18	SE, W	303.8	22	W	6.3	Ci.	S.-Cu. E	6 00	D2 a. = p.	
19	E quad.	364.9	26.2	E	2		Cu. NNW, ESE	8 00	= p. = a. p.	
20	E, SW	350	25.2	SE	1		Cu.	8 25	= p. = a. p.	
21	SE, W	277.3	26.4	SW	4.9		Cu.-N. ESE	3 30	L2 = a. = p.	
22	E, W	419.5	31.1	W	3	Ci.	Cu. WSW	4 00	= p. = a. = p.	
23	E, W	374.7	31.9	W	2.9	Ci.	Cu. W	4 30	= p. = a. = p.	
24	W	323.6	26	W	4.6	Ci.	Cu. WSW	1 50	D = a. = p.	
25	W	361.4	31.6	SW	1.7	Ci.	Cu. WSW	4 00		
26	E, SW	412.9	31.6	E	7.9	Ci.	Cu. ESE	0 15	=2 p.	
27	E, W	477.2	39.6	E	7.3	Ci.	Cu. SSE	1 40	D a. = p.	
28	E	340.8	22	W	3.4	Ci.	Cu.	2 45	D a.	
Mean		366.8	28.2		4.7			5 54		
Total		10,271.6						159 30 ^e	0	

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions.
^e 27 days of observation.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, FEBRUARY, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo	0.5															
Isabela, Basilan				0.8												
Zamboanga				3.6												
Davao			9.1												12.4	
Cotabato			8.6													
Dapitan	3.3	1.5											1.5			
Butuan	3.3	3.3	14.7	.6						3.3		0.5	3.8		.8	
Dumaguete												7.9	.8		1	
Yap, Western Carolines		19	.5	4.1	1.3	2	125.5	15.2		23.6	0.3	2.3	1.8	.5	1.5	4.3
Tagbilaran																
Iwahig																
Surigao		14.8	8.4	4.1					7.3	5.6	2	12.4		18	1	
Maasin														10.2		
Cebu				1										3		
Iloilo																
San Jose Buenavista																
Cuyo												.6		1.1		
Ormoc												.5		3		
Guiuan				4.1						.2		.8		5.1		
Tacloban	.5									.3		.8		5.1		
Capiz													1.1	.8		
Borongan						1.5	1	5.3	20.8		1.8	1	5.3	16.5		.5
Calbayog											2.3					
Masbate											1.8		3.1	1.5		
Romblon										.8	12.2	29.5		.3		
Batag											12.7					
Gubat						4.8					19.1	5.1	10.4			
Legaspi				.8					3.8		15.5	11.5	.3	1.3		
Sumay, Guam				4.6					1.3	1.3			19	17.8	11.4	3.8
Calapan				5.1						4.1	28	8.6	6.4	.3	1	
Virac			1.3	2						.5	3.1	.8	5.3	.3		
Nueva Caceres										.1	5.6	.1				
Batangas				.5						18.6	.5		2			
Atimonan			4.3							3.8	15.3	26.2	9.4	.3		
Ambulong, Tanauan				2.3												
Silang			1.3	3.3										7.6		
Paracale			6.3	2.6						1	33.3	3	6.6	26.8	27.2	
Santa Cruz, Laguna				1.9						.1			3.6	3.6		
Manila				.6									1.9	3.3		
Antipolo											3					
Iba																
San Isidro															.3	
Tarlac																
Baler	2	5.1	5.1	49	21.3	8.7	1		3		.8		1.3	37.1	1.8	11.4
Dagupan																
Bolinao								41.1							.3	
Baguio																
San Fernando, Union																
Echague	3		.8			.8			3.8	.5						
Candon							14									
Vigan																
Tuguegarao																
Laog																
Aparri	1.5	1.1	2	.3	12.8	2.8			7.6	.8	1.6	18	3.3			
Santo Domingo, Batanes	13.4	4.3	2.3			8		24.3	2.3		2.5					

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, FEBRUARY, 1914.

Station.	Day of month.												Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Jolo													0.5
Isabela, Basilan													.8
Zamboanga													3.6
Davao													21.5
Cotabato													8.6
Dapitan													6.3
Butuan						14.5						1.8	46.6
Dumaguete													9.7
Yap, Western Carolines	9.4			1.5	2.8	6.3		6.9	0.5			5	229.8
Tagbilaran													0
Iwahig													0
Surigao				1.5	5.3							2.3	32.7
Maasin													10.2
Cebu												1	5
Iloilo													0
San José, Buenavista													0
Cuyo													0
Ormoc												.8	2.5
Guiuan											14.2	19	41
Tacloban											.5	4.6	12.1
Capiz													1.9
Borongán											1.5	17.2	72.4
Calbayog												2.1	4.4
Masbate													6.4
Romblon												16.3	59.1
Batag												16	28.7
Gubat												42.2	81.6
Legaspi												9.4	42.6
Sumay, Guam			7.6	3.8	11.4							20.3	102.3
Calapan					.9			7.9		4.1	8.1		74.5
Virac						.5							13.8
Nueva Caceres													5.8
Batangas													21.6
Atimonan									7.4				66.7
Ambulong, Tanauan													2.3
Silang											4.6		16.8
Paracale									4.6	1.5	.8	10.1	123.8
Santa Cruz, Laguna										13.2			22.4
Manila										1.5			7.3
Antipolo													3
Iba													0
San Isidro												.3	.6
Tarlac											.3		.3
Baler	22.8								6.4	27.2	35.3	.3	239.6
Dagupan												30.7	0
Bolinao													72.1
Baguio													0
San Fernando, Union													0
Echagüe												.8	9.7
Candon													14
Vigan													0
Tuguegarao													0
Laog													0
Aparri							5.6	23.9		3.6			72.1
Santo Domingo, Batanes							67.6	4.7	8.9	1.5	3.8	3	159.4

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, FEBRUARY, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Dapitan.		Butuan.		Dumaguete.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	27.9	21.4	31.6	22.6	30.1	22.6	30.7	18.4	34.6	19.1	30.3	23.3	26.5	21.2	29.3	23.2
2	29.2	20.4	31.8	21.4	30	22	29.7	21.9	33.4	20.8	29.6	22.3	25.8	20.6	30.4	21.6
3	29.9	22.3	33.2	21.3	30	22	31.2	22	34.2	22.1	29.6	23.8	26.5	23.2	29.4	24.7
4	30	22.2	33.4	23.5	31	23.6	29.7	22.5	36.2	21.8	30.6	24.8	27.7	23.4	27.8	23.7
5	29.5	22.3	33.1	22.7	29.6	23	30.7	22.6	34.6	22.3	30.6	25	27.1	21.8	28.8	23.9
6	30.2	21.7	32.1	21.6	30	21.5	31.7	21	34.6	20.6	30.8	24.3	28.3	20.2	28.3	22.8
7	29.8	20.8	33.1	20.3	29.6	20.9	30.2	19.3	36.1	19.1	30.4	23.7	27.3	19.3	27.8	22.2
8	28.9	21	32	19.6	30.4	20.9	30.7	19.5	34.7	18.7	28.6	22.5	26.5	18.7	28.6	19.8
9	29	20.6	39.6	20.6	28	21.5	28.2	21.3	34.7	21.2	30.4	22.5	27	20.7	29.1	20.7
10	29.7	22.5	34.4	20.8	31.5	22.4	32.2	21.5	35	22	30.6	23.8	27	22.8	28.6	21.2?
11	29.8	22.4	33.3	21.5	31	22	32.2	21.5	33.8	22.6	30.9	22.8	27.9	21.5	29.4	21.8?
12	29.6	23.1	32.8	20.9	30.9	20.2	30.2	21.5	35.3	22.4	30.5	21.3	27.2	20.6	27.6	22.2
13	29.4	19.9	32.2	20.6	30.1	22.1	30.2	20.2	32.5	21.2	30.2	23.3	26	21.5	28.4	23.1
14	29.3	19.9	33.1	20.3	29.5	21.2	31.3	19.3	35.6	20.1	28.9	23.5	27.6	19.9	28.6	22.5
15	30.6	19.8	32.8	20.1	30.4	21.1	30.5	18.8	34.8	19.7	31.1	21.9	27.5	21.6	27.6	22
16	29.9	19.3	31.2	20	28.9	22.4	30.2	20.5	35.5	21.3	-----	24.1	28.5	19.6	29.3	21.3
17	29.9	20.9	35.1	19.9	31.1	20	33.2	18.9	35.1	20.3	30.5	23.1	29.1	19.6	29.8	20.4
18	31.2	20.3	31.9	-----	31.5	20.1	33.2	21.5	35.6	20.5	30.1?	23.7	29.6	20.3	28	23.6
19	30	20.8	32.5	21.1	30.5	20.9	32.2	20	36.9	20.7	30.4?	22	29.2	22.4	29	20.7
20	29.8	20	32.4	19.5	30	21.2	33.7	22.3	36.9	23.3	31.6	22	29.3	20.9	27.4	20.5
21	29.6	20.2	31.2	20.9	30.3	21.5	32.1	18.5	36.3	20.3	30.8	20.1	29.3	18.6	29	21
22	29.9	19.7	32.6	19.3	30.6	-----	30.7	21.9	35	20.1	30.7	23.5	27.5	22	27.8	22.8
23	30	19.4	32.2	20.5	29.5	21.1	33.7	21.2	34.3	20.5	-----	20.8	29	21.7	28	21.4
24	29.4	18.5	31.8	20.9	29.4	21.4	34.2	21.3	34.7	21.7	32.9	19.3	29.2	21.3	28.4	21.7
25	30.2	20	34	21.3	29	20	32.9	21.1	36.6	22.9	32.7	20.1	29.7	22.6	28.9	21.1
26	30.6	19.4	32.2	22.1	29.5	21.1	34.7	21.5	34.6	22.1	31.6	20.6	29.8	22.3	28.7	20.6
27	32.2	20.6	32.8	20.1	30.6	21.5	33.7	20.8	34.6	20.7	31.5	23.1	27.7	19.5	28.6	22
28	31.8	20.1	34	21.1	29.4	21.9	32.7	19.4	35.5	21.3	31.6	24.8	29	20.9	29	23.3
Mean	29.9	20.7	32.6	20.9	30.1	21.5	31.7	20.7	35.1	21	30.7	22.7	28	21	28.6	22

Day.	Yap, Western Carolines.		Tagbilaran. a		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San José Buenavista.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.7	24.6	31.9	20.7	31.7	19.3	28.8	21.8	29.8	23	29.3	23	29.3	22.4	33.3	19.7
2	31.2	24.5	30.6	19.2	31.2	19.2	28.7	21.4	29	20.8	29.6	22.6	29.5	21.5	33.2	18.6
3	31.2	22	31.3	23	32	19.2	26.7	23.5	29.4	22.4	30	22.8	29.4	21.9	32.8	19
4	30.6	23.7	31.2	21.4	30.8	20	26.8	24.1	30.4	22.5	29.4	23.9	30.1	21.9	32.7	18.6
5	30.7	24	31.8	20	31.9	21.2	29.2	22.9	29.5	23.8	28.1	23.1	29.2	23.4	35.2	20
6	30.4	23.5	31.1	19.4	31.5	19.3	29.5	23.4	29.4	21.2	30	22.9	30.5	22	33.2	18.1
7	29.7	23	29.9	18.3	31.2	19	28.6	20.6	29.3	19.6	29	22.5	29.6	21.1	33.8	17.4
8	30	22.7	30.2	19.2	30.6	18.4	28.8	19.7	29	20.2	29.1	22.6	30.1	21.8	31.9	18.8
9	30.8	23.3	30.1	19.7	31.7	18.1	28.2	21.3	29.6	21.4	29.5	22.3	29.8	20.2	32	17.8
10	30.2	23.2	29.9	20.5	31.3	17.3	28.3	22	29.5	21.9	29	23.7	29.1	21.5	32.3	17.5
11	30.2	22.5	29.2	17.4	31.7	18.9	29.6	20.3	28.6	21.2	29.5	22.5	29.5	21.4	32.3	18
12	30.4	24.1	29.8	18.8	31.5	20.3	27.3	22.3	29	21	29.5	23	30.1	22.4	32.4	20
13	29.7	23	29.7	19.5	31.5	20.4	27.9	21.7	28.8	23	28.8	23.5	28.5	22.3	33.2	19.6
14	29.6	24	30.8	17.7	31.5	19.5	28.4	19.6	28.5	20	28.4	21.7	29.4	21.2	32.6	18.1
15	30.7	23.3	30	19.4	31.2	20.1	27.9	21.8	30	21.2	29	21.9	29.9	21.4	33.6	18.7
16	30.7	23.5	31	18	31.1	20	29	19.7	29.8	22.8	28.5	22.4	28.9	21.6	33.8	18
17	29.2	23	30.2	17.5	31.2	18.6	29.7	19.7	30.5	22.4	29	22	30.1	20.9	32.8	20.6
18	30.7	23.7	30	19.4	31.3	16.8	30.2	21.2	30.6	22.4	29	22.8	29.5	21.5	32.4	19
19	31.7	22.6	29.5	19.2	31.5	18.7	29.3	20.9	30	20.9	29.4	22.3	30.1	19.8	32.2	19.6
20	31	22.3	29.6	19	30.6	18.3	30.4	19.9	30	23	29.5	23	30.1	20.7	32.3	19.1
21	30.6	23.1	30	18	30.9	17.8	27.2	21	29.5	21.4	30.7	22.4	30.1	20.8	33.3	19.8
22	30.6	24	30.3	20.7	31.2	17.3	29.9	22.2	28.6	21.2	30	23.5	29.9	21.3	33.8	19
23	31.7	23.5	29.8	19.9	32.4	16.8	28.9	20.8	28.9	21.3	30.9	22.5	33.6	20.9	33.8	20.6
24	31.6	24	29.8	19.8	31.9	17.5	29.4	21.4	28.8	20.4	30	21.5	32.5	21.1	32.2	20
25	30.4	23.3	-----	-----	31.7	15.9	29.2	21.7	29	22.8	30	23	30.9	20.4	33.6	19.5
26	31	24.3	-----	-----	31.5	17.4	30.4	20.2	29.5	21.9	29	22.9	30.4	20.5	33.7	18.6
27	30.9	23.5	-----	-----	31.5	17.9	29.7	20.3	30	22.6	29	23	30	22	34.2	18
28	31.4	24	-----	-----	32.3	18.1	30.4	23.6	29.4	23	30	24	29.6	23.2	33.8	19
Mean	30.7	23.4	-----	-----	31.4	18.6	28.9	21.4	29.4	21.8	29.4	22.8	30	21.5	33.1	19

a For this station, the maximum and minimum temperatures from February 17 to 24 are taken from a self-registering apparatus.

Maximum and minimum temperatures at the stations of the Weather Bureau, February, 1914—Continued.

Day.	Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.9	23.6	32.1	20.8	28.9	23.5	30.6	20.9	30.3	21.9	29.6	19.6	32.3	20.2	31.4	22.2
2	29.8	24.3	31.1	19.3	29.2	24.3	31.2	21.2	29.8	21.4	29.5	20	33.4	18.7	31.5	23
3	29.7	24.5	33.2	20.6	29.5	24.3	31.6	22.2	30.9	21.6	29.9	21.6	32.6	18.7	31.4	21.8
4	30.5	24.3	31.7	25	29.4	25.4	30.6	22.6	30.4	23.1	30.6	24.5	32.9	20.5	31.8	24.2
5	29.6	24.6	31.1	24.5	29.8	23.5	31.5	22.7	30.5	23.9	30	24.4	31.7	21.3	30.5	24.7
6	29.6	24.2	32.2	21.1	30.2	24.4	31	21.2	30.6	23	29.8	19.7	32.5	20.5	32.2	23.8
7	29.2	24.1	30.9	18.8	29.3	23.2	30.8	21.1	29.7	21.3	29.1	19.6	32.5	18.7	30.5	22
8	30	22.1	30.4	18.4	29.7	23	31	20.5	29.7	21.2	29.2	20.1	31.9	18.6	31.5	
9	29.3	22.1	29.9	19.4	29.2	23.7	30.8	22	30.9	20.1	29.4	22.3	33.5	20.4	31.6	21.2
10	30.4	24.5	32.1	20.9	29.7	24.3	31	21.7	29.1	21.4	29.3	22	32.7	20.5	29.5	21.5
11	29.7	24.4	29.8	18.1	29.5	22.5	30.6	20.5	30.1	21	29.1	18.9	30.5	18.1	32	21.6
12	30.4	24.4	31.2	21	29	23.4	28.5	22.6	30.2	23	29.3	22.4	32.8	21.2	28.8	22.4
13	29.6	23.9	31.5	19.4	28.7	24.3	30.3	20.5	29.7	23.4	28.2	22.4	32.1	18.7	30	22.4
14	29.7	23.9	29.4	18.9	29.4	22.8	27	21.1	28.9	21.9	27.2	20.2	27.9	20.1	28.4	21.8
15	30.5	21	32.4	21.7	29.2	22.2	31.6	20.2	29.8	22.8	29.1	23.8	33	18.7	29.4	
16	29.9	23.6	31.9	20.9	29.7	22.6	30.5	19.3	29.6	21.4	29.2	18.2	31.7	17.4	30.2	21.67
17	30.4	23.5	32	18.6	29.9	23.4	31	19.2	30.3	19.9	29.4	19	30.8	17	30.4	21.6
18	29.9	22.7	30.4	17.4	29.9	20.9	31.4	18.9	30.2	20.6	29.4	18.2	31	17.9	31.2	22.4
19	30	22.8	30.8	16.6	29.8	19.7	32	20	29.7	17.4	29.7	17	31.6	16.7	30.6	20.8
20	30.2	23.5	31.7	18.1	30.1	23.6	30.8	21	30.8	20.2	29.5	19.4	32.2	18.4	31.6	22.6
21	29.5	22.9	30.4	17.5	29.2	23.7	32.2	21.1	31	21.3	29.5	19.5	32.6	17.8	30.8	21.5
22	31.5	24	30.8	18.1	30.3	23.3	30.7	21	31.2	21.4	29.6	17.5	30.6	18.9	31.5	21.2
23	30.3	22	30.2	18.1	31	20.1	31.6	19.8	31.2	19.9	29.6	18.4	30.8	18.1	31.8	22.5
24	29.9	24.1	30.7	17.3	30.8	21	32.4	20.7	31.3	20	30.5	19.2	32.3	19	33.6	22.4
25	30.5	24.5	30.9	17.8	30	20.5	32.8	21.6	31.4	21.1	29.6	19.2	31.6	18.7	32.4	23.4
26	30.5	22.4	30.1	16.8	29.9	22	31	20.4	31.7	19.3	30.1	17.5	30.9	18	33.5	22.6
27	30.7	21.2	32.2	19.7	30.5	24.2	31.5	21.7	31.3	21.6	30.1	19.4	34.5	18.2	32	24.2
28	31.7	24.3	29	23.3	29.8	22.7	29	22.6	31.9	22.7	27.9	22.4	29.8	21.6	31.8	25.2
Mean	30.1	23.5	31.1	19.6	29.7	23	30.9	21	30.4	21.4	29.4	20.3	31.9	19	31.1	22.5

Day.	Romblon.		Batag.		Gubat.		Legaspi.		Sumay. Guam.		Calapan.		Virac.		Nueva Caceres.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31	23.3	28.8	22	30	24.4	31.5	23.5	28.6	24	29.7	22	30	18.4	31.7	15.3
2	30.7	21.2	28.9	22	28.9	23.5	31.1	23.5	28.2	24.6	29.4	20.6	30.8	20	31.1	15.1
3	31	22.6	29	22.4	28.8	23.9	29.6	23.5	29.6	24.6	29	21.8	31.6	20.1	31.4	15
4	31.7	23.4	28	22.2	27.9	25	29.7	23.9	29.4	24	29.5	22.5	29.6	22.7	31.4	16.2
5	30.9	23.4	28.6	22.5	28.8	24.6	31.2	24.3	27.6	23.6	29.4	21.9	31.8	20.47	31.3	17.8
6	30.9	22	28.9	21.9	28.6	20.2	31.1	22.1	28.4	24.2	28.2	19.4	31.5	18	31.1	14.9
7	30.4	20.9?	28.4	21.3	28	20	31	21.2	28.2	24.6	30	19.1	29.9	18.1	30.6	14.1
8	31.3	20.7	29.5	21.4	28.7	20.1	31.2	20.3	28.6	24	29.2	19.5	30.5	17	31.2	13.4
9	30.7	19.5	29.4	21.4	29.3	20	31.2	18.3	28.2	24	29.8	17.8	32	17.5	30.9	13
10	30.7	21	28.7	21.9	28.2	24	30.7	22.6	27.8	23	28	21.8	30.3	20.2	30.9	15.5
11	30.8	21.4	28	20.9	27.6	22	27.6	21.5	29.2	24.2	26.5	21.5	27.5	20	27.6	18.3
12	31.6	22	28.4	20.4	27.2	22.4	27.6	20	29	23.4	25.5	21	27.8	19.4	30.6	17.4
13	30.5	20.9	28	21.8	27.1	21.9	29.4	22.3	28.8	23.4	29.5	20.9	27.6	20.1	30.3	17.5
14	29.6	22.7	27.4	20.4	27.3	21.6	29.2	20.7	27	22	28	21	30.6	20.1	30.5	16.8
15	30.7	22.6	28.5	22	27.5	23.3	30.5	22.6	27.6	22.6	28.5	20.8	30.1	19.57	31.3	15.2
16	31	22.7	29	21	28.2	23.3	31.1	22.5	27.8	22.8	29	20.1	31.2	16.9	31.5	13.7
17	31.1	20.5	29	22.2	28.3?	23.4	31.2	19.6	28.4	24.6	29	20.1	31	17.1	31.3	12
18	31.1	20.3	29.5	20.5	29.7	18.6	31.2	17.4	28.6	23.4	28.5	17.1	29.5	17	31.7	12
19	30.5	18.5?	29.4	19.7	28.7	18.5	31.1	16.7	28.8	25	29.2	16.5	31.5	16.5	30.8	13
20	30.9	19.2	29.5	22	28.3	23.1	31.2	20.5	29.8	23.4	28	18.1	30	18.3	31.6	12.9
21	31	20.9	29.5	21	28.6	20.2	30.4	18	30	24	28	18.5	31	16.6	31.2	
22	31.5	18.7	28.8	20.5	29.4	18.9	30.9	18	29.6	24	27	18.3	30.5	17.5	32.8	
23	31.9	20?	29.9	20.3	30	21.2	31.6	20.8	28.8	24.4	28.5	17.8	31.6	17.4	33.4	
24	31.9	18.6	30	20.4	29.7	20.1	32.2	18.9	29.4	24	29.2	17	32	18.1	32.7	
25	31.8	19.4	30	21.5	30.3	20.1	31.8	18.7	30	30	30.5	17	32.2	18	32.6	15
26	32	19.9?	29.9	20.6	29.2	21	31.6	22.8	30.6	23.8	28.3	18.5	30.7	18.9	31.8	16.5
27	31.7	22.1	29.8	22	29	24.3	31.3	23.5	28.8	23.8	29.4	21	32.6	20.4	31.7	16.5
28	32.6	23.4	28.4	22.5	29.2	25	31.5	23.4	28.8	24.2	27.8	19.2	31.8	22.4	31.3	15.1
Mean	31.1	21.1	29	21.4	28.7	22	30.7	21.1	28.8	23.8	28.7	19.7	30.6	18.8	31.3	15.2

Maximum and minimum temperatures at the stations of the Weather Bureau, February, 1914—Continued.

Day.	Batangas.		Atimonan.		Ambulong, ^a Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.3	20.6	27.7	20.7	32	21	30.7	19.4	30.2	20.5	30.7	21.3	31.1	21.4	32.1	20.8
2	33.1	20.2	29.4	21.2	30	21.6	31	19.6	29.8	20	30.5	20	28.6	19.2	28.8	19.4
3	31.8	20.6	29.3	23.3	29.9	20.9	29.8	19	30.3	23.5	28.4	22	28.8	19.1	30.6	19.3
4	31	22.7	28.4	23.6	30	21.5	29	18.3	29.2	22.5	28.6	22.3	28.8	21.9	28	20.3
5	31.8	21.1	29.1	20.5	31.7	21	28.8	18.6	29.3	21.2	30.3	22	32.2	20.5	30.6	20.6
6	32.4	19.7	29.8	19.4	30.9	20.5	29.6	19.1	29.4	19.9	30	19	31.9	18.1	32.2	19.3
7	32.2	19	28.5	20.8	31	19.5	30.3	18.4	29.5	18.6	28.9	19.8	29.6	19	29.1	19
8	32.8	19.6	27.8	19.6	30	19.5	29.7	18.5	29.9	19.8	29.7	19	31.2	18.4	31	19.1
9	31.7	18.3	29.9	23.3	31	20.8	30	18.2	30	18.5	29.7	18.9	32.4	20	31.4	19.3
10	27.3	19.8	25.6	22.2	29	22.1	29.3	18.6	25.8	21.5	26.9	21	28.7	21.9	31	20.3
11	27.3	21	26.2	22.5	30.5	21.5	29.5	18.5	25.5	22	29.2	21.1	31.5	20.4	30	19.9
12	28.8	21.6	26.3	21	28.5	21.6	29.1	18.2	26.2	21.5	28.1	20.2	29.1	20.9	28.2	20.3
13	29.4	19.8	27.7	22.5	29	21	28.8	17.8	27.5	22	27.7	21.2	29.3	19.5	29.8	19.2
14	29.8	19.2	26.8	22.4	29	21.1	28.2	17.3	27.6	20.9	28.3	20.4	28.4	19.3	28.5	18.3
15	31.8	19.4	29	22.3	30.2	19.9	28	17	28.6	21.7	29.5	20.2	31.5	18.2	31	19.2
16	31	20.7	28.9	22.3	31.6	20.2	29.3	16.6	28.8	19.9	29.4	20.5	31.2	16.9	31	18.4
17	30.2	19.6	29.3	20.5	30.9	20.2	29.9	17.1	29	20	31.2	19.2	31.9	17.2	30.6	17.4
18	32.8	18.7	28.6	18.3	31.3	19	30.4	17.5	29.2	18.6	30.5	20	32	17	32.7	18.4
19	32.7	18.6	28.8	18.3	31.4	18.5	30.7	17	29	18.2	30.2	18.5	32	16.3	32.8	17.8
20	31.9	18.6	30	19	33	17.5	30.1	16.8	29.8	18.8	31.2	18.6	32.4	17.4	31.5	18.8
21	32.8	18.5	29.4	20.1	32	18.5	29.4	17.3	28.9	19.3	30.3	20.1	31.8	17.3	30.9	18.8
22	32.7	18.3	28.5	19.9	32.8	18	30.5	17	29.5	18	30.7	17	32.3	17	31.7	17.9
23	30.9 [?]	19	29.7	18.9	34	18.4	30.8	16.4	30.2	19.8	30.8	18.5	30.8	18.3	32.8	17.2
24	33.7	17.9	29.4	19.1	35.7	18.4	31.3	16	29.2	19.5	30	18.1	32.4	18.4	32.8	18.7
25	32	19	29	20.7	35.1	19.5	30.7	16.5	29.8	20	30.6	20.4	32	19.5	33.2	19.4
26	33.2	17.5	27.5	21.3	30	19	31.2	16	29	21	27.8	18.2	28.2	19.4	27.7	19.3
27	32.9	21.4	29.4	20.7	33	20.7	31.5	15.7	29.2	23	29.8	20.8	32.4	20	32.2	19.7
28	33.8	20	29.8	19.6	31.5	21	29.4	16.3	28.5	21.8	31.5	18.2	33.1	17.4	33.4	19.5
Mean	31.6	19.7	28.6	20.9	31.2	20.1	29.9	17.6	28.9	20.4	29.7	19.9	30.9	18.9	30.9	19.1

Day.	Iba.		San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernan- do, Union.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30	19.9	31.9	22	33.8	20.5	30.4	20.5	33.3	21.8	31	21.6	22.4	13.5	31.1	22.1
2	30.8	19.7	31	20.2	33	20.8	29.5	19.5	31.3	21.4	29.7	24.9	22.2	12.7	30.5	22.3
3	32	18.5	30.9	18.8	33.1	19.4	31.6	21.9	32.3	20.8	31.1	21.1	24.2	13.7	30.9	21.8
4	30.5	19.9	30.9	21	32.1	20	27	21.9	33.4	21	30.1	20.3	23.8	13.6	30.7	20.7
5	31.2	20	31.6	21.3	31.8	21.2	26.9	21.5	33.6	20.6	31.1	22.9	22.8	13.1	31.6	20.8
6	31	18	33	18.3	33.2	18	30.4	20.1	31.3	20.3	30	20.9	23.2	13	30.6	21.2
7	30.5	19	31.1	20.7	32.4	21	29.4	19.7	34.5	21.9	31.5	20.5	22.8	12.7	31.8	20.2
8	30.2	19	31.7	18.2	33.5	18.4	28.9	19.1	30.8	21.1	29.3	22.4	21.2	13.3	30.9	22.3
9	30.9	17.5	33.1	20.7	32	19.5	30.4	20.6	31.3	20.6	29.5	22.6	23.7	12.5	31.4	19.3
10	30.8	18.6	29.9	19.4	32.2	19.4	31	20.5	31.3	21.1	29.5	19.1	23	12.3	31.4	19.9
11	31.1	17.9	32.2	19.4	34	18.6	29.3	19.6	29.6	20	29	21.4	23.6	12.7	30.7	19.2
12	30.7	15	32.4	18.7	32.9	19.4	28.5	18.7	28.4	19	27.8	19.2	22.8	12.2	32.4	18.5
13	30.8	16.8	31.3	19	33.4	19.6	29.2	19.4	31.5	19.5	29.3	16.9	23.3	10.7	31.8	17.4
14	30	16.6	27.7	20.7	30.4	18.5	29.7	20	30.5	18.8	29	18	20.8	11.2	29.9	18.4
15	32.9	20.7	27.7	19.4	30.5	20	25	19.7	33.3	21	30.7	22	21.3	11.6	30.4	18.2
16	33.6	16.5	31.1	16.4	32.6	17.2	28.1	18.2	33.9	20.6	32	21.4	29.2	12.2	32.9	18.6
17	30.7	15	30.9	16.7	33.3	18.8	28.9	18	33.1	19.5	29.7	17.9	29.7	12.2	31.3	17.6
18	31.5	16.1	32.1	18.4	34.6	18.2	30	19.1	32.3	20.6	30.1	20.6	29.1	12.2	30.3	22.2
19	31	16.2	32.5	16.5	34.5	16.2	28.4	17	32	20	31	19.3	23	11.3	30.1	20.8
20	30.4	15.5	32.9	17.2	34.2	15.8	28.2	18.4	33.4	18.4	30.2	20.4	23.1	14	30	19
21	30.8	16.5	31.9	17.4	33.6	17.2	32.5	18	33.3	20	31.2	21.3	22.2	10.2	30.7	21.9
22	31.3	17.8	33.6	18.5	33.2	18	32.6	18.1	34.6	20.5	31	21.2	22.8	12.2	31.7	20.2
23	30.2	15	33.7	18	34.5	18.2	33	17.8	33.2	19.6	30	20.2	25.5	11.7	32.3	19.4
24	30.3	16.4	34.1	18.4	33.5	17.4	34	20	31.3	19	29.5	19	22.2	12	30.2	17.6
25	30	16.5	34.5	19.7	35	17.9	31.3	21.4	32.3	19.1	29.1	17.4	25.1	12	30.1	18.1
26	28.1	16.6	28.5	19.3	30.2	17.5	26.8	20.5	32.8	19.1	29.5	18	20.8	12.5	30.2	18.7
27	31.2	23	30.4	21	32.2	17.7	25.7	20.5	33.3	21.1	32.5	21.5	23.1	12.4	32.2	19.8
28	31.6	19.2	32.8	18	34.6	18.4	29.6	19.4	31.6	20.8	31	21	23.4	12.5	30.1	21.7
Mean	30.9	17.8	31.6	19	33	18.7	29.5	19.6	32.3	20.3	30.2	20.5	22.8	12.4	31	19.9

^a For this station, the maximum and minimum temperatures from February 16 to 19 are taken from a self-registering apparatus.

Maximum and minimum temperatures at the stations of the Weather Bureau, February, 1914—Continued.

Day.	Echague.		Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.9	19.4	29.8	22.5	30.3	22	33.4	19.5	31.6	20.5	29.4	19.6	24	21.2
2	29.6	20.8	29.7	21.5	29.5	20.8	28.8	21	33.2	17.5	24.4	20.9	23.8	20.8
3	26.3	19.6	29.9	22.2	30.4	20.1	28.6	20.6	33.9	21.5	25.4	21.4	23	19.3
4	27.4	19.9	29.8	22.2	30.3	24	29.2	20.5	32.5	18	24.4	20.6	25.4	19.6
5	29.4	20.7	30.1	22	30.7	22.3	33.2	19	31.7	20.6	29.5	18.8	26.4	21.8
6	31.7	18.4	30.5	20.6	30.3	21	33	20.2	32.2	19.5	27.9	20.6	26.6	21.4
7	29.3	20	29.3	21	31.3	19.3	30.5	19.8	32.1	16.8	26.1	20.1	26	20.1
8	31.1	16.6	29.2	23	30.3	21.3	33.7	17.7	32.5	20.5	29.5	18.7	27	20.5
9	27	20.8	28.8	19.8	30.3	18.9	25.1	19.9	32.4	18.6	23.9	19	22.9	17
10	27.5	18	29.6	21.4	31.4	22.2	30	18.5	34.2	19.4	24.3	18.2	23.6	17.9
11	28.8	17	29.3	20	29.2	19	31	17.3	31.3	16.5	26.4	18.1	22.9	17
12	28.8	17.9	28.2	17.4	28.2	18.4	29.3	17.5	-----	16.4	22.6	18.6	20.5	17.4
13	26.7	18.5	28.5	18.2	28.3	21.8	24.6	17.8	-----	-----	22.6	18.5	21.9	17.4
14	27.6	17.9	29.3	20.6	30.6	22.2	30.5	16.5	31.1	15.5	25.2	18.1	24.9	18.5
15	28	18.3	29.2	21	30.1	22	33.4	16.8	31.5	19	27	18.6	26.6	19.8
16	29.5	17.2	29.3	20	30	20.7	32.5	17.5	31.2	18.9	28.5	18.2	26.4	21.6
17	29.5	15.9	29	20	28.1	20.6	33.4	15.3	31	19	27.6	18.4	27.4	22.2
18	31.4	17.9	30	22.5	29.3	22	34.8	18	31.5	19.5	30.2	19	30.4	22.4
19	31.4	17	29	21.2	30.1	20.8	33.7	18.4	32.7	18.6	28.9	19.4	29.2	19.6
20	31.3	15	29	20	29.2	21.7	34.5	17	31.8	18.5	29.8	17.6	29.7	19.7
21	31.6	14.5	29.5	24	29.5	23.3	34	17	31.7	19.4	29.8	19.5	28.8	22.5
22	31.3	16.7	29.5	20.9	29	22.5	34.8	18.1	31.4	20	30	19.7	29.5	22.5
23	31.7	16.7	30.5	20.9	29.2	20.2	34.2	19	33.2	19.8	30.4	20.6	23.4	22
24	29.9	19.1	29	19.2	30.5	17.5	33	17.5	31.5	15.3	26.1	20.2	22.9	18.8
25	30.3	19.1	28.5	19.4	29.7	20	33.8	19.8	31	17.5	26.1	20.5	24.5	19.7
26	29.3	20	29.4	21.2	30.2	20.7	30.5	19.5	33.1	19.5	24.8	21.7	22.5	19.8
27	24.9	20	29.9	21	30.4	22.3	28.6	20.5	31.9	20.4	26.8	20	25.6	20.6
28	31.5	17.3	30	22	31.2	21.3	36.1	20.4	31.2	19.2	29.6	20.1	26.3	22
Mean	29.4	18.2	29.4	20.9	29.9	21	31.7	18.6	32.1	18.7	27	19.5	25.4	20.1

SEISMOLOGICAL BULLETIN FOR FEBRUARY, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

2, 5^h 31^m 30^s * [2, 13^h 31^m 30^s]. Legaspi (SE of Luzon). Oscillatory earthquake, direction SW-NE, intensity III, duration 4 seconds.

8, 5^h 11^m [8, 13^h 11^m]. Santo Domingo (Batan Islands). Earthquake of intensity II-III.

13, 20^h 15^m [14, 4^h 15^m]. Santo Domingo (Batan Islands). Oscillatory earthquake, direction E-W, duration 3 seconds: accompanied by subterranean noises.

14, 7^h 40^m 03^s * [14, 15^h 40^m 03^s]. Vigan (NW of Luzon). Oscillatory earthquake, direction W-E, intensity III, duration 5 seconds. There was a repetition of intensity II-III, five minutes later. Its seat of origin was undoubtedly in the China Sea, not far from the Ilocos coast.

14, 21^h 55^m [15, 7^h 25^m]. Guam (Mariana Islands). Earthquake of intensity III.

16, 4^h 50^m [16, 12^h 50^m]. Ormoc (W of Leyte). Oscillatory earthquake, direction WNW-ESE, intensity IV, duration 7 seconds.

16, 21^h 30^m [17, 5^h 30^m]. Cebu (E of Cebu). Oscillatory earthquake, direction E-W, intensity II-III.

19, 5^h 45^m [19, 13^h 45^m]. Jolo (N of Jolo). Oscillatory earthquake, direction SSW-NNE, intensity III-IV, duration 10 seconds. It was also perceptible in the Island of Basilan: Its origin was probably in the NW of the Celebes Sea.

20, 4^h 27^m 51^s * [20, 12^h 27^m 51^s]. NE of Mindanao. Earthquake of intensity VI-VII, which was felt throughout the whole of the Province of Surigao and in the northern part of the Agusan Valley. It probably originated in the Pacific, in the great Deep, not far from the place of origin of earthquakes of April, 1913. From the reports received up to the present we learn that it had much greater intensity on the coast near 9° lat. N, than to the N and W. However, in Butuan, which is 80 kilometers from the coast, the intensity was VI, though, as has already been pointed out, this apparent increase is due in great part to the nature of the ground: in this station also the direction of the first shocks was E-W and a subterranean noise apparently from the E preceded the earthquake. There was a repetition at 9^h 38^m 08^s * [17^h 38^m 08^s] of intensity III and short duration.

22, 12^h 04^m 11^s * [22, 20^h 04^m 11^s]. Bolinao (W. of Luzon). Oscillatory earthquake, direction WNW-ESE, intensity III, duration 4 seconds.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

24, 11^h 52^m 18^s * [24, 19^h 52^m 18^s]. **W of Mindanao and S of Negros.** Earthquake of intensity V-VI which was felt throughout the whole of western Mindanao. Its greatest intensity was felt in Dapitan and Cotabato. Its origin was probably in the NW of Illana Bay. It was also perceptible, but with less intensity, in the Provinces of Zamboanga and Misamis and in the southern part of Negros, so that the area affected by the shock had a diameter of about 500 kilometers. It was registered not only by the seismographs of the Archipelago but also by some on the continent.

24, 17^h 45^m [25, 3^h 15^m]. **Guam (Mariana Islands).** Earthquake of intensity III-IV, very short duration.

24, 21^h 50^m 08^s * [25, 5^h 50^m 08^s]. **Baguio (W of Luzon).** Oscillatory earthquake, direction SE-NW, intensity II-III, duration 4 seconds.

25, 11^h 55^m [25, 19^h 55^m]. **Dapitan (NW of Mindanao).** Oscillatory earthquake direction S-N, intensity III, duration 4 seconds. This was, no doubt, a repetition from the same center as the one at 11^h 52^m 18^s on the 24th.

26, 4^h 49^m 02^s * [26, 12^h 49^m 02^s]. **Batangas (S of Luzon).** Oscillatory earthquake, direction SE-NW, intensity III, duration 3 seconds.

26, 12^h 40^m [26, 20^h 40^m]. **S of Negros and NW of Mindanao.** Earthquake of intensity IV-V, felt principally in Dumaguete and with less intensity in Dapitan. It originated, doubtless, in the sea to the SSW of the Island of Negros.

28, 6^h 47^m 52^s * [28, 14^h 47^m 52^s]. **Butuan (N of Mindanao).** Oscillatory earthquake, direction SE-NW, intensity III-IV, duration 15^s. Its origin was probably in the great Deep, like the one on the 20th.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich Mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N : $T_0=6.4$, $\epsilon=4.4$, $\frac{r}{T_0^2}=0.045$;
 A_E : $T_0=6.3$, $\epsilon=3.5$, $\frac{r}{T_0^2}=0.052$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
23	2	Iv	eP	1 49 24				Legaspi (SE of Luzon).
			L	50 23				
			M _N	50 39	4	75		
			M _E	50 39	4		102	
		F	59					
24	2	Iv	eP	5 31 30				
			L	32 10				
			F	43				
25	3	I	e	11 49				
			F	12 05				
26	4	Iv	eP	1 48 31				
			L	48 45				
			M _N	48 46	1	80		
			M _E	48 48	1		73	
		F	52					
27	6	I	e	11 51 28				
			F	12 20				
28	6	I	e	14 11				
			F	28				
29	7	I _r	e	6 56 24				
			L	7 02 00				
			M _E	03 38	8		16	
			F	35				
30	8	I	eP	15 44 46				
			F	55				
31	8	Iv	eP	17 52 49				
			L	53 16				
			F	18 04				
32	10	I	e	11 40				
			F	12 08				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
33	12	I	e F	<i>h. m. s.</i>				
				8 53				
				9 02				
34	12	I	e F	9 43				
				53				
35	12	I	e F	18 37 30				
				52				
36	13	Iv	eP F	16 17 20				
				23				
37	14	I	e F	7 16				
				35				
38	14	Iv	eP L F	7 40 03				Vigan (NW of Luzon).
				40 42				
				49				
39	14	Iv	eP L F	12 49 23				
				49 34				
				52				
40	15	Ir	e L ME MN F	1 26 22				
				34 34				
				34 50	6	49		
				35 07	5-6	42		
41	16	Iv	eP L ME F	1 34 14				
				34 30				
				34 32	0.5	102		
				38				
42	16	Iv	eP L MN ME F	5 33 52				
				34 58				
				35 07	5	75		
				35 07	5	41		
				40				
43	16	I	e F	6 08				
				7 08				
44	16	I	e F	11 34				
				12 19				
45	17	Iv	eP F	17 15 13				
				18				
46	18	I	e F	6 52 40				
				7 02				
47	19	Iv	eP L F	4 20 13				
				20 23				
				23				
48	20	Iv	eP eS eL MN ME F	4 27 51				Northeastern Mindanao.
				29 28				
				31 08				
				32 00	5-6	50		
				32 07	6	41		
49	20	Iv	eP eS eL MN ME F	9 38 08				Northeastern Mindanao.
				39 50				
				41 15				
				41 55	9	65		
				41 58	8	41		
50	22	Iv	eP L MN F	12 04 11				Bolinao (W of Luzon).
				04 36				
				04 40	1	90		
				14				
51	23	I	e F	4 04 36				
				25				
52	24	Iv	eP eS L ME MN F	11 52 18				W of Mindanao and S of Negros.
				54 06				
				55 15				
				12 00 22	9	53		
				00 40	9	48		
				34				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
53	24	I _v	eP	<i>h. m. s.</i> 21 50 08				Baguio (W of Luzon).
			L	50 25				
			F	53				
54	26	I _v	eP	3 38 50				
			L	40 55				
			F	51				
55	26	I _v	eP	4 49 02				Batangas (S of Luzon).
			L	50 04				
			M _E	50 17	5	102		
56	26	I _r	e	5 18 06				
			S	28 23				
			L	34 49				
57	28	I _v	M _N	35 00	8-9	45		Butuan (N of Mindanao).
			F	7 03				
			ePS	6 47 52				
			L	50 12				
			F	7 35				

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

2, 5^h 31^m 30^s * [2, 13^h 31^m 30^s]. Legaspi (SE de Luzón). Temblor oscilatorio, dirección SW-NE, intensidad III, duración 4^s.

8, 5^h 11^m [8, 13^h 11^m]. Santo Domingo (Islas Batanes). Temblor de tierra de intensidad II-III.

13, 20^h 15^m [14, 4^h 15^m]. Santo Domingo (Islas Batanes). Temblor oscilatorio, dirección E-W, duración 3^s: acompañado de ruido subterráneo.

14, 7^h 40^m 03^s * [14, 15^h 40^m 03^s]. Vigan (NW de Luzón). Temblor oscilatorio, dirección W-E, intensidad III, duración 5^s. Repitió con intensidad II-III cinco minutos más tarde. Su origen se hallaba seguramente en el Mar de China, no lejos de las costas de Ilocos.

14, 21^h 55^m [15, 7^h 25^m]. Guam (Islas Marianas). Temblor de tierra de intensidad III.

16, 4^h 50^m [16, 12^h 50^m]. Ormoc (W de Leyte). Temblor oscilatorio, dirección WNW-ESE, intensidad IV, duración 7^s.

16, 21^h 30^m [17, 5^h 30^m]. Cebú (E de Cebú). Temblor oscilatorio, dirección E-W, intensidad II-III.

19, 5^h 45^m [19, 13^h 45^m]. Joló (N de Joló). Temblor oscilatorio, dirección SSW-NNE, intensidad III-IV, duración 10^s. Fué también perceptible en la isla de Basilan: su origen se hallaba probablemente en la parte NW del Mar de Célebes.

20, 4^h 27^m 51^s * [20, 12^h 27^m 51^s]. NE de Mindanao. Temblor de tierra de intensidad VI-VII sentido en toda la Provincia de Surigao y en la parte N del valle del Agusan. Su origen se hallaba probablemente en el Pacífico, en el gran abismo o fosa, no lejos al sur del origen de los terremotos de Abril de 1913. De las notas recibidas se desprende que tuvo mucha mayor intensidad en las costas correspondientes al paralelo 9° N que hacia el N y al W. Sin embargo en Butuan que dista unos 80 kilómetros de la costa llegó a VI, pero como se indicó otras veces este recrudescimiento aparente debe atribuirse en gran parte a la naturaleza del terreno: en esta estación se notó bien la dirección E-W de los primeros impulsos, y se oyó ruido subterráneo procedente del E. A 9^h 38^m 08^s * [17^h 38^m 08^s] repitió con intensidad III y corta duración.

22, 12^h 04^m 11^s * [22, 20^h 04^m 11^s]. Bolinao (W de Luzón). Temblor oscilatorio, dirección WNW-ESE, intensidad III, duración 4^s.

24, 11^h 52^m 18^s * [24, 19^h 52^m 18^s]. W de Mindanao y S de Negros. Temblor de tierra de intensidad V-VI sentido en toda la parte W de Mindanao. Su mayor intensidad se hizo sentir en Dapitan y Cotabato; su origen probablemente se hallaba en la parte NW de la bahía Illana. Fué también perceptible con menos intensidad en las Provincias de Zamboanga y Misamis y en la parte S de Negros, por manera que el área afectada tenía unos 500 kilómetros de diámetro. Registráronlo los seismógrafos no sólo del Archipiélago sino también algunos del Asia.

24, 17^h 45^m [25, 3^h 15^m]. Guam (Islas Marianas). Temblor de tierra de intensidad III-IV, duración muy corta.

24, 21^h 50^m 08^s * [25, 5^h 50^m 08^s]. Baguio (W de Luzón). Temblor oscilatorio, dirección SE-NW, intensidad II-III, duración 4^s.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de De Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los seismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

25, 11^h 55^m [25, 19^h 55^m]. **Dapitan** (NW de Mindanao). Temblor oscilatorio, dirección S-N, intensidad III, duración 4^s. Este era sin duda una repetición originada en el mismo centro que el terremoto del 24 a 11^h 52^m 18^s.

26, 4^h 49^m 02^s * [26, 12^h 49^m 02^s]. **Batangas** (S de Luzón). Temblor oscilatorio, dirección SE-NW, intensidad III, duración 3^s.

26, 12^h 40^m [26, 20^h 40^m]. **S de Negros y NW de Mindanao**. Temblor de tierra de intensidad IV-V, sentido principalmente en Dumaguete y con menos intensidad en Dapitan. Su origen seguramente se hallaba en el mar, al SSW de la Isla de Negros.

28, 6^h 47^m 52^s * [28, 14^h 47^m 52^s]. **Butuan** (N de Mindanao). Temblor oscilatorio, dirección SE-NW, intensidad III-IV, duración 15^s. Probablemente su origen se hallaba también en el abismo del Pacífico al igual del terremoto del día 20.

BULLETIN FOR MARCH, 1914.

METEOROLOGICAL BULLETIN FOR MARCH, 1914.

By Rev. JOSÉ CORONAS, S. J.,

Chief of the Meteorological Department of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was greater than in March of last year in almost all the stations. In Manila it was greater than the normal of the month by 0.25 mm., and than the monthly mean of March, 1913, by 1.18 mm. The highest pressures were registered on the 18th, and the lowest on the 6th in Luzon, and on the 5th, 6th, and 31st in the Visayas and Mindanao.

The mean monthly temperature differed but little from that of last year, the greatest difference being +1.1°C. in Tuguegarao. In Manila it was exactly the same as in March of last year and almost identical with the normal of the month. The extreme values at the Central Observatory were 35.7°C. on the 12th, and 17.6°C. on the 26th. The absolute minimum observed in Baguio was 12.6°C. on Mount Mirador and 11.0°C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND-CLASS STATIONS FOR MARCH, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from March, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from March, 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Surigao.....	760.22	+1.12	762.96	18	758.43	5	26.1	+0.2	31.2	12	22.2	23
Cebu.....	60.20	+1.10	62.87	18	58.46	31	27.3	+ .2	32.3	26	21.5	19
Iloilo.....	59.82	+1.14	62.44	18	58.17	6,7	27.2	+ .3	35.3	6	21.5	31
Ormoc.....	60.39	+1.22	63.06	18	58.86	5	26.3	+ .1	34.9	25	19.3	19
Tacloban.....	60.68	+1.14	63.35	18	59.14	31	26.4	— .6	33.7	25	21.7	16
Capiz.....	60.72	+1.50	63.34	18	58.77	6	26.5	— .1	32.8	13, 22, 24	21.6	11
Calbayog.....	60.72	+1.35	63.50	18	59.13	5	25.7	— .2	34.7	2	18.7	2
Legaspi.....	60.85	+1.10	63.68	18	59.15	31	27	+ .1	33.1	23	20.1	31
Atimonan.....	61.17	+1.43	64.08	18	59.01	6	26.5	+ .2	32.3	26	19.6	31
Ambulong, Tanauan.....	60.41	+1.21	63.28	18	58.30	6	27	0	36	13	19	11, 12
Paracale.....	61.35	+1.22	64.17	18	59.44	6	25.9	— .2	31.5	12	19.1	12
Manila.....	60.77	+1.18	63.81	18	58.74	6	26.5	0	35.7	12	17.6	26
San Isidro.....	60.86	+1.11	63.96	18	58.70	6	27.5	+ .3	37.6	30	18	4
Dagupan.....	59.99	+1.01	63.25	18	57.67	6	27.6	+ .1	37.8	24	19.8	4
Bolinao.....	60.36	+1.12	63.77	18	58.01	6	26.9	— .7	34.3	24	19.9	5, 27
Baguio ^a	638.05	+1	640.59	18	636.55	6	18.2	0	27	5, 6	12.6	4
Vigan.....	760.47	+1.21	763.52	18	758.24	6	26.8	— .3	33.3	28	20.2	2
Tuguegarao.....	61.15	+ .97	64.23	2	58.57	6	27.3	+1.1	40	24	17.2	28
Aparri.....	61.22	+ .90	64.34	2, 18	58.29	6	25.5	+ .1	33.5	6, 24	18.6	3

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—The scarcity of rain was not so great as during the preceding two months. Half of the stations had a greater rainfall than during March of last year: nevertheless, of the 38 stations for which we can give the normal only 7 had an amount greater than the normal for the month. In Manila the total rainfall was only 6.1 mm. which is less than the normal by 12.1 mm., and 9.7 mm. less than during March, 1913. In Baguio the rainfall was only 15.5 mm. which is less than the normal by 21.6 mm.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF MARCH, 1914.

Station.	Total.	Departure from March, 1913.	Departure from normal.	Rainy days.	Departure from March, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from March, 1913.	Departure from normal.	Rainy days.	Departure from March, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	25.8	-76.2	-44.2	4	-11	17.1	7	Calapan	28.7	-3		2	-4	8.6	16
Isabela, Basilan	15	-111.4	-39.6	2	-12	13.2	5	Virac	139.1	+79.7		13	0	95	5
Zamboanga	26.8		0	4		18.6	28	Nueva Caceres	60.5	+0.5		7	46	5	
Davao	175.8	+50.1	+24.1	8	+3	81.3	22	Batangas		-5.6		1	0	3	15
Cotabato	43.8	-32.4	-25.7	11	+2	16.3	1	Atimonan	24.5	-32.9	-52.2	1	1	7.3	1
Dapitan	18.8	-9.5	-32.9	12	+8	4.3	1	Ambulong, Tanauan	2.1	5.8		1	2	1.3	16
Butuan	145.2	+74.6	-2.2	20	+4	29.2	7, 19	Silang	0	-2.5	-20.8	0	0	0	0
Dumaguete	13.3	+9.7		5	+2	3.8	26	Faracale	79.7	36.4		10	4	32.4	15
Yap, W. Carolines	94.2	+46.3		19	+5	20.6	0	Santa Cruz, Laguna	4.5	1.2		3	0	1.8	16
Iwahig	0			0		0	26	Manila	6.1	9.7	-12.1	1	2	5.1	1
Surigao	240.6	+79.2	-23	22	+1	44.2	26	Antipolo	1	3.8		1	2	5.3	18
Maasin	55.1	+12.9	-37.7	4	0	27.9	27	Iba	5.3	2.5		1	2	5.3	15
Cebu	29.7		-23.7	10		10.2	16	San Isidro	1	.9		1	2	1	7
Loilo	19.8	-4.1	-9.6	3	-1	13.2	17	Tarlac	10.7	1	-11.5	1	2	9.9	1
San Jose Buenavista	4.6	-19.1	-12.6	1	-2	4.6	28	Baler	142	38	-42.4	15	+2	59.2	1
Cuyo	0	0	-1.4	0	0	0	0	Dagupan	7.8	26.4	-20.7	2	0	6.8	7
Ormoc	46.4	-34.4	-29.5	11	0	20.4	27	Bolinao	14.2	8.9	+8	2	+1	7.6	16
Guiuan	218.9			21		56.2	26	Baguio	15.5	7.4	-21.6	5	+1	4.6	15
Tacloban	110.7	+53	-6.4	20	+10	20.1	27	San Fernando, Union	5.3	5.3	-2.8	1	+1	3.8	19
Capiz	20.8	+15.2	-1	23	+5	9.4	5	Echague	27.9	41.3		4	-7	1	15
Borongan	216.4	+126.1		8		39.6	4	Candon	0	6.1	-10.6	0	-2	0	0
Calbayog	182.3	+118.9	+72.6	18	+8	50.4	5	Vigan	0		-3.4	0	0	0	0
Masbate	54.3	+35	+4.6	8	+3	16.5	4	Tuguegarao	0	-32.5	-29.5	0	-8	0	0
Romblon	50.5	+42.1	+2.3	10	+6	11.4	15	Laoag	0	0		0	0	0	0
Batag	150.9			11		53	5	Aparri	24.6	-98.6	-26.4	5	-7	10.9	27
Gubat	135.3		-24.9	10		50.8	5	Santo Domingo, Batanes	163.1	-207.4	+40	7	-11	66.8	4
Legaspi	119.4	+27.5	-49.4	11	-5	35.5	5								
Sumay, Guam	38.5	+13.1		9	+2	11.4	29								

DEPRESSIONS AND TYPHOONS.

During the month there was no depression or typhoon which affected the Philippines, and even in the whole of the Far East there were only two depressions which did not belong to the class known as continental depressions. Both of these were formed in the Pacific to the NE of Luzon and moved to the NNE crossing the Loochoos in the direction of Japan. The first crossed the Loochoos on the afternoon of the 1st, and the second on the morning of the 30th.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La media presión atmosférica de este mes es para todas las estaciones mayor que la de Marzo del año pasado. La de Manila se diferencia de la normal de este mes en $+0.25$ mm., y de la media mensual de Marzo, 1913, en $+1.18$ mm. Las presiones más altas se observaron en todas partes el 18, y las más bajas el día 6 en Luzón, y los días 5, 6 ó 31 en Visayas y Mindanao.

La temperatura media mensual difiere muy poco de la del año pasado siendo la diferencia mayor $+1.1^{\circ}\text{C}$. correspondiente a la estación de Tuguegarao. La de Manila es exactamente igual a la de Marzo, 1913, y casi idéntica a la normal de este mes. Los valores extremos registrados en el Observatorio central fueron: 35.7°C . y 17.6°C . y corresponden respectivamente a los días 12 y 26. La mínima absoluta observada en Baguio fué 12.6°C . para la cumbre del Mirador y 11.0°C . para el valle.

Precipitación acuosa.—En el cuadro de lluvia que acompaña el texto inglés se verá que la escasez de lluvia en Filipinas no fué tan notable este mes como los dos meses anteriores. Son, en efecto, casi la mitad las estaciones que aparecen con una cantidad de lluvia mayor que la de Marzo del año pasado. Sin embargo, de 38 estaciones, para las cuales podemos dar valores normales, solamente hay 7 que den un total de lluvia mayor que la normal de este mes. En Manila sólo se han recogido en todo el mes 6.1 mm. de agua cantidad que se diferencia de la normal en -12.1 mm., y de la lluvia de Marzo, 1913, en -9.7 mm. En Baguio la cantidad de lluvia mensual no pasa de 15.5 mm., menor que la normal de Marzo en 21.6 mm.

DEPRESIONES Y TIFONES.

No ha habido en todo el mes ninguna depresión o tifón de importancia para Filipinas. Y aun en todo el Extremo Oriente solamente se observaron dos depresiones que no pertenecen a la clase de las llamadas depresiones continentales. Ambas se formaron en el Pacífico al NE de Luzón y se movieron al NNE atravesando las Islas Loochoos en dirección al Japón. La primera atravesó las Loochoos la tarde del día 1, y la segunda la mañana del 30.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.		Evaporation. ^b				
	Pressure (mean).	Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.			1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).	
					8 a.m.	2 p.m.	8 a.m.									2 p.m.
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Perct.	mm.	°C.	°C.	mm.	mm.	
1.	763.34	25.6	31.1	20.0	26.8	27.5	27	27.3	27.1	27.9	72.2	17.5	17	50.7	4.9	3.5
2.	63.24	25.8	32.6	21.3	26.6	28.1	27	27.3	27.2	27.9	73.2	17.8	18	50.3	5.1	3.8
3.	62.30	25.3	33.1	19	26.5	28.3	27.1	27.6	27.2	27.9	65.3	15.1	14.9	52.8	7.2	5.5
4.	60.57	25.7	33.8	18.9	26.6	28.5	27.4	27.8	27.1	27.9	71.3	17.3	14.7	54.4	6.6	4.7
5.	59.30	26.3	34.3	20.6	27.5	28.7	27.8	27.9	27.3	27.8	74.8	18.8	17.5	55.2	6.1	4.5
6.	58.74	28.1	35.2	23.7	27.9	29.2	27.9	28.1	27.3	27.9	72.4	20.2	21.6	56.4	5.5	4.1
7.	58.94	28.2	34.8	22.5	27.8	29.2	28.1	28.3	27.3	27.9	72.1	20	19.5	55.5	6.6	4.8
8.	59.23	28.3	34.8	22.4	27.8	29.6	28.1	28.6	27.3	27.9	69.6	19.4	19.9	54.8	7.9	5.6
9.	59.31	27.1	34.5	21.2	28.1	29.4	28.4	28.6	27.3	27.9	70.1	18.2	17.4	56.7	7.3	5.5
10.	59.71	26.7	34.2	20.7	27.8	29.5	28.5	28.8	27.3	27.9	70.6	17.7	17.2	54.7	7	5.3
11.	59.44	26.2	34	19	27.5	29	28.3	28.6	27.3	27.9	67.1	16.4	15	53.7	7.8	5.9
12.	60.25	26.6	35.7	18.8	27.3	28.9	28.2	28.6	27.4	27.9	67.5	16.8	14.8	55.8	6.6	4.9
13.	60.76	26.8	35	19.5	27.4	29	28.3	28.7	27.5	27.9	67.6	17.3	15.3	55	6.2	4.6
14.	61.33	26.3	34.8	20.2	27.5	28.8	28.3	28.5	27.5	27.9	69.1	17.3	16.8	56.8	6.8	4.9
15.	62.16	25.2	30.4	22.8	27.6	27.8	28.4	28.2	27.7	27.7	77.1	18.3	19.6	56.3	2.5	2
16.	61.52	26.4	33.3	22.4	27	28	28	28.1	27.5	27.9	70.5	17.6	19.9	47.7	6	4.8
17.	62.78	26.7	33.4	22.6	27.1	28.5	27.9	28.2	27.6	27.9	69	17.7	19.9	46.2	5.9	4.5
18.	63.81	26.1	33.8	20.5	26.8	28.4	27.9	28.6	27.6	27.8	70.2	17.3	17.5	56.9	5.6	4.2
19.	62.77	26.1	33.9	21.2	27.1	28.1	27.9	28.1	27.6	27.9	71.2	17.6	18	57.4	4.8	4
20.	60.64	26.2	33.8	19.8	26.4	28	27.7	27.9	27.6	27.9	71.8	17.8	16.8	53.5	6.6	4.6
21.	59.89	26.8	34.5	21.7	27.4	28.7	27.8	27.9	27.7	27.9	69.8	17.8	18.9	54.7	7.5	5.4
22.	60.06	26.5	33.9	19.5	27.5	28.7	28	28.3	27.9	28	65.9	16.8	16	56.3	7.2	5.1
23.	60.05	26.5	34.8	20	27.6	29.2	28.2	28.5	27.7	27.9	69.8	17.5	16.4	55.4	7.7	5.8
24.	60.38	26.4	35.5	18.9	27.3	29	28.1	28.5	27.7	27.9	64.1	16.1	15.3	55	7.8	5.8
25.	60.64	26.6	35.2	20.9	27.6	29.3	28.3	28.6	27.7	27.9	60.4	15.2	17.5	57.9	7.9	6.2
26.	60.60	25.5	34.5	17.6	27.1	28.9	28.1	28.4	27.8	27.9	60	14.2	14.6	58.1	7.6	5.6
27.	60.91	25.7	34.2	19	27.2	28.6	27.9	28.2	27.7	27.9	64.3	15.5	15.2	53.1	7	5.4
28.	61.18	26.3	34.6	20.2	27.1	28.5	28	28.2	27.8	27.9	65	16.2	15.8	54.6	8.1	5.9
29.	60.89	27.6	35.3	21.4	27.5	29.3	28	28.3	27.8	27.9	61.8	16.6	18	57	8.3	6.2
30.	60.10	26.5	34	20.5	27.8	29.5	28.3	28.8	27.8	27.9	69	17.5	17	53.9	6.7	4.8
31.	58.88	27.1	34.8	21.5	28.2	29.6	28.5	28.9	27.9	27.9	63.1	18.4	18.4	53.8	7.5	5.5
Mean Total	760.77	26.5	34.1	20.6	27.3	28.8	28	28.3	27.5	27.9	68.6	17.3	17.2	54.5	6.7	4.9
Departure from normal	+0.25	-0.1	+1.7	-0.7							-2.9	-0.8		206.3	153.4	

Day.	Wind.				Clouds.			Sunshine.	Rain, 24 hours beginning mid-night.	Miscellaneous.
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.	Form and direction.		Amount (mean).			
					Upper.	Lower.				
		Km.	Km.				0-10.			
1.	E quad.	180.5	15	SE	5.6	A.-Cu.			h. m.	mm.
2.	E quad.	155.5	23	E	6.9	A.-Cu.			4 10	
3.	E	211.5	24	WNW	2.2	A.-Cu.			5 25	
4.	SE	236.5	24	SE	2.5	A.-Cu.			9 35	d° a.
5.	SE	263	26.5	SE	3.7	Ci.			8 00	Ω° a.
6.	SE	201.5	21.5	SE	5.5	A.-Cu.	E		5 15	
7.	SE	223.5	19	SSE, SE	3.3	Ci.			6 10	
8.	ESE	264.5	26	SE	2.6	Ci.			9 40	
9.	ESE	228.5	28.5	SSE	2.2	A.-Cu.			10 30	
10.	SE	262	27	SE	1.6				9 25	≡° a.
11.	SE	261.5	23.5	SEbyS	1.3				9 40	
12.	E quad.	126.5	12	SW	1.2				10 20	
13.	SW quad.	111	13	SW	1.4	Ci.			10 10	
14.	SE	188.5	24	SE	4.3	A.-Cu.			9 50	
15.	E quad.	105.5	13	NNE, NNW	9.8	A.-Cu.			8 10	
16.	E	148.5	18	E	5.9	A.-Cu.			0 30	● p.
17.	E quad.	197.5	24	SE	5.9	A.-Cu.			5 55	
18.	E quad.	195.5	22	SE	5.4	A.-Cu., Ci.-S.			8 10	
19.	E quad.	202.5	20.5	ESE	5.2	Ci.			4 50	
20.	W quad.	206.5	18	NW	5.2	Ci.			6 55	1° p.
21.	SE	165.5	15.5	WNW, SE	3.4	Ci.			9 45	± p.
22.	E quad.	202	21	ESE	7.2	Ci.			9 30	
23.	SE	261.5	28	SE	2.2	Ci.			8 15	○° p.
24.	SE	228.5	21.5	SE	2.2	Ci.-S.			10 00	
25.	SE	225	23.5	SE	3.6	Ci.			9 30	
26.	ESE, WSW	184	20	WSW	1.8	Ci.			10 15	
27.	E, ESE	179.5	21	E	3	A.-Cu., Ci.			10 50	
28.	ESE	254	26.5	SE	1.3	Ci.			10 30	≡° a.
29.	SE	299	28	SE	2.2	Ci.			11 20	
30.	SE quad.	181	15	W	1.4	Ci.			10 20	○ p.
31.	SE quad.	193.5	23	SSE	1.9	Ci.			10 50	
Mean Total		204.6	21.5		3.6				8 29	
Departure from normal		-498.7			-0.8				263 10	-12.1

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pres- sure ^b (mean).	Air temperature at Mirador (on the top of the mountain).				Air temperature in the valley (near the city hall).				Relative humid- ity (mean).	Vapor pres- sure (mean).	Radiation.		Evaporation.		
		Mean.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Maxi- mum.	Hour.	Mini- mum.			Hour.	Mini- mum on grass.	Maxi- mum in sun. Black bulb in va- cuo. ^c	Free expos- ure (total)	Shel- ter (total)
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.	mm.	°C.	°C.	mm.	mm.	
1	640.06	16.8	24.3	0.50p.	12.7	2.50a.	24.5	11.2	6.30a.	81.5	11.5	11.5	46.7	4.2	2.3	
2	40	17.6	24.9	1.10p.	13.9	4.40a.	24.6	11.50a.	13	7.20a.	81.5	12.1	11.2	51.7	3.7	
3	39.10	17	22.4	9.55a.	14	6.50a.	24.5	10.30a.	13.1	6.15a.	85.5	12.2	12.5	44.2	3.8	
4	37.74	17.6	24.8	1.45p.	12.6	5.55a.	24.7	2.25p.	11	5.40a.	71.3	10.5	9.7	45.6	7	
5	36.81	18.5	27	11.50a.	14.5	3.00a.	26.8	11.50a.	13	5.45a.	77	11.9	12.6	47.5	3.7	
6	36.55	19.5	27	2.20p.	15.4	4.20a.	26.8	3.05p.	15.3	6.00a.	81	13.5	14	46.5	4.9	
7	36.85	17.9	23.8	1.25p.	15.6	6.55a.	24.8	0.55p.	14.9	5.30a.	92.5	14.1	14	39.4	1.7	
8	37.06	19.9	26.5	10.35a.	16	6.05a.	26.1	10.50a.	15.4	5.40a.	81.5	13.7	14.5	47.6	4.8	
9	37.14	19	26.2	9.20a.	15.4	6.20a.	26.8	10.35a.	15.2	6.20a.	88.3	14.3	14.2	48.3	3.7	
10	37.23	18.7	25.2	0.05p.	14.8	3.30a.	24.6	3.25p.	14.7	5.05a.	87	13.9	15.3	46.2	2.9	
11	36.92	18.9	25.3	1.15p.	15.5	5.30a.	24.4	2.30p.	14.3	6.15a.	82.5	13.3	12.6	51.8	4.3	
12	37.58	18.3	25.1	0.45p.	14.6	6.20a.	24.3	1.30p.	14.3	6.15a.	85.5	13.1	11	47.3	3.3	
13	38.15	18.8	25.1	0.45p.	15	6.15a.	25.5	2.00p.	14.6	6.35a.	81.5	12.9	11.7	48.5	4.6	
14	38.48	18.5	25.4	0.55p.	14.7	6.15a.	25.6	0.35p.	13.6	6.00a.	83.7	13.1	12.2	49.3	3.5	
15	38.86	17.4	22.1	2.40p.	14.8	12 m. n.	23	1.30p.	15.67	6.30a.	88.3	13.1	12.4	30.1	1.6	
16	38.48	17.3	24.8	11.05a.	14	2.55a.	25.3	11.25a.	12.9	6.35a.	82	11.9	12.1	50	4.2	
17	39.73	17.2	23.3	0.55p.	13.8	5.40a.	23.8	1.30p.	13	6.55a.	87.7	12.3	11.9	41.2	3.2	
18	40.59	18.1	23.8	9.20a.	14.7	5.35a.	25.7	10.35a.	13.8	6.20a.	86	13.3	12.5	42	3.2	
19	39.77	17.4	23.5	9.40a.	14.5	6.20a.	24	1.00p.	14.4	6.05a.	86.2	12.7	12.9	50	2.8	
20	37.75	17.9	24.7	1.50p.	15	5.55a.	23.8	1.45p.	15.2	6.20a.	87.8	13.3	13.3	46.6	2.7	
21	37.12	17.6	24.1	0.05p.	14.6	6.05a.	24.5	3.25p.	14.4	-----	88.7	13.3	13.9	49.5	2.7	
22	37.42	18.2	25.4	11.55a.	14.5	6.05a.	25	1.10p.	13.5	6.00a.	84	13	12.5	37.6	4.7	
23	37.56	18.5	25.3	11.25a.	14.5	5.35a.	25.6	-----	13.6	-----	81.2	12.8	12.5	45.8	5.2	
24	37.91	19	26.3	10.45a.	14.5	5.20a.	26.2	-----	12.8	5.55a.	70.3	11.2	12	48.5	7	
25	38.09	18.2	25.8	9.35a.	14.4	5.15a.	25.3	11.00a.	13.1	5.50a.	76.7	11.7	11.6	46.4	4.3	
26	37.77	17.8	23.4	1.50p.	14.5	6.15a.	24.6	2.00p.	13.5	-----	81.8	12.3	11	40.5	4.3	
27	37.77	17.5	24.6	11.50a.	12.7	6.05a.	25.2	1.15p.	11.6	5.40a.	72.8	10.8	10.2	48	7.2	
28	38.16	19.1	25.8	1.15p.	13.4	3.40a.	26.6	11.40a.	11.9	5.40a.	54.3	8.8	10.7	45.8	10.4	
29	38.40	19.7	26	2.30p.	15	6.15a.	26.4	1.30p.	14.7	0.30a.	70.2	11.9	13.4	48.8	6.2	
30	37.73	18.8	26	1.05p.	14.8	4.50a.	24.7	9.30a.	13.1	6.15a.	84.7	13.6	11.3	45.7	3.9	
31	36.77	19	25.8	1.50p.	15.3	6.10a.	26.7	10.05a.	14.5	6.05a.	86.3	14	12.9	47.5	4.3	
Mean	638.05	18.2	25	-----	14.5	-----	25.2	-----	13.7	-----	81.6	12.6	12.4	46	4.4	
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	137.3	79.9

Day.	Wind.				Clouds.			Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.
	Prevailing direction. ^d	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	Amount (mean).	Form and direction.				
						Upper.	Lower.			
		Km.	Km.		0-10.			h. m.	mm.	
1	W quad.	314.6	23.8	W	3.6	Ci.	Cu.	SSE	3 45	-----
2	W quad.	263.4	24.3	W	4.1	A.-Cu., Ci.	Cu.	SSE	3 45	4.3
3	W, E	347.8	25.1	W	4.6	Ci.	Cu.	S	1 45	-----
4	W, E	386.7	28.2	W	1	Ci.	Cu.	-----	6 20	-----
5	SE	507.8	30.9	SE	1.3	Ci.	Cu.	WNW	4 35	-----
6	SE, E	535.5	33.6	E	4.7	A.-Cu. ESE, SE	Cu.	SSW	2 35	-----
7	W, E	326.6	22	W	8.4	Ci.	Cu.-N.	WNW	0 10	2.3
8	SE	405.7	33.6	SW	7	A.-Cu.	Cu.-N.	S	4 10	-----
9	E, W	327.8	28.2	W	5.7	Ci.	Cu. S, WSW	-----	3 35	-----
10	W	278.5	23.8	W	8.4	A.-Cu.	Cu.-N.	SW	1 55	-----
11	W, E	-----	26.6°	W	6	-----	Cu.-N.	S	3 30	-----
12	W	277.2	25.7	W	6	-----	Cu.-N.	SW	3 00	-----
13	W	274.1	27.7	W	5.4	-----	Cu.	SE, S	3 50	-----
14	W	253	26.8	W	6.6	-----	S.-Cu.	ENE	2 50	-----
15	W	-----	20.1?	S	9.6	-----	cu.-N., N. s, w	-----	0 00	4.6
16	W, E	435.1	30.1	W	4.9	-----	Cu.-N. WSW, sw	-----	2 45	-----
17	Variable	338.9	21.9	W	5.3	Ci.	Cu.	S	0 30	-----
18	Variable	255.1	19.8	W	5.3	A.-Cu.	Cu.	-----	2 20	2
19	SE, W	326.8	28.5	SW	5.6	Ci.	Cu.	S	2 00	2.3
20	W, SE	285.5	27.2	W	9	-----	Cu.-N.	ssw, s	3 00	-----
21	W, SE	322	23.5	W	6.9	Ci.	Cu.	S, SSW	1 40	-----
22	SE	363.8	26	W	5.1	Ci.	Cu.	ESE	3 40	-----
23	SE, W	389.3	28	W	3.7	Ci.	Cu.	SW	4 20	-----
24	SE, E	334.1	31.4	W	1.3	Ci.	Cu.	-----	5 15	-----
25	W	282.4	30.6	W	4.9	-----	Cu.	E, SSW	3 05	-----
26	W, SE	341.3	27.2	W	5.3	Ci.	Cu.	E, SW	1 00	-----
27	SE, W	372.7	29	W	2.7	Ci.	Cu.	-----	3 45	-----
28	SE, W	400.8	31.2	W	0	Ci.	Cu.	-----	7 25	-----
29	W	422	28	SE	3.4	Ci.	Cu.	-----	3 40	-----
30	W	252	24.7	W	5.4	-----	Cu.	-----	6 25	-----
31	W, SE	296.3	27.2	W	3.6	-----	Cu.	-----	5 25	-----
Mean	-----	342	27.1	-----	5	-----	-----	-----	3 17	-----
Total	-----	-----	-----	-----	-----	-----	-----	-----	102 00	15.5

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.
^e Deduced from 21 hours.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, MARCH, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo			0.3		6.9		17.1									
Isabela, Basilan				1	13.2		8									
Zamboanga					18.6			.3								
Davao				4.6						11.4		25.4	24.4			
Cotabato			1.5	8.6	2.8	.8	6.6					2.8	.8			
Dapitan	4.3		2.8	1.8			5									1.3
Butuan	.5	.3	1.3	29.2	10.2		3.1		2.1	21.4		1.5	17.5			1.5
Dumaguete				1.2	1.5		3.8									
Yap, Western Carolines	16	4.3	5.3				2	1.3					3	.3	2.1	
Iwahig																
Surigao	2.3	2.5	8.2	13.7	2		5.8	3	33.3	15.3		4.1				7.6
Maasin							7.1									7.9
Cebu							1.3		2							10.2
Iloilo							8									
San Jose, Buenavista																
Cuyo																
Ormoc			7.9	3.9	6.6	.3	.3									
Guiuan	.3	2	51	43.2	3		.3					4.3	.3			3.6
Tacloban	3.3		3.8	18.5		4.3	.5			3		5	.5	16	.3	1.3
Capiz				1	9.4											
Borongan	.3	2.8	19.6	39.6	9.1	4.6	6.3					3.3	19.6	.8		10.7
Calbayog				8	23.9		4.3					2.3			1.8	3.8
Masbate			1.3	16.5	9.9											8.1
Romblon				11.2	7.4											11.4
Batag			3	32	53											7.4
Gubat				50.8	44.2							8.9				6.4
Legaspi			1.5	29.8	35.5		.8	7.1								12.9
Sumay, Guam	2.5	4.6						3		6.4						26.6
Calapan	.5	1	2.3		5	6.7	3.8									8.6
Virac			.3	11.7	95	.3	5.8	1.8				4.6	1.8	.5	4.8	1.3
Nueva Caceres				1.8	46		6.6									5.1
Batangas															.3	
Atimonan	7.9	1.3	.8		3.8											6.9
Ambulong, Tanauan																1.3
Silang																
Paracale	.8		1	12.2	17.4	4.3										32.4
Santa Cruz, Laguna																1.5
Manila																5.1
Antipolo	1															
Iba																1
San Isidro																.8
Tarlac							9.9									
Baler	59.2			3	11.2	.3	1.5	1.5						6.1	3.3	.8
Dagupan							6.8									1
Bolinao																7.6
Baguio		4.3					2.3									4.6
San Fernando, Union																
Echague	.8														3	1
Candon																8
Vigan																
Tuguegarao																
Laoag																
Aparri					2.3			.8								4.3
Santo Domingo, Batanes				66.8					.3					2		

Daily rainfall at the stations of the Weather Bureau, March, 1914—Continued.

Station.	Day of month.															Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo												1.5				25.8
Isabela, Basilan																15
Zamboanga												7.9				26.8
Davao				22.4		2.5						81.3				175.8
Cotabato						16.8						.5	2.3		.3	43.8
Dapitan			1			.4					1	.8			2.3	18.8
Butuan	14					2.5	.3	.8	3.1	4.1	13.2	4.6	.8		13.2	145.2
Dumaguete			3.8							3						13.3
Yap, Western Carolines	2.5	6.6	.3			.6			3.8	.3	20.6		.3	.5	15.5	8.1
Iwahig																0
Surigao	10.1		4.1	4.3	.8	3.9			4.8	15.7	44.2	24.4	.3	5.9	.8	17.3
Maasin	12.2											27.9				55.1
Cebu			7.6									.5		.5		7.6
Iloilo	13.2												4			1.8
San José, Buenavista													4.6			4.6
Cuyo																0
Ormoc	3.3		1.8							1.3	20.4					.6
Guiuan	4.1		.8	6.9	1.8	.3	2.8		1.3	56.2	41.9	1.3	3.5	.3	20.9	218.9
Tacloban	5.9		2.8	3.8						2	20.1	1	4.1		8.7	110.7
Capiz	2.6										.5	5.7				.5
Borongan	3.1	.3	19.8	2.5	5.8	4.8				7.9	17.2	8.4	4.3	1.5	24.1	216.4
Calbayog	25.9		5.8	6.1	32.8	5.6	5.8			1	7.9	1.3	1.5		1.3	182.3
Masbate	15.2										2	.3			1	54.3
Romblon	6.4		.8								2.5	5.4	.3		2.8	50.5
Batag	2	2.3			2.5		1.5				31.2	6.6			9.4	150.9
Gubat	5.3								1.5	2.3	3.3	2				135.3
Legaspi	2.										9.7				4.6	119.4
Sumay, Guam		.8				.8	1.3							11.4	7.7	33.5
Calapan					.5											23.7
Virac	14.7						.3			.5						139.1
Nueva Caceres									1							60.5
Batangas																.3
Atimonan										3.8						24.5
Ambulong, Tanauan	.8															2.1
Silang																0
Paracale	1.8						1.5		3			1				79.7
Santa Cruz, Laguna	.1	.8										.3				4.5
Manila			1													6.1
Antipolo																1
Iba		5.3														5.3
San Isidro																1
Tarlac																10.7
Baler		5.1	25.9						1.8	15.7		6.6				142
Dagupan																7.8
Bolinao	6.6															14.2
Baguio		2	2.3													15.5
San Fernando, Union		1.5	3.8													5.3
Echague																2.9
Candon																0
Vigan																0
Tuguegarao																0
Laoag																0
Aparri			2.5							3.8	10.9					24.6
Santo Domingo, Batanes	9.7	63.7	16	3.5							.9	.2				163.1

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, MARCH, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Dapitan.		Butuan.		Dumaguete.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31	22.1	33.3	21.6	30	22.5	34.2	19.5	35.9	21.1	31.7	24.4	29.7	20.6	29.5	23.6
2	30.9	22.3	33.2	21.6	29.6	22.5	34.7	23.3	34.8	21.4	31.4	23.3	28.7	23.1	30.6	24.9
3	29.6	22.1	33	22.1	31.9	22.9	36	21.9	34.2	22.4	30.9	23.6	29	22.2	30	23.5
4	30.1	22.1	34.2		31	24.5	29.2	22.8	29.9	22.8	31.2	24.6	28.3	23.8	30.4	24.6
5	29	24.3		21.3?	30.8	23	31.2	21.4	33.9	22.9	31.6	24.9	30	23.6	29.3	25.4
6	32.6	22.1		23.1	30.8	22.9	32.2	23.2	35.7	23.2	32.1	23.8	31.5	23.4	30	24.6
7	32.6	22.9	29.6	22.4	30.6	24.5	33	21.4	36	23.5	32.7	24.3	30	22.6	29.5	24.5
8	30.8	22.3	33.6	21.1?	29.1	22.5	34	22	34.8	23.8	32.5	25.2	30.5?	23.6	29.7	23.7
9	31.8	22.8	32.6	23.3	29.7	23	32.2	20.4	33.8	21.1	31.3	25	29	23.1	29.2	25.4
10	32.4	21.9	30.8	23.1	29	22.9	32.4	21.4	35.1	22.6	31.9	24.5	27	23.6	28.4	24.8
11	32.1	21.3	31.1	21.1	29.4	22.9	33.2	22.6	34.8	23.7	31.5	24.8	29.5	22.5	29.5	23.8
12	31.3	21.3	28.8	21.3	27.9	24.4	32.2	22.9	33.3	23.7	32.4	25	31	23.7	29.8	25.5
13	31.7	21.9	31.8	23.1	28.7	23.5	32.7	23	34.2	22.7	31.9	23.3	31	23.5	29.8	24.8
14	31.1	21.8	33.9	22.6	30	23	32.7	22.7	37.6	23.3	33.2	24.3	31.8	23.4	29.2	24.3
15	31.3	22.1	32	22.5	28.9	21.7	33.7	22.3	37.7	23.2	32.8	23.8	29.5	22.8	29.5	24.7
16	30.4	21.7	33.8	21.6	31.8	22.7	32.7	19.9	37.3	21.1	31.9	23.3	29.8	20.1	30.7	23
17	30.6	21.1	34.8	22.6	30.3	22	33.3	19	35.5	20.4	31.6	24.7	28.8	22.7	30	24.7
18	30.7	21.5	32.8	21.6	31.4	22	34.6	20.6	37.1	22	31.9	25.1	29.6	21.5	30	25.5
19	30	20.7	34.4	23.1	31	22	33.7	20.5	36.6	21	32.9	24.7	29.5	18.9	30.2	24.2
20	30.6	20.7	33.2	20.1	30.5	21.5	32.3	20.2	35.2	20.1	31.6	23.3	29.6	22.8	30.3	23.7
21	30.4	20.4	33.6	20.5	31	21.5	33.8	21.8	34.2	22.9	32.7	22.8	30.1	22.7	30.3	23.5
22	32.3	21.1	33.8	21.1	31.6	22.4	33.9	21.2	36.7	23.5	32.4	23.9	30.1	22.8	30.4	24.1
23	32.1	21	31.8	22.3	29.9	22.9	34.7	21.6	35.2	23.3	31.6	25.3	31.2	22.6	29.5	26.3
24	31.7	21.4	32.6	22.1	30.1	23	35.6	21.6	34.9	22.5	31.9	24.5	31.3	22.3	30.8	25.3
25	31.2	21.6	33.4	21.5	32.4	22.1	34.7	21.4	36.1	21.9	32.6	24.6	29.3	21.8	31.3	23.4
26	31	21.4	35.6	21.5	31.4	22.5	34.2	23	36.3	23.6	32.5	24.9	30	23.3	31.1	23.3
27	30.9	22.6	35.2	22.6	32	23.5	32.7	22.6	34.7	22.9	32.9	24.3	29	23.7	31.2	23.7
28	30.3	23	32.3	23.1	31.2	24	31.7	23.4	34	22.6	33.4	25.6	29.9	23.6	30.5	25.6
29	32.4	22.5	31.8	22.6	30.4	23.5	33.7	21	36.2	22.2	31.9	25.5	29.3	21.1	30.5	24.9
30	31.8	21.5		21.1	30	23	34.2	21.6	35	22.7		24.6	31	22.5	29.7	25.9
31	31.4	21.3	32.1	21.6	30	22.3	33.7	20	35.5	21.9	33.5	23.9	28.6	24.3	31.2	22.7
Mean	31.2	21.8	33	22	30.4	22.8	33.3	21.6	35.2	22.5	32.1	24.4	29.8	22.7	30.1	24.4

Day.	Yap, Western Carolines.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San José Buenavista.		Cuyo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.1	24.3	32.6	20.3	30.4	23.1	30	22.8	29.5	23.8	31	23.5	33.7	22.2	30.7	25.3
2	30.5	24.5	33	20.2	29.8	24.6	28.8	22	29.8	23.4	29.5	23	33.8	20.1	31	24.8
3	31.1	24	32.3	20.4	28.4	23	29	22	31.2	23.6	31	22.4	33.8	18.6	30.2	24.7
4	30.2	24	34	21.5	29.8	24.2	29.6	22.2	31	25	31.5	23.9	33.6	22.5	30.9	25.2
5	31.4	23.8	33.7	22	29.6	23	30.5	23	30.5	24.4	32.1	24	33.7	22.5	30.5	25.3
6	31.2	25.1	33.1	23.5	30.2	24.4	30.6	23.2	31	24.9	35.3	24.9	33.3	23.4	33.7	25.2
7	31.8	24.8	33.5	22.2	28.9	23.3	30.5	23.9	31.5	24.5	33	25	34.5	25.1	31.6	26.1
8	31.3	23.5	33.1	22.6	30.4	25.2	31	24	31.2	23.5	32.5	25	34.2	22.6	32.4	25.8
9	31.7	24.7	33.4	23.3	29.4	24	31	24.4	30.6	24.4	31.5	23.9	34.2	21.7	32.3	24.9
10	32.7	24	32.6	20.7	28.7	23	29.1	23.6	30	23.9	31.2	24.1	34.9	21.4	31.1	25.5
11	31.8	25.3	33.5	20.9	29.4	24	31.5	22.6	31	23.9	32.3	22.9	32.8	21.4	31.2	24.8
12	33.3	23.6	33.3	22.7	31.2	23.5	31	24	30.2	25.7	33.5	24.5	34.2	24	31.7	25.1
13	32.7	23.2	34	20.2	30.6	23.2	31	23.8	31.8	24.9	34.6	23.7	34.6	23.4	32.7	24
14	33.3	24	34.2	20.6	30.7	23	32	22.7	32	24.5	32.5	23.3	33.8	22.5	32.2	25.8
15	32.1	23	34	20.2	30.1	23.1	31.5	24.8	30	24.6	31	23.2	34.2	21.6	31.4	25.8
16	32.2	25.3	32.7	19.6	29.4	23.2	29	21.3	30.5	23	32.1	22.3	35.7	19.5	32	25.1
17	31.7	24.9	33.8	20	30.2	23.1	29.2	22.1	30.7	23	29.6	23.4	32.1	22	30.1	25.2
18	32.1	24	33.6	23.1	29.5	23	30.5	22.4	29.8	23.2	31.4	23.7	34.7	21.5	31.5	25.5
19	31.7	24.6	33.6	20.5	30.7	22.3	31	21.2	31.8	21.5	31.2	22.9	33.8	20.3	31.4	25.3
20	32.3	25.4	33.5	20.4	28.1	22.3	29.6	22.1	30.5	22.2	31.5	22.7	33.8	20.5	29.5	25
21	31.4	25.3	33.1	21.6	30.2	22.7	32	23	30.6	24.4	32.1	23.3	33.7	21.7	31.5	24.6
22	31.8	24.2	33.2	21.4	30.9	23.8	31	23.5	30.5	24.5	32.2	23.9	34.1	21.5	31.9	24.9
23	32.1	24.3	33.9	22.1	30.3	22.2	31.4	25	31.2	24.8	32.3	24.8	34.7	22.8	32.3	25.9
24	32.7	25	33.4	22.3	29.6	23.2	31.5	23.8	31.5	24.8	32.5	24.5	34.7	21.5	32.2	25.5
25	33.1	24	33.5	21.1	29.2	22.7	30	22.2	32.1	24.4	32.5	23.9	34.7	20.1	32.7	25.3
26	30.9	24	34	19.8	29.8	22.3	29	22.4	32.3	23.9	30.6	23.3	35.3	21	31.7	25.2
27	31.7	25.3	33.1	18.8	28.7	23.6	29	22	31.5	25.5	30.7	23.9	34.5	20.5	30.5	25.1
28	31.8	24.2	32.9	22.6	29.7	23.1	30	23.5	30.1	24.6	30.5	23.9	32.9	23.5	30.2	25
29	32.4	24.6	32.7	24.3	30.3	22.5	30.8	23	32	24.1	32	23.4	33.3	21.5	31.8	25.3
30	32.7	24.5	34	19.6	30.8	22.7	31.6	22.6	30.6	24.4	31.1	23.5	34.2	21.1	31.8	25.4
31	31.7	23.7	33.5	18.8	28.6	23.1	29.5	24	30.5	24.7	32	21.5	33.8	19.1	31.8	24.3
Mean	31.9	24.4	33.4	21.2	29.8	23.2	30.4	23	30.9	24.1	31.8	23.6	34	21.6	31.5	25.2

Maximum and minimum temperatures at the stations of the Weather Bureau, March, 1914—Continued.

Day.	Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.		Romblon.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1.....	30	21.3	29.2	23.6	32	22.3	31.6	24.4	29.6	22.5	33.8	21.1	32.4	23.4	31.6	23
2.....	30.8	19.4	29.5	24.9	32.3	22.3	30.8	21.8	29.7	19.2	34.7	18.7	31.5	23.4	31.1	23.9
3.....	31.5	20.8	29.4	23.6	29.7	23	30.3	22.5	29.6	23	32.9	21.9	33.2	24.2	31.6	23.2
4.....	30.2	23.5	30.7	24.8	30.6	23.8	30	24.4	29.2	24.6	31	23.5	29.5	24.4	32.9	23.1
5.....	31.4	23	30.8	24.5	29.7	23.9	30.4	24.8	29.5	24.8	28.3	23.1	29.4	24.8?	31.2	23.4
6.....	32.8	22.3	30.8	24.4	30	24.4	32.7	24.5	30.2	23.5	31	22.6	31.2	24.4	33	23.2
7.....	31.5	20.7	30.9	23.6	31	23.2	31.8	23.8	30.1	21.7	31.7	21.2	32.5	23.8	32.5	23.9
8.....	32.7	22.7	30.8	25.1	32.2	23	32.2	24.7	29.9	24.5	33.9	22.7	32.8	25	32.4	22.8
9.....	31.7	21.8	30.7	25.2	31.6	22.8	32.3	23.5	30.5	25.5	33.2	21.5	32.5	24.5	32.1	24.3
10.....	30.9	21.6	29.4	24	31.5	23	31.4	23.6	29.8	22.5	31.1	20.7	31	24.4?	31.6	23.1
11.....	31.6	20	31.1	23	31.4	22.4	31	21.6	30	19.5	31.8	21.6	33.4	23	31.5	22
12.....	31.7	21.4	30.9	22.8	31	23.4	30.8	23.9	29.5	22.5	30.1	23.1	31.8	24.5	33	20.3
13.....	32.2	22.3	31.6	24.5	30.5	23.2	32.8	22.6	28.1	22.1	32.1	23.5	33	23.4	33.1	21.2
14.....	31.5	20.2	31.7	23.2	31	22.8	31.2	22.4	30.3	21.2	32.1	21.3	33.6	24.5	32.7	21
15.....	32.5	21.6	30	24.6	32.9	23.3	32.1	23.5	30	19	33.2	20.1	33.8	23.2	32.2	22.3
16.....	32.2	19.6	29.9	23	30.5	21.7	31.2	22.5	30.2	19.6	34.4	19.3	34.2	23.5	30.7	23.4
17.....	30.4	22.2	30	24.1	31.5	23.4	31	24.4	30	24.3	31.6	22.7	31	23.5	31.8	23.9
18.....	33.2	22.6	30.9	24.9	32	22.4	31.8	23.8	30.6	23.2	33.3	21.5	33.4	24.5	32.3	23.4
19.....	32.6	19.3	29.9	24.3	31.4	22	31.1	23.9	30.1	22	33.1	20.3	34	23.8	32.3	22.5
20.....	31.2	20.6	30.6	24.4	32.3	22.5	31.3	22.9	29.8	21.9	29.6	20.3	34.2	24.4	32.5	22
21.....	30.7	20.8	30.8	23.1	31.2	22.7	32.1	23.7	30.6	19.9	31.4	20.5	33	25	32.9	21.3
22.....	32.7	21.3	31.2	24	31.9	22.4	32.8	24.6	30	22.5	31.6	21.7	33	25.2	32.7	22.7
23.....	33.9	20.9	30	23.5	32.1	22.6	32.7	24.1	30.6	21.7	32.4	21.2	35	24.8	32.3	23.4
24.....	32	22.5	30.8	24.4	32.3	23.4	32.8	24.5	30.6	23	33.4	21.2	35.4	25.2	32.7	23
25.....	34.9	21.6	31.4	25.1	33.7	22.8	31.5	24.5	30.9	21.2	33.1	21.3	32.2	24.2	33.2	24
26.....	34.2	21.4	30.2	24.4	33	22.9	31.4	23.5	30.6	21.5	33.3	20.1	32.8	23.4	33.4	24.7
27.....	30.2	23.2	30.9	23.6	29.2	23.3	30.2	23.8	29.6	24	27.6	23	30.8	25.2	33.8	23.8
28.....	31	23.5	30.7	24.2	30	23.4	31.8	23.7	29.9	22.6	31.7	22.6	29.8	24.5	32.9	23
29.....	32.3	21.9	30.8	23.8	32	23	31	23.7	30.1	23	31.5	20.9	33.2	23.2	32.6	28.8
30.....	33	22.1	30.7	24.6	33.4	22.9	31.3	23	31.2	22.7	33.4	20.4	33.2	23.2	33.7	23.4
31.....	30.4	21.5	29.9	24.7	30.8	24.4	32	21.9	30.3	22	31.6	21.9	31.6	23.4	33	20.6
Mean.....	31.9	21.6	30.5	24.1	31.4	23	31.5	23.6	30	22.3	32.1	21.5	32.5	24.2	32.4	22.9

Day.	Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1.....	29.2	21.5?	28.6	23.2	30.9	23	28.6	23.8	27.1	24.1	32.5	22.5	32.6	19.6	32.9	22.6
2.....	28.5	21.4	29	23	31.6	23.5	30.2	23.8	29.1	23.5	30.7	19	31.6	17.6	32.8	23
3.....	29	22	29	22.3	30.3	22.9	30	24.8	29.5	21.1	30	18.9	29.7	16.9	33.1	20
4.....	27	22.6	29.3?	22.8	29.4	23.8	30.4	24.4	30	21.8	33.4	22.4	31	21.8	34	23.5
5.....	26.5	22.4	25.7	23.5	26.6	23.1	30.6	24.8	29.5	24	26	22.5	29.1	21.5	33.9	22.6
6.....	28.2	20.6	28.6	23.2	30.7	23.3	30	24.8	30	23.3	30.3	22.2	33	21.7	33.4	24.6
7.....	28.9	22.5	29.8	25	31.3	22.9	28.8	24	30?	23	30.5	23.2	32.2	20.5	35.2	23.2
8.....	29	22.6	29.4	25.4	31.6	24	30.8	23.4	30.5	22.4	30.8	23	32.9	20	34	22.9
9.....	29	23.4	29.6	25.2	31.5	24.5	31	24.2	30.6	22.8	30.4	22.3	33.1	18.1	33.3	23
10.....	29	22.5	29.2	24.9	31.7	23.7	31.2	25.2	30.7	22.2	30.2	20.4	31.9	18.4	35.3	21.6
11.....	29.5	22	29.6	19	31.6	21.6	30	24.4	30	19.5	32.4	16.9	32.8	15.4	34.3	20.2
12.....	29.5	23	30.2	24	31.6	24.2	31.6	24.8	30	19	30.6	20.5	33.9	17.7	33.9	19.2
13.....	28.3	22.4	30.5	22.2	32.3	21.4	31.8	25	31	19.2	31	21.7	33.9	18.5	34.5	20.2
14.....	29.8	22	30.3	24.9	32.2	22.6	31	24.6	31.8	19.1	28	20	31.6	19.3	33	19.2
15.....	29	21.5	29.5	22.2	31.4	23.9	31.4	24.2	29	20	30.1	17.8	31.8	16.9	33.1	19.4
16.....	29	21.5	28.4	23.5	29.4	24.3	30	24.2	30.5	21.6	31.1	21.4?	29.9	22.1	34.3	23.2
17.....	29.8	22	29.4	23.2	32.1	23.8	30	25.2	29.5	22	33.2	20.6	30.5	17	34.8	23.3
18.....	29.4	23.3	29.7	24	31.7	24.8	30.4	25.2	31	24	31	20.8	32.6	18.8	35.2	22.8
19.....	29.8	21.9	29.9	24.3	32.8	23.4	31.4	24	31	21.6	30.9	19.5	31.5	17.5	35.5	21
20.....	29	22.6	30.1	24.2	32.6	24.7	30.2	24.8	31.4?	20.6	29.8	20	33.1	18.5	34.4	21
21.....	30.4	22	30	23.1	32.7	24.7	29.2	24.6	31	19.4?	31	20.4	32.5	17.7	35.3	19.8
22.....	29.5	22.5	30.6	25	32.8	24.6	31	23.8	31.8	21.8	30.8	20.7	32.4	19.5	34.8	21.4
23.....	30.5	22.5	30.4	25.3	33.1	24.2	30	23.8	31.9	21.6?	31.2	18.8	32.8	18.1	36.3	21.2?
24.....	30	22.6	30.5	25.4	32.7	25.1	29.8	24.8	31.5	21.7	32.1	22.1	34.2	19.6	35.6	21.8
25.....	30.5	22.5	30.2	23.8	32.2	24.1	30	25	31.5	23	32.7	19.8	32	17.7	35.3	22.4
26.....	30.6	22.5	30.4	25	32.2	23.9	30.2	25.6	29.9	24.7	32.8	19.8	32.6	17.9	32.8	22.8
27.....	26	21.9	29.2	24.4	31	24.7	30.6	24.8	31.5	23	33	19.9	32	20.6	35.2	21
28.....	28.5	21.5	28.9	23.4	30.9	22.9	31	24.6	29	23	33.4	20	31.7	21.2	34.3	21.2
29.....	29	23.4	30.7	25.4	32.8	24.7	28.8	25	32.2	22	33.1	20.6	33	18	34.9	22
30.....	30	22.5	30.8	22.6	32.8	21.7	28.6	25.4	33.1	22	30.4	19	31.9	15.7	33.9	21.3
31.....	29.4	22.5	30.9	21	32.7	20.1	31	25	31.2	19.1	31.3	19.3	32.7	15.6	35.3	18.4
Mean.....	29.1	22.3	29.6	23.7	31.6	23.6	30.3	24.6	30.5	21.8	31.1	20.5	32.1	18.7	34.4	21.6

Maximum and minimum temperatures at the stations of the Weather Bureau, March, 1914—Continued.

Day.	Atimonan.		Ambulong, Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.		Iba.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	26.6	24.1	31.2	23	30.7	17.8	29.2	23.6	31.2	19.2	31.1	20	31.8	19.7	32.2	17
2	28.6	23.1	30.9	23.6	30.8	17	29.7	23.4	32.2	19.4	32.6	21.3	31	20.9	32	20.5
3	29.6	24.1	31	22.4	30	16.6	29.2	23.9	32.6	20	33.1	19	32.8	19.2	32.6	20.5
4	28.2	23.9	32.6	23.5	29.7	16.9	29.5	22.7	30.5	20	33.8	18.9	33.9	19.4	31.4	18
5	30.5	24.4	31.8	24	30.2	17.8	28.4	23.5	31.1	23	34.3	20.6	33.5	19.8	31.7	19
6	31.9	23.5	34	23.1	29.5	18.3	30.4	23.1	32.7	24	35.2	23.7	34.1	23.5	34.1	20.6
7	29.4	22.4	35.8	22.1	30.5	18	30.8	22	32	23	34.8	22.5	34.8	22.5	32.7	20.9
8	30.4	24.2	33.5	23.2	30.7	18.2	30.8	22.9	32.4	23.5	34.8	22.4	34.8	22.3	34.2	24
9	29.5	22.5	33.6	23.5	31	18.1	30.6	21.3	33	22	34.5	21.2	34.7	23	33.4	21
10	31.3	24.8	33.2	22.4	31.3	19.3	29.9	20.9	32.5	22	34.2	20.7	35.5	21	33.4	21.1
11	28.8	19.7	34	19	31.7	19.5	30	19.6	32.5	19.2	34	19	33.8	19.6	31.3	20.2
12	29.2	19.8	34.8	19	31.4	19.1	31.5	19.1	33.9	19.5	35.7	18.8	35.4	19.3	31.4	20.9
13	29.2	20.2	36	19.5	32	19.7	30.8	20.6	33.6	19	35	19.5	35.2	19.3	31.7	18
14	30.7	20.6	34.8	19.5	32.2	19.2	31	20.7	33.1	20.4	34.8	20.2	34.4	20.6	32.9	18.3
15	31.8	24.2	32.4	23.5	31.3	18.5	29.8	22.9	30.1	22.9	30.4	22.8	30.2	22.6	30.4	21
16	31.4	23.9	32	23.9	30	19.4	29.8	23.2	31.3	22.7	33.3	22.4	33.5	23	32.9	20.5
17	30.5	23.7	32.2	23	30.8	18.3	30.2	22.7	31.8	22.7	33.4	22.6	34.2	22.3	33.1	19.5
18	31.8	25.2	33.6	24	31.3	18	30.2	23	32.8	22.7	33.8	20.5	33.8	21	33.1	19
19	30.4	24.2	33	22.4	30.8	19.1	30.2	21.2	31.6	21.8	33.9	21.2	34.5	21	31.4	20.5
20	30	22.6	33.8	21.4	31.5	18.7	31.2	21.9	33.4	20.2	33.8	19.8	34.6	20.2	32	22.5
21	30.4	20.4	34.7	20.5	31	19.5	30.7	19.7	32.7	20.2	34.5	21.7	35.2	20.5	31.5	19.5
22	30.6	24.2	33.8	20.5	31.8	20	30.8	22.8	32.6	20.5	33.9	19.5	35.5	21	33.1	19
23	31.8	23.6	33.7	20.6	32.2	19.7	30.8	23.6	32.9	21.4	34.8	20	35.7	21.7	32.8	19.4
24	30.2	25.7	34.4	23	31.6	19.1	30.8	23.2	32	20	35.5	18.9	36.4	20	33.5	18
25	30.5	21.6	34	20.5	32	19.5	30.8	21.2	33.1	21.8	35.2	20.9	35.5	20.6	32.5	21.4
26	32.3	24.8	32.8	22.9	31.1	20	30.1	23.6	31.3	21.6	34.5	17.6	35.3	19	33.1	17.2
27	31.8	25.2	32.2	23	30.4	19.6	30.3	24.9	31.2	21.5	34.2	19	33.8	19.8	35.5	20.5
28	29.8	25.6	33	23	30.9	20.2	31	24.6	31.8	20.5	34.6	20.2	35.5	20.8	33.2	17.5
29	31.4	25.3	33	23	31	20	30.8	23	32.4	21.5	35.3	21.4	35.8	22.8	32.5	19.3
30	31.8	21.8	34.5	20.2	31	19.7	30.6	21	33.1	21.5	34	20.5	35.1	20.1	33	20.4
31	30.6	19.6	34	19.5	31.8	20.2	30.3	19.9	33.8	20.3	34.8	21.5	35.6	20.3	31.1	19.7
Mean	30.4	23.2	33.4	22	31	18.9	30.3	22.2	32.3	21.2	34.1	20.6	34.4	20.9	32.6	19.8

Day.	San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernando, Union.		Echague.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.2	18.5	35.7	18.2	30.4	20.5	32.7	20.9	30.5	22.6	24.3	12.7	31.9	19.9	32.5	16.1
2	34.2	21.4	35.8	19.8	31.4	21.6	32.7	22.2	29.4	22.2	24.9	13.9	32.1	20.6	31.4	19.7
3	32.2	20	35.8	18.5	30.9	21.3	35.5	22.1	30.6	21.4	22.4	14	31.6	20.4	31.2	18.8
4	35.8	18	36.1	17.2	29	19.3	35.2	19.8	30.6	21.5	24.8	12.6	31.6	20.5	33	17.1
5	34.4	20.8	36.2	20	31.4	21.6	37.3	21	33.1	19.9	27	14.5	32.5	21.1	33.5	17
6	35.5	23.7	35.7	22.2	33	22.7	36.4	24.5	32.7	22	27	15.4	34.7	21.3	33.8	20.9
7	37	23.4	38	22.4	33	23.5	32.9	24.5	32	23.3	23.8	15.6	34.5	24.7	32.9	22.2
8	34.6	23.1	36	21.4	32.8	23.2	36.8	24	33.9	22.7	26.5	16	34.3	24.5	35	21
9	35.1	21.5	35.9	22	32.7	23.2	36.8	23	33.5	23	26.2	15.4	33.7	22.9	34.9	22.4
10	35.5	21.4	36	20	34.6	20.8	36.8	23.3	32.9	23	25.2	14.8	33.6	24.7	34.6	18.4
11	36.6	19.8	36.4	20.1	30.5	19.9	33.7	23	32.6	22	25.3	15.5	33.7	22.4	35.2	17
12	36.8	20.4	36	20.4	33.2	19	34.7	23	31.5	22.8	25.1	14.6	33.6	25.2	35.4	17.7
13	36.8	20.6	36.5	20.5	34	20	33.9	23	32.4	21.9	25.1	15	32.2	23.1	34.9	18.4
14	35.8	21.3	36.5	20.8	34	20	31.4	23.6	32.1	21.4	25.4	14.7	32.4	23.7	33.7	21
15	29.1	22.8	31.4	22.2	27.7	22.3	34.9	24	32.6	22.9	22.1	14.8	32.8	23.1	28.3	21.6
16	33.5	21	34.4	21.4	29.2	22	35.3	23.1	32.9	22.3	24.8	14	33.1	23	30.9	20.9
17	34.5	20.4	35.4	20.4	31.4	21.3	36.3	22.9	32.5	24.1	23.3	13.8	34	24.1	33.5	19.5
18	34.4	19.8	35.6	19	30.4	20.1	32.8	22.4	30.6	25.6	23.8	14.7	32.6	23.4	34.3	18.3
19	35	20.2	36.8	22	30.9	21.3	35.4	23.1	32.5	23	23.5	14.5	32.7	24.8	34.6	19.8
20	35.9	22	35.4	22.5	30.7	20.9	34.8	23.4	31.1	22.9	24.7	15	31.8	23.5	34.3	20.4
21	36.2	21.8	36.5	22	31	21.1	33.6	23	31.7	21.6	24.1	14.6	31.9	23.2	34.4	22
22	35.7	20.1	36.8	21	34.2	19.4	34.8	22.6	32.5	21.4	25.4	14.5	32.9	22.6	35.4	19.4
23	36	21	37.4	20.4	30.6	20.3	36.5	22.1	33.6	21	25.3	14.5	33.3	21.9	35.8	18.4
24	36.6	18.8	36.7	18.6	33.2	18.7	37.8	21	34.3	22	26.3	14.5	34.1	22.8	36	17.4
25	34.7	21.6	34.6	20.1	31.8	21.1	36.4	22.5	33.1	21.9	25.8	14.4	33.2	22.7	34.5	19.5
26	34.7	18.8	36.3	18	33	19	36.8	22	33.6	24.5	23.4	14.5	34	22.4	34	18.3
27	34.6	18.3	35.2	16.8	32.9	18.5	33.9	22	32	19.9	24.6	12.7	32.9	21.2	33.8	17.5
28	35	20.4	35.8	19	34.5	19.5	37.6	22	33.5	22.7	25.8	13.4	33.3	21.7	34	17.5
29	35.1	21	37.6	19.2	31.6	21.9	36.4	21.6	33.1	21.5	26	15	33.4	21.4	35.3	18
30	37.6	21.6	37.4	23.2	33.9	20	31.4	24.5	32.4	25.1	26	14.8	32.4	20.6	35.3	20.1
31	37.1	22.1	37.3	21.5	34.2	20.1	35.9	23.5	32.6	24.1	25.8	15.3	32.9	22.1	35.1	22.5
Mean	35.1	20.8	36	20.3	32	20.8	35.1	22.7	32.3	22.5	25	14.5	33	22.6	33.9	19.3

Maximum and minimum temperatures at the stations of the Weather Bureau, March, 1914—Continued.

Day.	Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.5	21.9	30.3	22.1	34.7	17.4	33.1	20.3	28.4	19.1	26.5	21.4
2	30.4	20.5	30.4	20.2	34.2	17.8	33.7	17.9	28.4	20.1	26.9	19.4
3	31	21.5	30.6	23.3	33.8	18.8	31.2	18.6	29	18.6	27.3	21.8
4	30.5	21.5	30.8	22	36.7	18	32	20.5	31.2	20.2	26.9	20.7
5	31.1	20.7	32.4	21.7	37.5	19	33.5	20	30.6	19.6	28.3	23.4
6	32	22	31.7	23.2	36.8	22	33.7	20.4	33.5	22.1	29.9	24.7
7	31.6	25.1	31.8	24.5	35.1	21.7	33.2	23	30.5	22.1	30.6	22.1
8	31.5	26.1	32.2	24.7	39.1	22.9	34	22	32.2	22.5	30	24.2
9	31.5	25	30.8	24.9	38.6	22.3	33.4	22.3	31.9	23.1	30.1	25.2
10	31.6	25	31.5	25	38.4	22.4	33.8	22.7	31.3	21.5	29.5	24.1
11	31	23.5	31.4	23.2	38.5	19.8	33.1	23	30.4	21.4	29.1	22.7
12	31.1	23.6	31.9	23.3	36.8	20.5	33.6	23	30	21.1	30	22.6
13	31.5	23.9	32.8	23	38.7	20.6	34.3	21	30.7	21.6	29.3	21.6
14	31.1	23.5	31.1	23.2	34.8	21.5	33.6	20.5	29.2	23.8	24.5	21.9
15	31.5	23	32	22.2	31.4	22	36.1	22.4	28.1	23.2	23	19.6
16	31.5	23.3	31.8	24	36	22.5	35.1	20	28.2	21.8	26.9	19.6
17	31.5	24.2	32.9	24	37.5	19.7	33	23.2	32.1	20.1	29.3	23.1
18	31.5	24	31.8	23.2	37.7	21	33.7	23	29.7	21.7	24.5	22.3
19	31	25.5	31.5	24.7	36.2	22.5	34.3	23.9	28.1	23	24.3	21
20	31	24.5	32.2	24.3	37.3	21	32.8	21.5	29.1	22.2	26	21.4
21	31	24.7	31.9	23.2	38	22.5	33.2	21.6	29.9	22.5	28.5	21.7
22	31.1	23	31.6	22.8	39.5	23.3	32.7	21.4	31.4	21.6	29.8	22.8
23	31.4	23	32	22.9	38.5	21.5	34.1	20.5	32.2	21.9	30.1	23.5
24	31.5	23.4	32.5	23.5	40	21	34.5	20.3	33.5	21.6	30.1	23.5
25	31.4	23	31.8	22.2	38.5	20.6	35.4	17.9	30.6	19.3	28.5	21.7
26	31.5	23	32.9	23.7	35.2	20.6	36.2	20.5	29.8	21.5	26.1	22.2
27	31	22.6	31.8	21.8	34.1	20.1	36	23	27	21.4	25.6	22.6
28	31.4	23	33.3	22.4	38.4	17.2	34.7	19.9	29.6	20.7	29.1	23
29	31.5	23.4	31.5	24.2	39	23	34.8	21.2	32.9	22	30.4	24.2
30	31	23.2	31.3	22	38.7	21.3	33.9	20.5	29.7	21.8	29.4	22.5
31	31	23.2	30.6	22.3	38.4	22.3	34	21.4	30	22.1	28.8	22.7
Mean	31.2	23.3	31.7	23.1	37	20.9	33.9	21.2	30.3	21.5	28	22.4

SEISMOLOGICAL BULLETIN FOR MARCH, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
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EARTHQUAKES FELT IN THE PHILIPPINES.¹

8, 4^h 55^m [8, 12^h 55^m]. **Maasin** (S of Leyte). Earthquake of intensity II-III.
11, 17^h 40^m [12, 1^h 40^m]. **Baguio** (W of Luzon). Earthquake of intensity II, duration three seconds.

16, 22^h 44^m 43^{s*} [17, 6^h 44^m 43^s]. **Eastern Visayan Islands**. Earthquake of intensity VI-VII and of great extension. Its epicenter was in the northern part of the "Philippine Deep" in the Pacific, to the E and ENE of the Island of Samar, this island consequently being the one where it was felt with the greatest intensity. All the reports from the stations both in the E as well as the W, qualify the earthquake as violent; but we do not believe that its intensity was greater than No. VII of the scale, since the damage done was to old buildings only. In the description of the earthquake sent by several observers it is noted that the large oscillations were preceded by slow gentle movements, which they considered as subsultory and which lasted long enough to be recognized; these preliminary movements clearly indicate that the epicenter was outside the Island to the E and ENE, whence the large oscillations which immediately followed, came. In Batag, a small island to the N of Samar, subterranean noises were heard. The duration of the earthquake was great in all parts, it being from 30 to 40 seconds.

Outside the Islands of Samar and Leyte, which were closest to the place of origin, the earthquake was felt with decreasing intensity in a zone very much prolonged in the SSE-NNW direction, which extended from the NE of Mindanao to the NE of Luzon, a distance of 1,200 kilometers. In the direction ENE-WSW it was perceptible as far as the N of Panay, which is about 300 kilometers from the eastern coasts of Samar. The peculiar shape of the region affected by the earthquake forms another proof that it took its origin in the "Philippine Deep" which has approximately a SSE-NNW direction to the E and NE of Samar.

The shock was registered by all the seismographs of the Far East and Europe; consequently in the meizoseismic zone, which was in the Pacific, it must have had much greater intensity than that displayed in the eastern part of the Island of Samar.

On the 17, 6^h 49^m 12^{s*} [17, 14^h 49^m 12^s] there was a repetition of small intensity, registered by the seismographs in Manila, but not noted by any observer except the one in Batag, where oscillatory movements were observed in the E-W direction and with intensity III.

17, 16^h 56^m 48^{s*} [18, 0^h 56^m 48^s] **E of Mindanao**. Earthquake felt throughout the whole of the eastern part of Mindanao, which comprehends the Province of Surigao and

¹ The intensity of the earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory, whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

the subprovinces or districts of the Agusan and Davao. The intensity of the shock was III in Surigao and IV-V in Butuan and Davao, towns 200 kilometers apart in the N-S direction.

As we have no data from other parts of E Mindanao, it is not possible to determine whether this earthquake had its origin in the "Philippine Deep" which is close to the eastern coasts of the island, or in the seismotectonic line of the Agusan Valley and the Gulf of Davao. What appears certain is that the intensity does not correspond to an extension of more than 400 kilometers along the eastern part of Mindanao. That the intensity was small is deduced from the seismograms obtained of the earthquake in Manila, Baguio, and Ambulong, Taal. It was also registered at the Observatory of Irkutsk.

18, 3^h 10^m [18, 11^h 10^m]. **Maasin** (S of Leyte). Earthquake of intensity II-III.

19, 21^h 26^m [20, 5^h 26^m]. **NE of Luzon**. Oscillatory earthquake, direction E-W, intensity III in Aparri and II-III in Tuguegarao.

21, 15^h 08^m 56^s* [21, 23^h 08^m 56^s]. **Aparri** (NE of Luzon). Oscillatory earthquake, direction E-W, intensity IV, duration 8 seconds.

22, 14^h 30^m [22, 22^h 30^m]. **Davao** (SE of Mindanao). Oscillatory earthquake, direction E-W, intensity IV, duration 3 seconds.

22, 18^h 16^m 00^s* [23, 2^h 16^m 00^s]. **E of Mindanao**. Earthquake of intensity V, felt throughout the whole of the Agusan Valley and in the Gulf of Davao. The only observations in our possession are those from Butuan and Davao and hence it is difficult to say whether the epicenter was in the Agusan Valley itself or in the Pacific close to the eastern coasts of Mindanao. But the fact that no report was received from the central area of the Agusan Valley or from the eastern coasts, indicates, as we know from experience, that it had not much greater intensity there than in the two stations mentioned above. It was recorded by the seismographs in Manila and Irkutsk.

26, 13^h 29^m [26, 21^h 29^m]. **Ormoc** (W of Leyte). Subsultory and oscillatory earthquake, direction E-W, intensity IV-V, duration 10 seconds.

28, 7^h 25^m 34^s* [28, 15^h 25^m 34^s]. **Calapan** (NE of Mindoro). Oscillatory earthquake, direction NE-SW, intensity IV, duration 4 seconds. There was a repetition with intensity III, and in the same direction at 7^h 32^m 24^s* [15^h 32^m 24^s].

28, 13^h 59^m [28, 21^h 59^m]. **Ormoc** (W of Leyte). Oscillatory earthquake, direction WNW-ESE, intensity V, duration 10 seconds. The origin of this shock and of that which occurred on the 26th was to the W of Ormoc, where as we have pointed out before, there is a center, apparently volcanic, because the earthquakes which take their origin there are of very small extension.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich Mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N : $T_0=6.4$, $\epsilon=4.4$, $\frac{r}{T_0^2}=0.045$;
 A_E : $T_0=6.3$, $\epsilon=3.5$, $\frac{r}{T_0^2}=0.052$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
58	4	I	e F	<i>h. m. s.</i> 13 24 51				
59	4	I	e F	15 31 00 16 56				
60	4	I	e F	18 40 19 28				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _E μ	A _N μ	
61	6	I _r	eP	19	14	37		
			S	21	55			
			L	28	24			
62	6	I	M _N	20	44	16	15	8
			F	20	24			
63	7	I _v	e	20	50	52		
			F	21	14			
64	7	I	iP	11	26	05		
			eS	27	22			
			eL	29	16			
65	10	I _v	M _E	30	28		6	31
			F	51				
66	12	I _v	eP	16	02	53		
			F	19				
67	13	I	eP	16	30	14		
			F	33				
68	14	I _r	eP	17	41	48		
			L	42	15			
			F	45				
69	15	I _v	e	4	43	00		
			F	5	25			
70	16	II _v	eP	20	06	22		
			S	11	47			
			L	16	32			
			M _E	23	35	13-14		59
			M _N	23	42	13-14	58	
71	17	I _v	F	21	13			
72	17	I _v	eP	17	16	22		
			F	19				
73	18	I _r	eP	22	44	43		
			iL	45	32			
			M _N	50	49	1-2	1,775	
			M _E	50	50	1-2		918
			F	0	22			
74	18	I _v	eP	6	49	12		
			L	50	11			
			F	59				
75	18	I _v	eP	16	56	4		
			L	58	5			
			M _N	17	00	52	7	438
76	21	I _v	F	17	35			
77	22	I _v	eP	4	29	15		
			eS	36	34			
			eL	44	00			
			M _E	58	02	13		15
			F	5	34			
78	25	I _v	eP	6	27	02		
			S	34	00			
			L	40	26			
			M _E	55	04	12-13		8
			F	7	30			
79	25	I	eP	12	17	15		
			L	17	39			
			M _N	17	41	1		52
			F	24				
80	25	I _v	eP	15	08	56		
			F	14				
81	25	I	ePS	18	16	00		
			L	18	29			
			M _N	19	29	6		25
			M _E	19	29			
			F	50				
82	25	I _v	eP	3	26	21		
			L	26	44			
			F	29				
83	25	I	e	8	21	33		
			F	43				
84	25	I _v	eP	17	52	12		
			L	52	35			
			F	56				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.	
						A _N μ	A _E μ		
81	28	I _v	eP	7				Calapan (NE of Mindoro).	
			L			25 34			
			M _E			25 48			
			F			25 51	1		20
				29					
82	28	I _v	eP	7				Do.	
			L			32 24			
			M _E			32 39			
			F			32 47	1-2		49
				41					
83	28	I _v	eP	8					
			L			42 06			
			F			42 16			
				45					
84	28	I _v	eP	9					
			L			18 16			
			F			18 28			
				21					
85	28	I _r	eP	10					
			eS			49 36			
			eL			54 00			
			M _N			59 08			
			M _E			11 00 12	11		125
		F	01 50	12		82			
			52						
86	30	I _u	eP	1					
			S?			01 00			
			L?			19 00			
			M _E			35 00			
			F			49 40	20		9
			2 52						
87	31	I _v	eP	0					
			L			29 53			
			L			31 30			
			F			46			

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

8, 4^h 55^m [8, 12^h 55^m]. **Maasin** (S de Leyte). Temblor de tierra de intensidad II-III.
 11, 17^h 40^m [12, 1^h 40^m]. **Baguio** (W de Luzón). Temblor de tierra de intensidad II, duración 3^s.

16, 22^h 44^m 43^{s*} [17, 6^h 44^m 43^s]. **Islas Visayas Orientales**. Temblor de tierra de intensidad VI-VII y de grande extensión. Su epicentro se hallaba en la parte N del "Abismo de Filipinas" en el Mar Pacífico, al E y ENE de la Isla de Sámar, siendo por consiguiente en esta Isla donde se sintió con mayor intensidad. Todos los reports de las estaciones tanto del E como del W de la Isla lo califican de terremoto violento; no creemos sin embargo que su intensidad pasase del grado VII, puesto que sólo causó desperfectos en algunos edificios viejos y nada sólidos. En la descripción del terremoto varios observadores hacen notar que precedieron a las grandes oscilaciones otros movimientos muy suaves, considerados como susultorios, los cuales duraron el tiempo suficiente para darse cuenta de ellos: estos movimientos preliminares indican claramente que el epicentro se hallaba fuera de la Isla, hacia el E y ENE de donde procedían las grandes oscilaciones que siguieron inmediatamente. En Batag, islote situado al N de Sámar, se oyó ruido subterráneo. La duración del terremoto fué en todas partes muy larga de 30 a 40^s.

Fuera de las Islas de Sámar y Leyte, más cercanas a su origen, el terremoto se sintió con decreciente intensidad en una zona muy prolongada en la dirección SSE-NNW, que se extendía desde el NE de Mindanao al NE de Luzón, una distancia de 1,200 kilómetros. En la dirección ENE-WSW, fué perceptible hasta el N de la Isla de Panay distante de las costas orientales de Sámar unos 300 kilómetros. Esta forma de la región afectada por el terremoto tan desproporcionalmente prolongada prueba una vez más que su origen se hallaba a lo largo del "Abismo de Filipinas," el cual al E y NE de Sámar tiene aproximadamente la dirección SSE-NNW.

Registraron este terremoto todos los sismógrafos del Extremo Oriente y de Europa; por consiguiente debió tener en la zona meizosísmica, toda ella dentro del Mar Pacífico, mucha mayor intensidad que la desarrollada en la parte oriental de la Isla de Sámar.

El día 17 a 6^h 49^m 12^{s*} [17, 14^h 49^m 12^s] hubo una repetición de poca intensidad registrada por los sismógrafos de Manila, de la cual solamente dió aviso el observador de Batag. Allí se sintieron movimientos oscilatorios de dirección E-W y de intensidad III.

17, 16^h 56^m 48^{s*} [18, 0^h 56^m 48^s]. **E de Mindanao**. Temblor de tierra sentido en toda la parte oriental de Mindanao, que comprende la Provincia de Surigao y las subprovincias o distritos del Agusan y de Dávao. Su intensidad fué del grado III en Surigao y de IV-V en Butúan y Dávao que distan entre sí cerca de 200 kilómetros en la dirección N-S.

Como no tenemos datos de ninguna otra localidad del E de Mindanao, no es posible determinar si este terremoto tuvo su origen en el "Abismo de Filipinas" cerca de las costas orientales de la Isla o en la línea sismotectónica del Valle del Agusan y Golfo de Dávao. Lo que parece cierto es que su intensidad no correspondió a la extensión de más de 400 kilómetros, a lo largo de toda la parte oriental de Mindanao. Su poca intensidad la deducimos principalmente, de los registros de los sismógrafos de Manila, Baguio y Ambulong. Fué también registrado en el observatorio de Irkutsk.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de De Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

18, 3^h 10^m [18, 11^h 10^m]. **Maasin** (S de Leyte). Temblor de tierra de intensidad II-III.

19, 21^h 26^m [20, 5^h 26^m]. **NE de Luzón**. Temblor oscilatorio, dirección E-W, intensidad III en Aparri y II-III en Tuguegarao.

21, 15^h 08^m 56^{s*} [21, 23^h 08^m 56^s]. **Aparri** (NE de Luzón). Temblor oscilatorio, dirección E-W, intensidad IV, duración 8^s.

22, 14^h 30^m [22, 22^h 30^m]. **Dávao** (SE de Mindanao). Temblor oscilatorio, dirección E-W, intensidad IV, duración 3^s.

22, 18^h 16^m 00^{s*} [23, 2^h 16^m 00^s]. **E de Mindanao**. Temblor de tierra de intensidad V, sentido en todo el Valle del Agusan y en el Golfo de Dávao. Tampoco podemos asegurar si este terremoto tuvo su epicentro dentro del Valle del Agusan o en el Pacífico cerca de las costas orientales de Mindanao: solamente tenemos observaciones de Butúan y de Dávao. Con todo el no haber recibido aviso ninguno, ni del centro del Valle del Agusan ni de las costas orientales, indican, según la experiencia que tenemos, que no tuvo allí mucha mayor intensidad que en las dos estaciones mencionadas. Registráronlo los sismógrafos de Manila y los de Irkutsk.

26, 13^h 29^m [26, 21^h 29^m]. **Ormoc** (W de Leyte). Temblor de tierra susultorio y oscilatorio, dirección W-E, intensidad IV-V, duración 10^s.

28, 7^h 25^m 34^{s*} [28, 15^h 25^m 34^s]. **Calapán** (NE de Mindoro). Temblor oscilatorio, dirección NE-SW, intensidad IV, duración 4^s. Repitió con intensidad III y la misma dirección a 7^h 32^m 24^{s*} [15^h 32^m 24^s].

28, 13^h 59^m [28, 21^h 59^m]. **Ormoc** (W de Leyte). Temblor oscilatorio, dirección WNW-ESE, intensidad V, duración 10^s. El origen de este temblor y del ocurrido el 26 se hallaba al W de Ormoc donde, según advertimos muchas veces, existe un centro, al parecer volcánico, por ser los terremotos en él originados de pequeñísima extensión.

BULLETIN FOR APRIL, 1914.

METEOROLOGICAL BULLETIN FOR APRIL, 1914.

By Rev. JOSÉ CORONAS, S. J.,

Chief, Meteorological Department of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was more than a millimeter greater than that of April, 1913, in all the stations of the Philippines. In Manila it was greater than the normal by 0.76 mm. The highest barometers were recorded on the 9th and 21st, the lowest on the 29th.

The mean monthly temperature was slightly higher than last April in almost all the stations. In the Central Observatory, Manila, it was 0.1° C. less than the normal and 0.9° C. greater than that of April last year. The absolute values for Manila were 36.9° C. on the 26th, and 19.2° C. on the 1st: while for Baguio they were 27.6° C. and 14.4° C. on top of Mirador, and 28.4° C. and 12.9° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND-CLASS STATIONS FOR APRIL, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from April, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from April, 1913.	Highest.	Day.	Lowest.	Day.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		<i>mm.</i>		<i>°C.</i>	<i>°C.</i>	<i>°C.</i>		<i>°C.</i>	
Tagbilaran	759.73	+1.10	761.22	9	758.37	29	27	+0.5	34.2	26	20.8	2
Surigao	59.98		61.34	9	58.80	29	26.4		31.5?	6?	21	30
Cebu	59.91	+1.19	61.37	9	58.68	29	28.1	+ .5	32.6	7	22.6	12
Iloilo	59.44	+1.12	60.93	21	58.11	29	28.5	+1.2	36	7	22.6	16
Ormoc	60.06	+1.26	61.39	9	58.78	29	26.6	- .1?	34.6	25	18.2	30
Tacloban	60.27	+1.18	61.66	21	59.12	29	27.1	+ .4	33.3	18	20.4	30
Capiz	60.17	+1.27	61.65	21	58.87	29	27.6	+ .7	34.3	26	22.2	17
Calbayog	60.29	+1.32	61.65	21	59.06	29	26	0	35.3	21	20.5	16, 17
Legaspi	60.30	+1.01	61.87	21	59.18	29	28	+ .6	34.1	30	22.4	14, 17
Atimonan	60.41	+1.26	62.29	9	58.93	29	27.4	+ .4	33.7	29	21.2	1
Ambulong, Tanauan	59.80	+1.17	61.74	9	58.38	29	28	+ .6	37.3	13	20.6	1
Paracale	60.67	+1.10	62.52	21	59.39	29	27.2	+ .6	33.8	17	21.6	14
Manila	60.17	+1.10	61.99	9	58.73	29	28	+ .9	36.9	26	19.2	1
San Isidro	60.31	+1.08	61.98	21	58.83	29	28.8	+1.2	37.7	27	20.1	3
Dagupan	59.43	+1.04	61.24	9	57.85	29	28.8	+ .6	38.7	24	22	3
Bolinao	59.80	+1.19	61.36	9	58.16	29	28.8	+ .4	36.5	26	22.3	6
Baguio ^a	638.08	+1.29	639.97	21	636.89	1	19.1	+ .5	27.6	21, 26	14.4	14
Vigan	759.90	+1.22	761.48	21	758.12	29	28.2	+ .1	34.2	26	22.3	8
Tuguegarao	60.47	+1.20	63.80	9	58.94	29	28.6	+ .4	41.8	20	19.8	10
Aparri	60.54	+1.32	64.50	9	58.90	29	26.6	- .1	35.6	26	19.6	11

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—If the rainfall of a few stations as Davao, Tagbilaran, Iloilo, Borongan, and Santo Domingo of the Batan Islands only be examined, it would appear that there was a great scarcity of rain during the month; but on making a more general survey of the whole Archipelago, as in the table below, it will be seen that though there was some shortage, it was nothing like as great as during January and February of this year.

In Manila 53.4 mm. of rain fell and though this quantity is 77 mm. less than last April, it was 18.8 mm. above the normal fall. In Baguio 117.6 mm. of rain were collected, a quantity 1.2 mm. more than the normal and 26.6 mm. more than during April, 1913.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF APRIL, 1914.

Station.	Total.	Departure from April, 1913.	Departure from normal.	Rainy days.	Departure from April, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from April, 1913.	Departure from normal.	Rainy days.	Departure from April, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	55.3	-71.3	-50.7	10	+2	20.8	25	Sumay, Guam	31.9	+14.1		7	0	15.3	15
Isabela, Basilan	95.4	+45	+5.7	7	+3	36.6	13	Calapan	68.1	-53.1		11	-3	41.4	22
Zamboanga	66.9	+40	+31.7	6	-2	20.1	29	Virac	210.5	-62.1		13	-6	95.2	9
Davao	22.6	-133	-152.7	3	-12	11.7	22	Nueva Caceres	228.8	+173.7	+116.4	9	+1	109.4	9
Cotabato	159.1	-29	-5.2	14	-4	27.7	5	Batangas	102.6	+44.9		7	0	71.1	5
Cagayan, Misamis	4.8	-33.8		3	-5	2.8	2	Atimonan	111.6	+11.2	+18.3	6	-4	55.2	9
Dapitan	79.1		-28.4?	8		28	12	Ambulong, Tanauan	105	+30.9		5	-1	84.5	13
Butuan	86.9	-155.3	-31.2	14	-8	25.7	22	Silang	40.6	-24.5	-13.2	5	-2	14.7	6
Dumaguete	18.7	+7.4		4	-7	6.7	21	Paracale	122.8	-5.7		10	-4	29.1	5
Yap, W. Carolines	65.9	-161.6		16	-6	12.9	20	Santa Cruz, Laguna	28.4	-27.4		4	-8	10.2	8
Tagbilaran	15	-20.3	-165.9	6	-4	9.1	12	Manila	53.4	-77	+18.8	8	+3	26.2	5
Iwahig	20.4			5		15.7	13	Antipolo	84.9	+39.2		8	+4	30.5	15
Surigao	227.5		-21.7	18		50	2	Iba	32.8	-46		5	-3	20.5	9
Maasin	103.2	+26.9	+34.5	6	-2	35.1	3	San Isidro	100.4	+27.4	+62.6	9	+4	66.9	15
Cebu	32.7	+19	.2	8	-3	19	11	Tarlac	128.1	+15.9	+52.3	10	+5	41.1	6
Iloilo	9.4	-80.2	-32.1	3	-7	8.1	28	Baler	240.5	-129.7	-79.7	17	-2	33.8	6
San Jose Buenavista	18.1	-23.7	-25.5	6	0	6.9	5	Dagupan	112.2	-37.2	+36.4	5	+1	55.9	5
Cuyo	20.6	-6.6	.2	1	-3	20.6	22	Bolinao	29.8	-9.6	+5.6	6	+2	16.5	28
Ormoc	97.8	+35.5	+29.5	11	+2	49.3	3	Baguio	117.6	+26.6	+1.2	14	+9	34.8	5
Guiuan	187.1			17		39.9	3	San Fernando, Union	3	-20.9	-13.7	1	-2	3	21
Tacloban	146.9	-64.3	+3.5	13	-8	37	11	Echague	64.1	+55.4		8	+4	19.8	5
Capiz	43.6	+3.6	-9.4	8	-4	21.3	12	Candon	15.8	-7.6	+2.2	2	0	9.4	21
Borongan	146.6	-220	-95	17	-8	34.5	10	Vigan	0	.5	-18.8	0	-1	0	0
Calbayog	92.8	-24.3	-13.8	12	-3	28.5	3	Tuguegarao	16.8	-8.4	-46.6	5	+3	7.4	15
Masbate	19.3	-65.6	-23.7	3	-4	9.9	3	Laoag	.5	+5		1	+1	.5	23
Romblon ^a	78.8					48.8?	22?	Aparrí	12.5	-38.8	-28.5	2	-2	9.4	16
Batag	128.8	+11.3		7	-4	58.1	10	Santo Domingo, Batanes	63.2	-61.9	-62.5	7	+2	31.8	4
Gubat	88.6	+8.7	-1	11	-5	17.7	10								
Legaspi	141	-41.3	-27.7	12	-9	31	22								

^a 29 days of observation.

DEPRESSIONS AND TYPHOONS.

The Observatory had occasion to give notice of but one depression during the whole of the month, viz, the one which appeared in the Western Carolines on the afternoon of March 31. At 6 a. m. of April 1, the center of the depression was to the S of Yap, moving W or WNW. It probably filled up on the 3 between the Pelew Islands and the Philippines.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes supera en más de 1 milímetro a la de Abril del año pasado, en todas las estaciones de Filipinas. La de Manila difiere de la normal de Abril en $+0.76$ mm. Las presiones más altas se observaron el 9 y 21, y las más bajas el 29.

La temperatura media mensual es para casi todas las estaciones algo mayor que la de Abril, 1913. La de Manila se diferencia de la normal en -0.1° C., y de la del año pasado en $+0.9^{\circ}$ C. La máxima y mínima absolutas para Manila fueron respectivamente 36.9° C. observada el día 26, y 19.2° C. observada el día 1. Las temperaturas extremas para Baguio fueron 27.6° C. y 14.4° C. en la cumbre del Mirador, y 28.4° C. y 12.9° C. en el valle.

Precipitación acuosa.—Aunque fijándose en algunas estaciones en particular, como, por ejemplo, Davao, Tagbilaran, Iloilo, Borongan y Santo Domingo de las Islas Batanes, podría decirse que hubo este mes mucha escasez de lluvia, sin embargo, no es así si hablamos en general de todo el Archipiélago, según se echa de ver en la tabla de lluvia que acompaña el texto inglés. Alguna falta de lluvia ha habido, pero no es comparable ni de mucho con la de los meses de Enero y Febrero de este año. En Manila cayeron en todo el mes 53.4 mm. de agua, cantidad que aunque difiere de la del año pasado en -77.0 mm., con todo, supera a la normal de Abril en 18.8 mm. En Baguio se recogieron en todo el mes 117.6 mm. de agua, siendo su diferencia de la normal y de la de Abril, 1913, $+1.2$ mm. y $+26.6$ mm. respectivamente.

DEPRESIONES Y TIFONES.

Sólo una depresión anunció el Observatorio en todo este mes de Abril, la cual había aparecido la tarde del 31 de Marzo en las Carolinas Occidentales. A las 6 de la mañana del 1 de Abril se hallaba el centro de la depresión al S de Yap, moviéndose al W o WNW. Probablemente se deshizo el día 3 entre las Islas Pelew y las Filipinas.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.		Evaporation. ^b			
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.								
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.	mm.	°C.	°C.	mm.	mm.	
1	759.28	26.8	34.9	19.2	27.5	29.1	28.5	28.7	27.9	62.1	15.8	15.7	54.6	8	5.7	
2	60.09	27.3	35	20.2	27.7	29.6	28.4	28.8	27.9	63.7	16.7	18.3	54.6	7.4	5.6	
3	60.50	26.9	34.8	19.3	27.8	29.4	28.6	28.8	27.9	67.7	17.6	15.7	58.5	7.2	5.3	
4	60.28	26.4	35.5	22.5	27.8	29.5	28.6	28.9	27.9	81.1	20.4	19.5	54.5	3.5	2.8	
5	60.52	26.6	33.4	21.7	28.2	28.7	28.7	28.7	27.9	79.7	20.4	19.9	54.4	3.7	2.7	
6	59.79	27.1	34.1	23	28	29	28.6	28.8	28	79.5	21	21	55.7	4.3	3.1	
7	59.97	27.4	33	22.7	28	29.2	28.6	28.8	28	77.6	20.9	21.2	57.3	4.6	3.2	
8	60.73	27.7	34.6	24	28.7	29.5	28.8	29.1	28.1	77.4	21.1	22.3	57.5	3.5	3	
9	61.99	26.8	32.6	23.7	28.5	29.5	28.9	29.1	28.1	77.8	20.2	21.8	54.1	4.1	3.1	
10	61.73	27.2	33.7	23.4	28.4	29.5	28.8	29.1	28	72.1	19.1	21	57.1	5.8	4.1	
11	60.13	27.8	34.4	22.9	28.7	29.8	29	29.1	28.2	67.6	18.5	20.3	53.9	7.1	4.9	
12	59.48	28.2	34.6	24.4	29.3	30.6	29.4	29.6	28.2	68.9	19.3	21.3	56.5	6.4	4.6	
13	59.60	28.1	34.5	24.8	29.8	31.2	29.8	29.9	28.3	72	20.2	22	54	5.5	3.8	
14	60.06	28	34	23.3	30.3	31.5	30.1	30.2	28.3	75.6	20.9	21.1	54.3	5.2	3.9	
15	61.05	28	34.4	24.4	30.2	31.3	30.1	30.4	28.3	77.1	21.3	22	59.3	4.8	3.4	
16	60.36	28	35.1	23	29.7	31	30.1	30.2	28.3	74.1	20.7	20.8	53.5	5.5	3.9	
17	59.35	28.5	34.1	25	30.2	31.5	30.1	30.8	28.3	75.1	21.5	22.8	53.7	5.2	3.8	
18	59.61	28.1	35.3	24.4	30.3	31.1	30.3	30.4	28.4	71.8	20	22.5	51	5.2	3.9	
19	60.09	28	34.2	23.3	29.9	30.9	30.2	30.3	28.5	70.3	19.5	20.9	52	6.2	4.6	
20	61.48	28.6	36.1	23.4	29.7	31	30.1	30.3	28.4	70.5	20.4	20.3	59.27	5.2	4	
21	61.88	28.6	35.4	23.7	29.7	30.9	30	30.3	28.6	71.6	20.6	22	56.7	6.7	4.9	
22	60.51	28.5	35.8	24.3	29.5	31	30.1	30.1	28.6	69.6	19.9	22.5	51.5	5	3.9	
23	59.87	29.4	35.8	24	29.8	31.5	30.1	30.3	28.6	73.4	21.8	22.5	55.7	6.6	4.8	
24	59.78	29.6	36.5	23.8	30.3	31.8	30.5	30.6	28.9	65.9	19.7	20.2	56.5	7.5	5.6	
25	59.82	28.9	36.2	23	30.3	31.5	30.5	30.8	28.9	66.1	19.4	20.2	54.6	7.2	5.2	
26	60.08	29.6	36.9	23	30.6	32.1	30.6	30.8	28.9	59.7	17.6	20.2	56.7	9.4	7	
27	59.86	28.7	36.5	23.4	30.7	32	30.8	31	29	66.5	19	20	56.9	7.6	5.7	
28	59.21	29	36.3	23.2	30.5	32	30.8	30.9	29	65.3	18.9	21	55.8	8	6	
29	58.73	28.4	35.4	22.8	30.6	31.8	30.8	31	28.9	65.4	18.5	19.4	56.3	8.2	6.1	
30	59.29	29	35.7	22.9	30.3	31.9	30.8	30.8	29	60	17.3	19	55.6	9.1	6.7	
Mean Total	760.17	28	35	23.1	29.4	30.6	29.7	29.9	28.4	70.8	19.6	20.6	55.4	6.1	4.5	
Departure from normal	+0.76	-0.1	+1.1	+0.3						-1.1	+0.2					

Day.	Wind.				Amount (mean).	Clouds.		Sunshine.	Rain, 24 hours beginning midnight.	Miscellaneous.
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.		Form and direction.				
						Upper.	Lower.			
		Km.	Km.		0-10.			h.	m.	mm.
1	SE	223.5	21	SE	2.3	Ci.	Cu.	10	35	
2	SE	222.5	20.5	SE	1.5	Ci.	Cu.	10	35	
3	SE	231	20.5	SE	2	Ci.	Cu.	10	20	
4	NE quad.	161	30	NNE	4	Ci.-S.	Cu.	7	05	8.6
5	E quad.	144	20	ENE	6.1	Ci.-S.	Cu.	4	00	26.2
6	NE quad.	203	17	NW, NNE	6.5	Ci.	Cu., Cu.-N.	7	10	
7	WSW	161.5	17.5	WSW	5.7	A.-Cu.	Cu.	6	30	
8	NE, W	140.5	15	ENE	4.5	Ci.	Cu.	7	30	4.4
9	E quad.	190.5	13	E	8.2	A.-Cu.	E Cu.-N.	3	00	1.3
10	W, ESE	150.5	22	SE	7.1	A.-Cu.	Cu.	4	10	
11	SE	200.5	20	SSE	2.6	Ci.	Cu.	10	10	
12	SE	192.5	19.5	SW	5	A.-Cu.	NE Cu.	7	00	
13	W quad.	194	23	SW	4.3	Ci.-S.	Cu.	8	30	
14	W	188	22	SW	3.5	Ci.	Cu.	10	45	
15	SSE	143.5	14	E	6.9	Ci.	Cu.-N.	7	00	10.8
16	W quad.	167.5	19	SWbyS	2.2	Ci.-S., Ci.	Cu.	10	30	
17	W quad.	206	18.5	WSW	3.4	A.-Cu.	Cu.	10	05	
18	SE	149	16.5	SEbyS	6.6	A.-Cu.	Cu.	5	35	
19	WNW, SE	209	24	SSE	3.9	Ci., A.-Cu.	Cu.	9	20	
20	SE	181	17	SE	5	A.-Cu.	Cu.	9	30	3
21	SE	218.5	24.5	SE	6.6	Ci.	Cu.	8	25	
22	NNE, WSW	189	17	WSW	6.8	Ci.-S.	Cu.	7	35	1.5
23	SE	203	22	SE	3.5	Ci.	Cu.	9	55	3
24	SE	232	24	SEbyS	3	Ci.-S.	Cu.	9	40	
25	SE	226.5	21.5	SE	3.2	Ci.	Cu.	11	25	
26	SE, ESE	245.5	23	SE	1.7	Ci.	Cu.	11	25	
27	SE	235	20	SSE, SE	3.9	Ci.	Cu.	10	00	
28	SE	249	26.5	SE	4	Ci.	Cu.	10	20	
29	ESE	278	34	SE	4.9	Ci.	Cu.	10	20	
30	ESE, SE	285.5	25	SE	4.8	Ci.	Cu.	10	50	
Mean Total		197.4	20.9		4.5			8	38	
Departure from normal		-1,031.2			+0.4			-3	03	+18.8

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pres- sure ^b (mean).	Air temperature at Mirador (on the top of the mountain).				Air temperature in the valley (near the city hall).				Rela- tive humid- ity (mean).	Vapor pres- sure (mean).	Radiation.		Evaporation.		
		Mean.	Maxim- um.	Hour.	Mini- mum.	Hour.	Maxim- um.	Hour.	Mini- mum.			Hour.	Mini- mum on grass.	Maxim- um in sun. Black bulb in va- cuo. ^c	Free exposure (total)	Shel- ter (total)
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.	mm.	°C.	°C.	mm.	mm.	
1	636.89	19.5	26.2	0.40p.	14.7	6.20a.	27	11.30a.	14.7	5.40a.	76.7	12.4	13.4	47.5	6.5	3.4
2	37.80	19	25.8	1.05p.	14.6	3.10a.	25.8	0.35p.	13.7	1.45a.	81.7	13.2	14.6	48	5.6	2.3
3	38.28	20.1	27.4	1.50p.	15.2	4.55a.	26.7	0.55p.	13.4	5.55a.	68	11.8	11	47.2	6.9	3.6
4	38.09	18.9	26.7	11.55a.	15.6	6.20a.	26.6	11.15a.	14.6	4.55a.	78	12.5	12.8	50	4.4	2.2
5	38.30	18.1	24.9	10.55a.	16	2.30p.	24.9	11.20a.	15.3	5.55a.	79.7	12.2	15.4	47.1	3.7	2.2
6	37.66	17.8	24.2	8.10a.	15.8	5.15a.	23.8	9.50a.	13.7	5.25a.	85.5	13	12.7	47.3	1.7	1
7	37.59	18	24.6	0.05p.	15.3	4.50a.	24.5	0.10p.	15.3	6.20a.	92.3	14.2	13.6	46.1	1.6	1
8	38.26	17.9	25.4	11.55a.	15.5	4.15a.	25	2.35p.	14.6	6.20a.	87.8	13.3	14.4	53.5	3.7	2.1
9	39.26	17.8	24.3	9.35a.	15.2	5.30a.	24.7	10.40a.	14.9	6.05a.	88.2	13.4	13.6	42.4	2.3	1.4
10	39.09	17.3	22.9	10.40a.	14.7	3.55a.	22.3	9.30a.	13.2	4.40a.	91.7	13.5	13	50	1.3	1
11	37.66	18.2	24.7	0.55p.	14.7	5.55a.	24.4	1.50p.	13.5	5.55a.	83.8	13	12	48	2.8	1.6
12	37.16	17.4	24.9	11.50a.	14.8	4.35a.	24.7	0.05p.	13.9	6.20a.	88.2	13	13	48.5	2.2	1.5
13	37.25	18.1	25.2	0.55p.	14.5	5.45a.	24.6	1.25p.	12.9	6.20a.	85	13.1	12.2	45.5	2.7	1.7
14	37.99	18.8	25.9	1.00p.	14.4	5.15a.	25.2	0.55p.	13.5	6.00a.	84	13.4	12.2	48.8	4	2
15	38.66	19.2	25.5	1.55p.	14.8	5.25a.	24.7	1.25p.	13.8	5.40a.	82.3	13.5	12.4	50.5	3.5	2
16	38.18	19.1	25.8	0.55p.	15.1	5.50a.	25.2	0.55p.	13.9	5.40a.	82.8	13.4	12.5	48	4.6	2.2
17	37.22	19.2	25.8	1.20p.	14.7	3.45a.	24.8	0.40p.	13.5	5.55a.	77	12.6	11.2	46.7	5.2	2.8
18	37.58	18.6	25.3	0.40p.	16	5.45a.	24.7	2.20p.	15	5.15a.	85.2	13.5	13	42	2.3	1.4
19	38.14	19.7	24.9	10.40a.	16	4.40a.	25.8	0.30p.	15.3	5.55a.	84.7	14.4	14.3	46.3	2.6	1.5
20	39.54	19.6	25.1	0.55p.	15.7	5.50a.	26.3	11.40a.	15.1	6.05a.	91.8	15.4	14.2	46.4	2.1	1.2
21	39.97	20.7	27.6	11.55a.	17.2	3.45a.	27.6	1.10p.	15.9	4.45a.	83.3	15	14	47	4.2	2.2
22	38.76	20.4	25.9	8.35a.	16.1	4.35a.	26.2	10.05a.	15.2	6.00a.	79	14	13.5	48	6	2.8
23	38.15	20.1	26	10.30a.	17	0.55a.	28.27	10.35a.	16.5	12 m. n.	78.2	13.5	14.7	47.4	4.8	2.6
24	38.31	20.1	26.8	0.55p.	16.3	4.10a.	26.7	11.55a.	15.2	5.35a.	84.3	14.7	14.3	48.3	3.2	1.8
25	38.17	20.1	26	1.25p.	16.2	5.20a.	26.6	1.55p.	15.3	6.30a.	87.2	15.1	13.5	47.6	4	2
26	38.32	20.6	27.6	1.50p.	16.2	5.55a.	28.4	1.05p.	15.7	5.55a.	77.5	13.2	11.9	48	7.8	4
27	38.19	20	26.8	1.55p.	15	5.50a.	26.3	10.40a.	13.6	6.05a.	78.5	13.4	10.7	47.3	6	3.3
28	37.59	19.4	26.8	11.50a.	16	5.20a.	27.3	0.05p.	14.3	6.30a.	80	13.4	12	49	4.8	2.5
29	36.99	19.8	26.1	0.25p.	16	5.20a.	26.5	Noon	15.2	5.55a.	81.7	14	13.5	48.8	4.8	2.4
30	37.50	19.4	25.9	0.30p.	15.7	4.20a.	24.7	2.05p.	14.3	5.05a.	82	13.7	12.5	45	4.6	2.8
Mean	638.08	19.1	25.7		15.5		25.7		14.5		82.9	13.5	13.1	47.5	4	2.2
Total															119.9	64.5

Day.	Wind.				Amount (mean).	Clouds.		Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.		
	Prevailing direction. ^d	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.		Form and direction.						
						Upper.	Lower.					
		Km.	Km.		0-10.			h. m.	mm.			
1	E, W	373.7	31.2	W	4		Cu.	WSW	7 55		☉ ☉ a. ☉ p.	
2	W	349.9	28.2	W	2.3		Cu.	WSW	5 55		☉ ☉ a. ☉ p.	
3	W, SE	320.5	30.6	SW	.6		Cu.	SSW	8 45		☉ ☉ a. ☉ p.	
4	W	395.5	30.4	W	4.3		Ci.	S	6 00	8.9	☉ ☉ a. ☉ p.	
5	E quad.	306	22.3	W	5.9		Ci.	Cu.-N.	3 00	34.8	☉ ☉ a. ☉ p.	
6	W	267.6	23.3	W	6.4		Ci.	Cu.	3 40	3.9	☉ ☉ a. ☉ p.	
7	W	316.5	22.5	W	6.1		Ci.	SSW	4 40	1.8	☉ ☉ a. ☉ p.	
8	E	283	23.9	W	4		Ci.	Cu.-N.	5 40	14	☉ ☉ a. ☉ p.	
9	E	367.4	23.5	E	7		Ci.	S	3 30	9.7	☉ ☉ a. ☉ p.	
10	W, E	266.3	17.9	W	7		Ci.	Cu.-N.	3 50	7.4	☉ ☉ a. ☉ p.	
11	W	310	28.4	W	6.3		Ci.	Cu.-N.	7 30		☉ ☉ a. ☉ p.	
12	W, SE	309.1	33.2	W	6.6		Ci.	Cu.	6 00	8.4	☉ ☉ a. ☉ p.	
13	W	288.1	28.5	W	5.1		Cu.	WSW	7 15		☉ ☉ a. ☉ p.	
14	W	317.5	33.3	W	4.9		Ci.	Cu.	8 15		☉ ☉ a. ☉ p.	
15	W	279.9	27.7	W	3		Ci.	Cu.-N.	8 30		☉ ☉ a. ☉ p.	
16	W	355.7	29.2	W	3.4		Ci.	Cu.-N.	8 30		☉ ☉ a. ☉ p.	
17	W	330.3	25.7	SW	3.9		Ci.	Cu.-N.	8 10		☉ ☉ a. ☉ p.	
18	E, W	335.2	26	W	7.7		Ci., A.-Cu.	Cu.-N.	sse, s	4 55	12.4	☉ ☉ a. ☉ p.
19	SE quad.	282.5	23.8	W	5.6		Ci., Ci.-S.	Cu.-N.	SSW		☉ ☉ a. ☉ p.	
20	W	253.2	23.5	W	5.7		Ci.	Cu.	E	5 10	5.6	☉ ☉ a. ☉ p.
21	E, SE	333.9	24.4	W	5.6		Ci.	Cu.-N.	S	5 00		☉ ☉ a. ☉ p.
22	W	357.7	25.1	W	5.3		Ci.	Cu.	NE	7 10		☉ ☉ a. ☉ p.
23	E quad.	461.3	36	E	5.4		Ci., A.-Cu.	Cu.		5 05	1.3	☉ ☉ a. ☉ p.
24	SE, W	311.9	27.2	W	4.3		Ci.	Cu.-N.	WSW	7 10	1.8	☉ ☉ a. ☉ p.
25	SE, W	329.9	29.6	W	3.9		Ci.	Cu.	S	8 05		☉ ☉ a. ☉ p.
26	E, SE	333.3	25.9	W	2.4		Ci.	Cu.		8 20		☉ ☉ a. ☉ p.
27	W	300.6	30.6	W	3.1		Ci.	Cu.	SE	7 45		☉ ☉ a. ☉ p.
28	W	327.6	30	W	4.6		Ci.	Cu.		6 40		☉ ☉ a. ☉ p.
29	W	339.5	27.2	W	5.1		Ci.	Cu.		3 35	.5	☉ ☉ a. ☉ p.
30	W	317.3	30.1	W	5.6		Ci.	Cu.		5 45	7.1	☉ ☉ a. ☉ p.
Mean		324	27.3		4.8				6 16			
Total		9,720.9							181 45	117.6		

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.

^b The barometric readings of this station are not reduced to sea level.

^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.

^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

^e 29 days of observation.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, APRIL, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo				1.5	2.3											
Isabela, Basilan				5.1									36.6	2		
Zamboanga					10.2											
Davao												9.1				
Cotabato	11.4	4.3		18.5	27.7						17.5	19.8	.8		17.3	
Cagayan, Misamis		2.8	1													
Dapitan						2.8				7.9		28				
Butuan	2.3	1	8.4	.5	.8							4.3				
Dumaguete			4.6									6.4		1		
Yap, Western Carolines	12.7	4.3	.8				5					.3	.5	7.9		
Tagbilaran	1.3										2.8	9.1				
Iwahig		1.9				1.3							15.7			
Surigao	3.8	50	6.1	1.3	2.8					6.4	18.8					
Maasin		31.8	35.1													
Cebu	1.8	4.6	3							.5	19					
Iloilo													1.3			
San Jose, Buenavista	1.8				6.9											
Cuyo																
Ormoc	1	17.8	49.3		.8					.8	8.6					
Guiuan	.5	8.8	39.9		2.8			2.5	10.4	24.3	8.9					
Tacloban	7.6	1.3	6.9		9.7					19.8	37					
Capiz	4.3		4.8	.8		5.6				3.5		21.3				
Borongan		3.8	6.6	3	.3				1.8	34.5	14.5					
Calbayog		.8	28.5		1.3				3	10.7	4.9					
Masbate			9.9							6.4						
Romblon	9.9	(a)	3.3	.8		1				14			1			
Batag			15							58.1		2.5				
Gubat	6.4	3.8	10.7		10.2			8.4	7.9	17.7						
Legaspi	26.6	3.1	6.1		1		10.7	4.8	24.9	7.6						
Sumay, Guam															2.6	15.3
Calapan	3.8	2			.8				2.5	3.5						
Virac			1.3	6.6	16.6	14.5	1.8	8.4	95.2	47.8						
Nueva Caceres	2.2			11.6	33.2				109.4	14.7						
Batangas				.3	71.1			6.9	2.3							14.3
Atimonan					15.2	1		25.4	55.2							
Ambulong, Tanauan					1.5		1.5	1.3	8.6				84.5			
Silang						14.7		6.4	7.6				4.6			2
Paracale			3.3	23.6	29.1	.8	8.1	17.2	28.5	8.1						
Santa Cruz, Laguna					6.4	4.6		10.2	3.1							
Manila				8.6	26.2			4.4	1.3							10.8
Antipolo				9.7	12.7	1.5		8.9					8.4	.5	30.5	
Iba									20.5							
San Isidro						2.8		.5		3	1.3	3	11.4	3	66.9	
Tarlac					6.6	41.1				38.4	1.3	1.5	.8		22.6	
Baler				.8	22.1	33.8	1	.3	1.8	15.7	21.4					
Dagupan				3	55.9	27.4		12.7	13.2							
Bolinao					.3				.3							
Baguio				8.9	34.8	3.9	1.8	14	9.7	7.4		8.4				
San Fernando, Union																
Echagüe					19.8	4.6	13	.8			1.3	3			9.4	
Candon																
Vigan																
Tuguegarao						1			.5		4.6				7.4	3.3
Laog																
Aparri					.6											9.4
Santo Domingo, Batanes				31.8	.1	6.9									2.7	18.3

* No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, APRIL, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Dapitan.		Butuan.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.7	21.8	30.9	21.1	30.5	23.1	33.2	21.2	34.3	22.6	34	22.9	34.2	24.9	30.7	23.4
2	32.9	22.7	31.2	23.1	29.5	23.9	34.7	21.3	32.8	21.3	31.5	21.1	32.2	25.5	29	21.9
3	32.4	22.1	32.3	21.8	28.9	23.9	33	23	34.9	23.5	29.7	22	33.3	25	28.5	23.7
4	30.8	22.5	32.1	21.6	30.9	23.1	33.7	22.4	36.1	23.3	32	23.2	33.7	23.8	32.2	23.2
5	32.6	22.8	31.1	21.1	30.8	24	33.8	22.9	34.6	23.2	32.3	23.1	35	23.8	31.5	23.8
6	33.3	22.3	31.6	22.1	31.6	23.5	33.2	22	34.4	21.6	32.9	22.6	34.1	24.8	33	23.8
7	31.3	22.3	32.4	22.1	29.5	23.1	34.2	21.8	36.2	23.2	32.6	22.4	34.2	23.1	32.6	23.6
8	33.4	20.9	31.2	22.6	30.4	22.5	34.3	21.3	37.1	21.6	32.4	20.4	35.7	22.8	32.1	22.5
9	32.4	22.6	32.1	22.9	30.5	22.5	34.4	22	35.6	21.4	32.1	20.5	34.6	24	32	22.2
10	32.8	21.8	33.6	21.1	30	22.8	33.2	20.8	35.7	21.4	31.7	20.5	32.7	23.5	31.0	21.9
11	31.4	21.5	32.6	21.4	30	22	35	21.5	34.9	21.2	32	22.9	35.9	24	31	22.7
12	32.7	21.8	33.6	21.9	29	24.5	34.2	21.8	32.2	23.1	32.4	24.5	33.5	25.5	29.7	23.6
13	32.9	23	33.2	21.1	30	23	34.2	21.1	34	22.5	32.5	22.9	31.6?	23.1	31.5	22.9
14	30.6	22	33.1	21.6	30.5	22.9	33.3	22.6	34	23.2	32.6	22.5	35	22.8	32	23.5
15	31.9	21.6	31.6	21.1	30.6	22.9	34.2	22.9	33.7	23.8	33.1	22.3	35.1	21.9	32.5	23.6
16	32	22	34.1	21.8	-----	22.5	34.2	22.2	34.7	22.5	32.6	21.5	33.9	21.8	31.9	23
17	31.9	21.8	31.6	23.1	-----	23.7	33.6	22.8	34.5	23.3	32.4	21.1	34.4	22.5	31.8	23.2
18	32.1	20.6	32	21.6	31.1	23	34.2	22.3	35.5	22.8	32.2	20.2	34.5	20.9	30.5	21.6
19	32.4	21.6	32.2	21.6	30.1	22.9	33.7	21.4	36.9	23.3	33.9	22.4	33.5	25.7	33.2	23.2
20	33.3	23.1	33.4	23.1	30.4	24.8	35.8	23	36.9	23.4	33	23.4	33.6	24.4	32	23.1
21	33.4	22.5	34.8	22.6	30.9	23.5	33.2	23.5	34.2	24.8	32	23.1	32.8	25.8	29.2	22.8
22	31.9	23.3	30.4	22.7	30	25.4	32.7	22.5	32.5	23.2	33	24	33.1	25.6	28.2	24.4
23	33.2	22.6	34.6	23.5	32.3	23.8	34.3	23.1	34.6	23	33	23	32.4	24.6	31.3	24.1
24	31.3	22.1	31.1	22.3	30	24	34.6	22.5	36.7	23.2	33.3	23.5	35	26	31.8	23.6
25	29.9	22.5	32.9	21.1	30	24.7	32.2	23	36	23.4	34.3	23.7	33.9	26	31.2	24.4
26	31.4	23	33.6	22.4	32.5	22.2	34.2	22.4	35.5	23	34	22.2	33.6	25.3	32.6	23.7
27	32	22.3	32.2	22.5	29.9	24	34.2	21.9	35.5	21.8	32.6	22.6	34.4	26.2	30.5	23.7
28	32.1	22.8	34.8	23.1	32.1	23.5	32.8	23.5	36.7	22.4	31.4	24	34	25.8	26.5	24.1
29	28.4	23.3	29.6	23.5	28	23	34.9	21.9	36.7	22.1	32.9	23.2	31.9	24.6	31	23
30	30.9	21.9	32.6	22.9	31	23.5	33.7	22.5	35.3	23.1	33.4	23.7	32.4	25.5	31.6	23.2
Mean	32	22.2	32.4	22.1	30.4	23.4	33.9	22.2	35.1	22.7	32.6	22.5	33.8	24.3	31.1	23.2

Day.	Dumaguete.		Yap, Western Carolines.		Tagbilaran.		Iwahig.		Surigao. ^a		Maasin.		Cebu.		Iloilo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.1	25.5	31.6	25.5	31.2	23.7	34	21.7	30.6	23.6	28.5	24.7	30	24.3	30.5	24
2	31.8	25	31.9	24.4	31.8	20.8	30.2	25.1	27.1	22.6	30	22.2	32	24.1	32	24
3	31.6	25	31.6	24	31.2	23.3	34.3	21.8	27.6	23.3	30.4	22.6	30	23	32.9	24.6
4	29.8	22.9	32.9	24.6	31.8	22.8	34.7	23	30.4	23.5	30.2	24.2	31.2	23.9	34	24.7
5	30.7	24.8	32.3	24.4	31.4	23.4	34	23.6	31	24.1	30	24	32.2	25.4	34	24.9
6	30.6	26.2	32.4	24.2	33.1	22.3	34.8	24.1	31.5	23.5	31	23.2	32.4	25.5	34.4	25
7	30.2	24.2	32.2	25	33.6	22.7	34.5	23.4	31.1	22.6	30.1	23.4	32.6	25.8	36	24.7
8	29.8	23.1	32.7	25	31.9	21.7	35	21.8	31	22.4	30	23.8	32	25	34	24.4
9	30	24.3	33.3	24.3	32.7	20.9	34.6	21.8	31.4	22.1	30.6	23.2	31.6	24.5	34.2	25.4
10	30.8	24.6?	32.5	25.1	32.7	22.5	34.1	22.3	30.4	22.6	30	24	32.5	25.9	33.5	25.4
11	31.3	25.7	33.1	23.4	31.1	23.1	34	22.7	29.5	22.9	29	24.2	31.3	24.5	31.6	24.5
12	29.7	25	33.7	24	31.4	23.3	34.8	22.9	29.2	23.5	29.8	24	30.8	22.6	31.5	24.4
13	28.7	24.2	33.2	24.5	30.6	22.7	34.1	22.4	30.1	22.8	30	23.4	32	25.5	34	23.5
14	28.8	23.1	32.7	24.2	30.5	22.9	34	21.4	31.3	22.5	29.8	22.9	32	24.7	34.6	22.9
15	29.5	23.8	34.1	24.1	31.4	22.7	35	22.4	-----	-----	29.6	23	32	25.2	34.4	23.1
16	30.2	23.8	32.8	25.3	30.9	22.6	33.8	21.6	30.8	22.2	29.5	23.5	31.6	25.4	32.7	22.6
17	29.3	24	34.1	24.5	31.3	21.5	34.5	22.4	30	21.5	29.6	23.5	32.1	25.3	34.4	23.4
18	30.3	22.8	33.8	24.9	33.2	21.6	34.1	21.7	28.3	22	31.8	22.6	32.5	25	34	23.9
19	30.1	25.9	33.2	24.2	32.8	23.8	34.6	21.1	-----	22.5	33	24.4	31.2	26	34.9	25.1
20	30.4	26.6	32.8	25.7	33.7	24.7	34.5	22.3	30.2	22.7	32.1	24.4	31.5	26.5	33.2	25.2
21	31.5	26	32	23.7	32.9	22.5	34.3	23.6	29.5	23.2	29.1	24.3	32.5	25.3	33.1	25.6
22	31.2	24.6	32	25.7	33.2	23.8	35.7	23	29.6	23.4	32	24.4	31.9	26	32.5	25.9
23	30	26	32.6	24.6	33	23.4	32.1	25.2	31.4	23	33	25.5	32.5	26.4	35.4	25.9
24	31.2	25.3	33.7	24.2	33.3	23.5	34.6	22.6	30.4	24	33.4	24.4	31.8	25.7	33.6	25.8
25	32.3	26.8	32.7	24.6	34	24.2	32.8	22.7	30.9	24.6	32.8	26	32.3	26.7	33.8	25.9
26	30.8	26.8	31.1	24.8	34.2	23	34.8	24.4	31.3	23.6	32.6	25.2	32.4	26	33.4	25.9
27	30.2	24.1	30.8	25.4	33.8	22	35.5	22.9	27.6	23.6	29.1	24.5	31.8	25	32.7	25.3
28	29.6	26.2	33	24.7	33.7	24.4	35.2	22.8	26.8	23.5	29.8	24	31	24.3	32.1	24.9
29	30.5	24.7	32.7	24.1	32.8	22.6	34.6	24	30.2	22.8	32.1	23.7	31.5	23	33.4	24.4
30	30.8	26.2	33.7	24.8	33.5	22.4	34.6	23.2	30.9	21	32.6	22.2	31.4	25	33.6	24.6
Mean	30.4	24.9	32.7	24.6	32.4	22.8	34.3	22.8	30	22.9	30.7	23.8	31.8	25.1	33.5	24.7

^a For this station the maximum temperatures from April 10 to 30, are taken from a self-registering apparatus.

Maximum and minimum temperatures at the stations of the Weather Bureau, April, 1914.—Continued.

Day.	San José Buenavista.		Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.2	23.5	32	25.9	30.9	24.1	31.4	23.9	31.5	23.4	31.5	24.8	30.6	25.4	30.5	22
2	34.3	22.6	32.5	26.3	31.3	20.4	31.1	24.3	29.6	22.6	31.5	23.7	30.5	21.5	32.9	20.8
3	34.2	22.6	33.1	26	28.4	23.2	29.7	25.6	27.4	23.8	31.9	23.6	30.1	24.5	31.2	22.5
4	34.8	24	32.6	24.8	30.9	23.4	31.2	25.7	31.5	23.8	32.1	23.7	31.1	24.9	31.7	22.9
5	34.3	25	32.7	26.4	31.5	22	31.3	23.6	32.4	22.6	31.7	24.2	31	23.5	30.6	23
6	33.8	23	31.2	25.6	32.1	21.8	31.3	25	31.6	22.2	32.5	24.4	31.6	22.7	31.6	21.6
7	34.6	24.2	32.2	25.4	31.8	21.4	31.5	23.9	32.4	24.4	32.5	24.2	31.6	23	30.9	22.3
8	35.1	23	33.1	26.7	31.2	21.5	31.6	24.3	32	23.6	33.2	23.7	31.4	23	31.4	22.7
9	35.6	23	33.4	26.9	33.4	20.5	31.8	22.7	32	23.4	32.9	24.9	31.1	22	31.7	21.6
10	34.6	23.1	31.6	26.5	31	21.9	31.1	24.3	31	24	32.4	25	31.1	23.3	30	22.7
11	34.8	23.4	31.7	25.8	32	22.8	30.9	23.5	30.6	23.8	31.4	24.1	30.4	23.4	30.4	22.7
12	34.8	24.1	32.8	26.6	31.8	21.9	30.9	24.2	31.9	23.5	31.2	23.7	30.1	22.1	30.2	21
13	35	23.6	33.5	24.5	32	21.4	31.6	24.5	31.5	23.9	32	22.3	31.1	22.5	31.7	21.4
14	34.7	23.5	32.9	24	30.6	21.9	31.3	23.1	31.7	23	32.4	22.3	31	22.3	31.5	22.1
15	35.3	24.2	32.6	25.3	32.1	21.1	31.9	23.1	32.6	23	32.3	23.1	31	21.8	31.1	21.7
16	35.1	22.5	33	25.2	31.9	20.6	31.4	22.7	33	22.9	32.3	23.2	30.5	20.5	30.6	20.5
17	35.2	23.4	34.7	25	31.9	20.5	31.5	21.9	33	23.2	32	22.2	30.9	21.4	31.7	20.5
18	34.7	21.9	34.7	23.8	32.6	20.4	31.4	23.4	33.3	22	33.6	23.2	31.5	21.3	32.3	21.5
19	35.2	23	33.5	26.7	34.5	22	32.1	24.5	32.3	23.6	33.4	25.6	31.5	23.3	31.9	22
20	35.9	24.1	33.6	27.3	33.8	23.3	32.3	24.3	32.2	24.8	33.7	25.6	31.9	24	32.4	23
21	36.1	23	32.7	27.4	32.9	22.5	32.5	25.3	31.9	23.8	33	25.4	31.8	23.9	35.3	22.9
22	35.7	25.1	33.7	27.2	32.9	23.5	32.3	25.1	32	24	33.7	26.4	31.6	25.2	34.8	23.7
23	35.7	25.8	31.7	23.9	33	23.2	32.8	24	32.2	23.8	33.6	25	31.6	23.6	32.6	22.8
24	35.9	23.2	32.5	25.1	33.4	22	31.8	25.1	31	24	33.5	25.9	30.9	23.4	31.6	23
25	36.3	23.5	33.3	26.5	34.6	23.8	32.2	26.1	32.2	24.4	33.5	25.8	31.6	25.4	32.1	22.7
26	35.6	24.4	34.1	25.8	34.4	23.2	31.8	25.4	32.5	24.2	34.3	24.9	31.6	25	34.1	22.8
27	35.7	23.1	33.3	25.2	30.8	22.4	32.8	25.5	31.9	24.2	33.4	24.5	31.6	24	30.9	22.2
28	35.8	24.1	33.3	26.9	33.1	22.2	31.8	24.6	31.5	23.5	33.8	25.7	31.2	23.4	31.6	22.4
29	34.9	21.6	34.3	25.9	34.1	20.3	32.9	25.3	32.4	22.5	33.4	24.5	31.4	21.5	31.6	20.7
30	35.2	20.1	32.6	26.3	33.2	18.2	31.3	22.8	32.3	20.4	33.4	23.8	31.4	21.4	32	20.9
Mean	35	23.4	33	25.8	32.3	21.9	31.6	24.3	31.8	23.4	33.7	24.3	31.2	23.1	31.8	22.1

Day.	Masbate.		Romblon.		Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.6	24.4		21.7	29.5	21.7	30.6	21.6	27.9	23.4	31.2	24.8	32.1	20.4	31.6	22.2
2	33.8	23.8			30	22.5	31.8	20.7	31.9	23.1	31.2	25.8	31.5	23	32.7	19.4
3	34.2	25.2			29	23.4	31.7	25	32.1	24.9	30.8	25.4	31.5	21.4	32.6	22
4	34.8	25.2	34.5	22.7	30	22.5	31.5	24.9	32.6	25.1	31.2	24.2	32	25	31.5	22.8
5	34.4	25.2	34.7	24.8	30.4	23.2	31.4	25.1	33.2	23.2	31.8	24.2	31.5	23.1	31.4	22.1
6	31.8	25.2	33.6	24	30	23.5	31	24.7	32.4	24.6	30.8	24.6	31.5	22.8	31.2	21.7
7	35.6	25.6	34.2	23.4	30.5	23.2	31.6	24.9	33.6	23.1	31.2	24.8	33.5	22.5	32.8	22.7
8	35.6	25.2	34.5	22.9	31.1	23	32	25.5	33.6	24.3	30.5	24.8	31.5	22.5	32.5	23.5
9	35.6	25.2	34.9	25.5	31	23.3	31.4	25	33.9	24.6	30.4	24.6	28.5	24.2	29.8	22.5
10	35.8	25.4	29.2	24.9	28	21.9	25.9	24.1	26.4	23.1	31	25.2	29.5	24.7	28.6	22
11	33.4	25.2	32.6	24.3	29.6	21.6	30.3	24.2	31.5	24.1	31	24.8	32.2	22.9	30.7	21.8
12	33.8		33.1	25.2	30	22	30.5	24.7	32.3	23	31	23.6	31	24	30.5	21
13		24.8	34.6	22.2	30.9	22.5	30.7	25.6	32.6	23.9	31.4	24.4	31	22.8	31.7	20.4
14	35.4	24.5	34	22.4	31	23	31.2	23.9	33.2	22.4	32	25.4	32.6	21.3	32	20.2
15	35.5	24.2	34.6	22.6	30.5	23.5	31.3	22.7	33.5	22.8	29.4	25.4	31.8	22.8	31	20.3
16	34.2	24	33.7	23.1	30.5	22.6	31.1	23.6	32.8	23.6	30.8	25.4	33	22.1	30.6	20.9
17	36.5	24.4	34.8	23	30.6	22.7	30.9	22.8	33.7	22.4	31.2	26.2	32.2	21.6	32.2	20.5
18	36.6	25.2	36	22.4	30.6	22.5	30.8	22.8	33.6	25.4	31.4	25.4	33.2	22		
19	36.2	25.8	34.7	24.7	31	23.5	31.8	22.8	33.5	25.7	31	25.4	33	23.5	31.1	23.3
20	35.6	25.5	34.9	25.9	31	23.4	31	25.5	33.1	25.8	30.8	25.2	32	24.6	32.6	22.2
21	36	26.4	34.7	26	30.8	24.2	31.8	25.5	32.7	26	30.6	25.8	33	26	33.4	23.4
22	35.4	26.5	34.8	26.3	30.5	23.1	30.6	24.9	29.4	24.5	30.8	25.4	28.5	24.5	29	23.2
23	36	25.4	33.1	25	30.5	24	32.2	25.1	33.6	24.6	30.8	25.4	32	23	33.1	22.1
24		26	34.1	24.6	30.9	24.4	32.3	25.4	33.8	26.1	30.2	25.2	32.6	22	32	22
25	36.4	25.6	34.6	25.9	30.5	24.7	32.4	25	33.4	26.5	31.2	25.6	33	22	32.1	23.5
26	36.6		34.2	25.3	31	24.5	32	25	33.4	25.8	30.8	24	32.6	23.6	32.8	24
27	35.4	25	34.2	25.6	31	23.4	32.4	25	32.4	24.8	30.6	25	33	24	33	21.4
28	34.6	26.2	34.1	25.3	31	24.3	32.4	23.2	33.6	25.4	30.8	24.8	33	23	32.7	21.5
29	35.4	24.8	34.1	25.4	31	23.4	32.6	23.2	33.8	25.3	32	25.4	32.1	23.1	32.5	21.2
30	34.6	24.8	34	24.4	31.4	22.4	32.3	24.4	34.1	25.2	31.4	25.2	32.5	22.5	33.3	21.2
Mean	35	25.2	34.1	24.3	30.5	23.1	31.3	24.2	32.6	24.4	31	25	31.9	23	31.8	21.9

Maximum and minimum temperatures at the stations of the Weather Bureau, April, 1914—Continued.

Day.	Nueva Caceres.		Batangas.		Atimonan.		Ambulong-Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.7	17.7	34.8	21.6	31.8	21.2	32.5	20.6	32	19.6	31.8	23.7	32.9	20.2	34.9	19.2
2	32.8	19.3	35.3	23	31.9	25.5	33	21.9	32.5	20.3	31.2	22	33.3	22.2	35	20.2
3	33.2	19.8	34.5	22.3	29	26	34	21.4	31.3	20.5	32.2	24.5	33	21.7	34.8	19.3
4	34	22	35.3	24	30.5	25.9	33.3	23	32	20.6	31.8	24.7	32.7	23.5	35.5	22.5
5	33	21.7	35.8	22.6	27.4	24.7	31	24	32.2	19.2	29.2	24.5	31.2	22.5	33.4	21.7
6	33.9	20.6	34.4	22.7	30.6	24.6	35	23	31.5	19	31.5	23.3	31.9	23.2	34.1	23
7	35	20.6	34.5	23.2	30.5	24.5	36.2	22.9	32.5	19.7	32	22.9	33.6	22.4	33	22.7
8	33.6	21.5	33.7	23.4	29.9	24.6	35	23.6	32.1	20.2	31.7	23.5	32.9	22.5	34.6	24
9	32.2	21.4	32	24	26.9	23.9	30	24.5	32.6	19.6	27.8	24	28.4	24.2	32.6	23.7
10	29.1	21.3	32.3	23.8	29.2	24.4	32.2	24.9	31.1	19.8	27.4	24	29.9	24.1	33.7	23.4
11	31.6	22	35.2	22.8	29.8	24.6	34.2	23.5	32	19.3	31.8	24	32	23.7	34.4	22.9
12	33.1	19.5	33.8	23.1	30.3	23.6	36.1	22.1	32.5	20.2	31.7	22.5	33.5	24.2	34.6	24.4
13	33.7	20	33.4	24	31	22.9	37.3	22.4	32.7	20.5	31.6	22.3	32.8	24	34.5	24.8
14	34.2	20	33.9	23.2	31.7	22	35.5	22	32.3	20.8	31.8	21.6	32	22	34	23.3
15	35.6	20.1	32.8	25	30.6	24.5	33.2	23.9	32.6	20.1	32	23.1	32	24.2	34.4	24.4
16	33.3	20.1	33.7	22	31.1	23.2	36	22.9	32.8	20.5	31.3	22.2	32.5	23.5	35.1	23
17	34.2	19.9	34	22.5	33.3	23	36	22.5	32.8	20.8	33.8	22.2	32.2	24.2	34	25
18	34	20.6	34.1	23	31.4	22.9	34.4	23.7	32.3	21.2	31.9	23	34.6	22.5	35.3	24.4
19	33.5	20.3	35.3	23.8	32.8	23.6	34.2	24.4	32.7	21	32.7	25	34	22.6	34.2	23.3
20	32.6	21.7	34.3	24.8	31.3	26.6	33.8	25.4	32.7	20.6	33.1	24.5	33.7	24.4	36.1	23.4
21	32.2	20.3	37.2	24.4	32.5	26.4	35	25.5	32.9	20.1	32.3	25.2	33.2	24	35.4	23.7
22	32.1	22	31.3	24.9	28.8	25.9	32	24.7	32.2	20.5	32.6	25	31.9	25	35.8	24.3
23	34	21	33.7	24.2	32.3	23.6	34	24	32.5	20.3	31.7	24	34.6	23.9	35.8	24
24	33.6	20.4	35.2	23.4	32.4	23.7	35.8	23.1	31.6	20.8	33.3	23.9	34.6	24.2	36.5	23.8
25	34.5	21.2	36.8	23.2	31.6	24.1	34.8	24.5	31.5	20.5	32.8	24.2	34.6	23.5	36.2	23
26	34	20.5	35.7	24.7	32	24	35	24.4	31.6	20.7	33.2	24.3	35.1	23.6	36.9	23
27	33.5	19.3	35.5	24.3	32.5	23.8	34.8	24.2	31.4	20.9	32	24	34.9	24.1	36.5	23.4
28	34.4	20.9	36.6	23.6	32.6	25.4	35	24	31.7	20.5	32.8	24.9	35	23.2	36.3	23.2
29	34.2	19.3	36.8	23.4	33.7	24.7	35	24.6	32.1	20.1	31.7	23.4	34.1	22.4	35.4	22.8
30	33.6	18.2	35.3	23.2	31.4	22.1	35.2	22.1	31.7	20.8	31.8	22.9	34.3	22.4	35.7	22.9
Mean	33.3	20.4	34.5	23.5	31	24.2	34.3	23.5	32.1	20.3	31.8	23.7	33.2	23.2	35.0	23.1

Day.	Antipolo.		Iba.		San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	36.3	21.8	33.2	19.9	36.6	21.1	36.5	20.8	34.8	20.7	37.8	23.2	32.1	22.7	26.2	14.7
2	34.8	21	32.5	19.5	36.6	20.4	37.7	19.6	34.7	20.2	35.4	22.4	34.8	22.4	25.8	14.6
3	35.4	19.9	32.5	19.8	37.4	20.1	37.8	19.4	32.8	18	37.7	22	33.9	24.2	27.4	15.2
4	35.1	19.8	33.1	21	36.3	22.9	36.5	22.4	33.2	23.4	37.7	23.5	32.8	26	26.7	15.6
5	30.9	21.7	32.9	22.5	36.6	23	38	22.6	32.5	22.9	33.8	22.9	33.6	23.5	24.9	16
6	33.3	22.2	33.5	20.9	36	23	36.5	22.4	28.5	22.7	34.8	22.4	32.6	22.3	24.2	15.8
7	35	22.2	33.5	23	36	22.8	34.5	22.6	31.8	22.2	31.8	22.5	33.4	23.5	24.6	15.3
8	35.3	22.3	32.5	22	36.7	23.5	36.6	23.2	32.5	22.9	37.4	23.4	32.9	23.9	25.4	15.5
9	32	22.4	33.9	24.1	34.9	24	35.1	24	30.5	24.8	35.8	22.5	34.7	24	24.3	15.2
10	33.7	21.7	32	22.2	35.7	21.6	36.2	22	31.9	21.7	35.8	22.9	34.4	23.9	22.9	14.7
11	34.4	22.8	32.4	22.7	35.9	23.8	35.6	22.4	32.4	22.3	36.9	24.1	34.1	24.4	24.7	14.7
12	34.8	22.3	31.7	22.8	35.4	22.6	34.6	22.6	32.2	22.6	34.8	24	32.5	23.6	24.9	14.8
13	34.4	21.9	31.9	21.6	37.1	22.2	36	22.1	31.7	21.7	35.1	23	33.9	22.5	25.2	14.5
14	35.1	22.2	33.2	21.7	35.6	23.6	35.7	23	32.9	22	34.3	24.4	33.9	23.9	25.9	14.4
15	34.2	23.1	34.1	22	36.3	23.4	36.7	23.3	32.9	23.1	34.4	25.5	33.7	26.4	25.5	14.8
16	34.8	21.7	33.2	21.5	35.5	23.6	35.7	23.1	33.3	22	33.3	23.5	33.7	23.6	25.8	15.1
17	34.3	23.1	33.2	21.5	35.5	24.3	36	25	33	23.6	33.8	24.6	34.1	26.3	25.8	14.7
18	35	22.8	33.5	22.4	33.4	24.2	35	23.6	29.17	24	36.8	24	33.1	23.5	25.3	16
19	35	22.4	33.5	23	34.2	24	35	24	32.8	23.4	37.5	24.5	36.4	23.7	24.9	16
20	33	22.5	34	22.5	36.7	22.5	37	22.5	31.8	21.8	34.8	24.6	33.6	27.7	25.1	15.7
21	34.7	22.8	34.5	23.5	34.9	24.4	36.5	23.6	33.5	24	38.4	25	35.5	26.1	27.6	17.2
22	36	23	34.4	22	36	24.5	37	22.4	32.6	22.8	38	24.4	35.6	22.9	25.9	16.1
23	35.6	22.8	34.2	22.8	37	24.1	36.7	23.4	33	23.2	37.3	24.2	35.8	25.6	26	17
24	36.4	22.7	34	23.5	37.1	23.8	37.5	22.8	34	24	38.7	24.1	35.4	24.9	26.8	16.3
25	36.2	22.7	34.5	23	37.5	23.5	37.5	23.4	35.3	22	38.1	26	35.6	25.4	26	16.2
26	36.2	22.7	35.4	24.5	36.4	23.6	36.7	23	32.8	22.6	38.6	25.1	36.5	26.1	27.6	16.2
27	37.3	22.3	35.4	21.9	37.7	22.5	36.3	21.2	31.9	22.3	38.3	24.4	35.5	24.9	26.8	15
28	37.4	23.3	34.6	23	37.4	23.9	37	22.6	33.1	23.4	38.3	24.6	35.1	23.1	26.8	16
29	37	22.4	33.5	23	36.8	24.5	36.9	23.1	32.4	23.1	37.8	24	34.6	24.9	26.1	16
30	35.5	22.8	34.9	22.5	36.7	23.5	36.7	21.7	32.2	22.4	36.8	23.6	35.5	25.1	25.9	15.7
Mean	35	22.2	33.5	22.2	36.2	23.2	36.4	22.6	32.9	22.5	36.3	23.8	34.3	24.5	25.7	15.5

Maximum and minimum temperatures at the stations of the Weather Bureau, April, 1914—Continued.

Day.	San Fernando, Union.		Echague.		Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1.....	33.8	24.5	36.6	19.7	31.4	24	31.3	24.4	39.4	21.5	33.4	21	32.1	20.4	30	22.5
2.....	33.5	22.4	36.4	18.2	31.5	23.5	31.7	22.7	39	21	33.3	21.5	31.5	21.6	30.5	24.9
3.....	34.1	23.8	36.9	16.6	31.5	24	32.1	23.5	40.1	20.6	34.5	21.1	31.5	19.7	30.1	22.2
4.....	33.1	22.9	35.8	21.5	31.6	24	32	23	40.8	21.8	35.6	21.1	30.6	21.5	28	22.5
5.....	33.6	23.6	33.3	21.4	31.6	25.4	32.3	24.2	34	25	38.5	23.8	27.7	23.8	24.8	22
6.....	34.1	22.5	32.4	22	32	24.5	32.7	25.2	33.2	23.6	33.5	22.1	29.2	23.5	29	21.8
7.....	33.9	22.8	34.3	22.2	31.7	25.6	32	23.6	36	22.8	33.1	22.7	29	22	27.1	22.8
8.....	34.4	23.7	33	22.7	31.9	23.7	32.8	22.3	34	22.5	35.3	20.6	28.6	23.6	26.2	21.4
9.....	34.4	24.4	30.3	21.6	31.9	24.4	33.5	26	31.4	22.5	37	22.5	26.7	22.7	26.5	21
10.....	35.1	24.2	30.5	20.9	32.1	24.5	33	25.2	33.6	19.8	33.7	22.1	28.2	20.4	28	22
11.....	34.6	23.6	34.5	21.4	33.5	24.4	32	25	36.4	22	34.8	21.9	29.5	19.6	28.5	21.6
12.....	34.3	24.9	34.5	21.9	32.2	24.4	32.8	24.1	32.7?	23.3	34.5	22.8	31.9	21.1	29	23
13.....	33.9	23.4	34.4	21.6	32.2	23	32.4	23.3	38	22.4	34.2	22.5	31.8	22.7	28.9	21.8
14.....	34.5	23.2	36.3	23.5	32.3	24.1?	33.2	23.7	38	22.8	34	23?	30.2	23.4	29.6	24.6
15.....	34.2	23.5	34.8	22.6	32.3	23.4	32	23.1	37.4	24	34.3	21.4	30.9	22.9	28.4	22.6
16.....	34.3	22.9	34.8	22.9	32.3	23.6	33.5	23.7	38	23.1	35.4	22.7	31	22	29	23.9
17.....	34.1	22.8	34.9	23.2	32	23.7	32.8	23.8	36.6	23	34.2	22.5	29.8	23	26	22.6
18.....	34.8	22.9	34.8	23.4	32.7	23	33.3	24.1	37.6	24	35	22.6	30.4	24.4	27.6	22.6
19.....	35.2	24.6	34.6	22.3	32.4	24.5	32.8	23.6	37.6	23.1	35.1	22.9	34.1	23.5	29.4	23.6
20.....	35	26.6	35.3	20.5	32.6	26.6	32.8	25.6	41.8	22.5	34.5	24.7	31.8	23.2	31.3	23.7
21.....	35.5	25.8	36.4	22.4	33	26.5	33.5	26.3	40.6	24.5	36	25.3	34	23.1	30.4	23.8
22.....	34.8	23.8	37	20.9	32.6	24.8	33	26.2	39.7	22.5	35.5	25.5	32.5	22.1	30.4	24.8
23.....	36.1	24.3	37.2	21.9	32.5	25.5	33.5	26.4	41.1	24	35.6	25.1	34.9	23.9	31.6	25.7
24.....	36.1	24.3	37.3	23.7	33	24.2	33.5	25.3	39.7	24.6	35.2	23.7	32.4	24.1	31.6	23.4
25.....	35	24.6	36.9	21.3	33.2	25.5	33.7	26.2	41.1	25	36.4	24	34.5	24.2	32	23.8
26.....	36.4	25	37.1	22.1	34	25.5	34.2	26.2	40.8	24.5	36.9	24.1	35.6	23.8	32.6	25.8
27.....	35.9	25.6	37.3	19.6	33.5	26	33.4	26.7	41.6	23.3	35.5	24.6	35.4	24.6	31.3	26.3
28.....	35.2	25.6	37.4	21.3	33	27	34	25.2	39.8	23.7	35.7	24.5	33.3	24.5	31.4	24.8
29.....	35.1	26	36.5	22	33.5	26.2	33.8	25.1	40.6	22.3	36.7	23	32.2	22.3	32	22.9
30.....	36	24.8	36.6	20.8	32.6	26.2	33.6	26.9	40	23.4	36	24.4	32.7	23.1	31.3	24.6
Mean.....	34.7	24.1	35.3	21.5	32.4	24.7	32.9	24.7	38	23	35.1	23	31.5	22.7	29.4	23.3

SEISMOLOGICAL BULLETIN FOR APRIL, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

1, 22^h 13^m 00^s * [2, 6^h 13^m 00^s]. West of Luzon. Earthquake of intensity III. It was felt in the stations of Bolinao and Baguio. Its origin was in the northern part of Lingayen Gulf, close to the coast of La Union.

2, 17^h 49^m 40^s * [3, 1^h 49^m 40^s]. Southwest of Luzon. Earthquake of intensity II-III which was registered by the seismographs in Manila and in Ambulong, a station about 60 kilometers to the S of Manila. This earthquake was the strongest of a series of 26 slight seismic movements which were registered by the seismographs on the 2d, 3d, and 4th. Its epicenter was about 135 kilometers from Manila and somewhat less from Ambulong; it was probably in the China Sea to the NW of the island of Mindoro.

8, 21^h 25^m [9, 6^h 55^m]. Guam (Mariana Islands). Earthquake of intensity IV.

9, 16^h 58^m [10, 0^h 58^m]. Jolo (Island of Jolo). Oscillatory earthquake of intensity III-IV, long duration.

16, 19^h 55^m * [17, 3^h 55^m]. Zamboanga (W of Mindanao). Earthquake of intensity III, duration 6 seconds.

17, 10^h 54^m 05^s * [17, 18^h 54^m 05^s]. Nueva Caceres (SE of Luzon). Oscillatory earthquake, direction E-W, intensity III-IV, duration 8 seconds. Its epicenter was in the eastern part of the Province of Ambos Camarines, where there is a well known seismic center.

18, 3^h 46^m 37^s * [18, 11^h 46^m 37^s]. Northeast of Luzon. Earthquake of intensity III, felt throughout the Province of Cagayan; the epicenter appears to have been in the Pacific not far from the NE coast of Luzon and some 360 kilometers distant from Manila.

20, 22^h 45^m [21, 6^h 45^m]. Butuan (N of Mindanao). Oscillatory earthquake direction NNW-SSE, intensity III, duration 3 seconds.

25, 14^h 39^m 07^s * [25, 22^h 39^m 07^s]. North of Luzon. Earthquake of intensity V-VI, felt throughout the whole of the northern part of Luzon. Its origin must have been very close to the northern coastline at the extremity of the central cordillera. In Aparri and Laoag subsultory movements were noted and the intensity there reached number VI of the scale. Further S the intensity was less as is clear from the reports received from Vigan and Tuguegarao. It was perceptible in the whole of the Cagayan Province, in a great part of the Mountain Province and in the two Ilocos; most probably it was felt also in the Babuyan Islands. It was recorded not only by the seismographs in the Philippines but also by those in China, Japan and Siberia.

¹ The intensity of the earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance was registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

29, 4^h 37^m 46^s * [29, 12^h 37^m 46^s]. Bacarra (NW of Luzon). Oscillatory earthquake, direction NNE-SSW, intensity II-III, duration 8 seconds. This earthquake undoubtedly came from the same origin as the preceding one; Bacarra is the nearest town to the epicenter and we received also a note from it concerning the shock of the 25th.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. AN: T=6.4, $\epsilon=4.4$, $\frac{r}{T_0^2}=0.045$;
AE: T₀=6.3, $\epsilon=3.5$, $\frac{r}{T_0^2}=0.052$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
88	1	Iv	eP	h. m. s.	3	70		W of Luzon.
			L	22 13 00				
			M _N	13 23				
			F	13 26				
89	2	Iv	eP	13 33 49				
			L	34 04				
			F	38				
90	2	Iv	eP	13 56 11				
			L	56 26				
			F	14 00				
91	2	II _a	eP	17 49 40	3-4	1,250		SW of Luzon.
			L	49 55				
			M _N	50 10				
			F	18 12				
92	2	Iv	eP	18 01 47				
			F	04				
93	2	Iv	eP	18 15 43				
			L	15 58				
			F	20				
94	2	Iv	eP	18 21 32				
			L	21 47				
			F	25				
95	2	Iv	eP	18 41 07	1 2	65		
			L	41 22				
			M _N	41 32				
			F	47				
96	2	Iv	eP	19 06 06				
			L	06 21				
			F	10				
97	2	Iv	eP	20 29 24				
			F	32				
98	2	Iv	eP	21 04 50	4	50		
			L	05 05				
			M _N	05 18				
			F	12				
99	2	Iv	eP	22 28 16				
			F	31				
100	3	Iv	eP	0 02 13	2-3	47		
			L	02 29				
			M _N	02 45				
			F	08				
101	3	Iv	eP	3 06 10	2-3	53		
			L	06 26				
			M _E	06 33				
			F	11				
102	3	Iv	eP	5 40 00	1-2	18		
			L	40 15				
			M _N	40 23				
			F	43				
103	3	IIv	eP	6 02 00	2-3	290		
			L	02 15				
			M _E	02 22				
			M _N	02 26				
			F	18				
104	3	Iv	eP	9 14 31			End overtaken by following earthquake.	
			L	14 46				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
105	3	Iv	eP L F	<i>h. m. s.</i> 9 15 44 15 59 20				
106	3	Ir	e F	21 47 22 32				
107	4	Iv	eP F	0 57 52 1 01				
108	4	Iv	eP L F	1 57 52 2 58 08 2 02				
109	4	Iv	eP F	2 24 49 29				
110	4	Iv	eP F	9 53 20 56				
111	4	Iv	eP L M _N F	10 24 09 24 25 24 27 31	2	67		
112	4	Iv	eP F	18 08 28 12				
113	4	Iv	eP F	18 42 05 45				
114	4	Iv	eP F	20 50 46 53				
115	5	Iv	eP F	6 22 25 25				
116	7	Iv	eP F	18 56 34 59				
117	8	I	e F	12 16 35				
118	9	Ir	eP L F	3 46 30 54 33 4 38				
119	9	I	e F	5 19.2 33				
120	9	I	eP F	9 30 40 55				
121	9	Iv	eP iL M _N F	18 08 44 09 10 09 12 16	2	150		
122	10	Iv	eP F	5 52 21 55				
123	11	Iu	eP eS eL M _E M _N F	16 39 10 46 03 52 56 57 30 59 09 18 52	5-6 10-11 17 12	133 105		
124	16	I	e F	19 55 20 13				Zamboanga (W of Mindanao).
125	17	Iv	eP eL M _E M _N F	10 54 05 54 30 54 36 54 39 11 12	1 1-2	184 260		Nueva Caceres (SE of Luzon).
126	18	IIv	eP L M _N M _E F	3 46 37 47 17 47 23 47 23 4 15	2-3 3-4	600 490		NE of Luzon.
127	20	Iu	eP eS L M _N F	13 49 48 14 04 44 22 00 15 02 50 53	23	8		

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
128	22	I	e F	<i>h. m. s.</i> 7 21 32				
129	23	I	e F	16 39 51				
130	25	II _v	eP L M _N M _E F	14 39 07 39 53 40 26 40 43 15 01	3-4 4-5	462 300		N of Luzon.
131	27	I _v	eP L M _E F	21 38 52 39 04 39 06 46	1-2	286		
132	28	I	e F	11 40 12 08				
133	29	I _v	eP F	4 37 46 46				Bacarra (NW of Luzon).
134	29	I _r	e F	8 37 9 19				
135	30	I	e F	10 16 44				

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

1, 22^h 13^m 00^s * [2, 6^h 13^m 00^s]. W de Luzón. Temblor de tierra de intensidad III. Sintióse en las estaciones de Bolinao y de Baguio; su origen se hallaba en la parte N del Golfo de Lingayén, cerca de la costa de La Unión.

2, 17^h 49^m 40^s * [3, 1^h 49^m 40^s]. SW de Luzón. Temblor de tierra de intensidad II-III registrado por los sismógrafos de Manila y Ambulong, que está unos 60 kilómetros más al S. Éste fué el principal de una serie de 26 movimientos sísmicos muy débiles registrados por los sismógrafos los días 2, 3 y 4: su epicentro se hallaba a unos 135 kilómetros distante de Manila y algo menos de Ambulong; probablemente en el Mar de la China al NW de la Isla de Mindoro.

8, 21^h 25^m [9, 6^h 55^m]. Guam (Islas Marianas). Temblor de tierra de intensidad IV.

9, 16^h 58^m [10, 0^h 58^m]. Joló (Isla de Joló). Temblor oscilatorio de intensidad III-IV, duración larga.

16, 19^h 55^m * [17, 3^h 55^m]. Zamboanga (W de Mindanao). Temblor de tierra de intensidad III, duración 6^s.

17, 10^h 54^m 05^s * [17, 18^h 54^m 05^s]. Nueva Cáceres (SE de Luzón). Temblor oscilatorio, dirección E-W, intensidad III-IV, duración 8^s. El epicentro de este temblor se hallaba en la parte oriental de la Provincia de Ambos Camarines, donde existe un centro sísmico muy conocido.

18, 3^h 46^m 37^s * [18, 11^h 46^m 37^s]. NE de Luzón. Temblor de tierra de intensidad III, sentido en toda la Provincia de Cagayán: el epicentro se hallaba al parecer en el Mar Pacífico no lejos de la costa NE de Luzón y a unos 360 kilómetros de distancia de Manila.

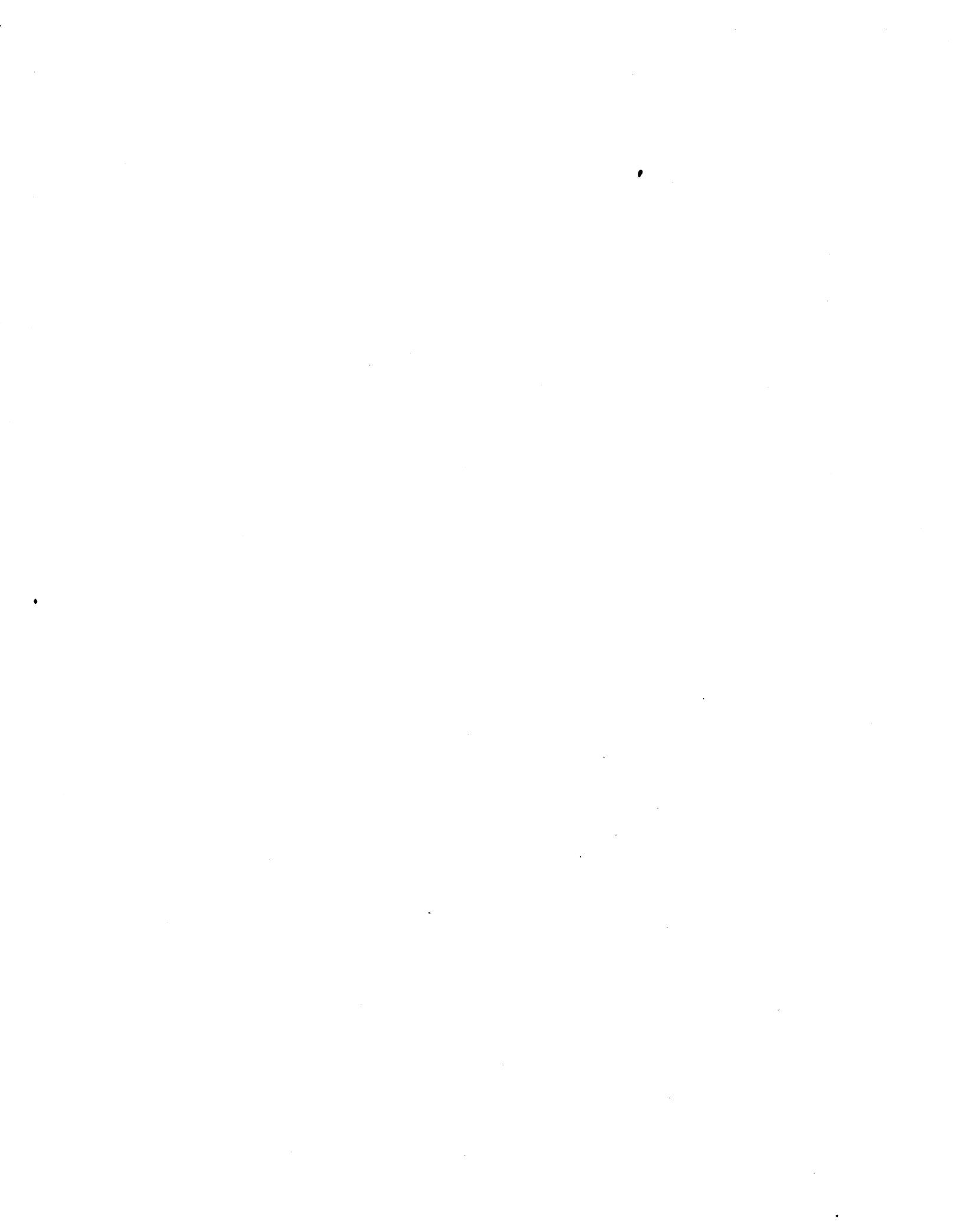
20, 22^h 45^m [21, 6^h 45^m]. Butuán (N de Mindanao). Temblor oscilatorio, dirección NNW-SSE, intensidad III, duración 3^s.

25, 14^h 39^m 07^s * [25, 22^h 39^m 07^s]. N de Luzón. Temblor de tierra de intensidad V-VI sentido en toda la parte septentrional de Luzón. Su origen debe colocarse muy cerca de la costa N hacia el extremo de la cordillera central. En las estaciones de Aparri y Laoag, se notaron movimientos susultorios, y la intensidad del terremoto llegó al grado VI, disminuyendo hacia el S, según los *reports* de Vigan y de Tuguegarao. Fué perceptible en toda la Provincia de Cagayán, en gran parte de la Montañosa y en Ambos Ilocos; seguramente lo fué también en las Islas Babuyan. Registráronlo no sólo los sismógrafos del Archipiélago sino también los de China, Japón y Siberia.

29, 4^h 37^m 46^s * [29, 12^h 37^m 46^s]. Bacarra (NW de Luzón). Temblor oscilatorio, dirección NNE-SSW, intensidad II-III, duración 8^s. Este temblor seguramente procedió del mismo origen que el precedente; Bacarra es la población más cercana al epicentro, de donde se recibió también una nota referente al terremoto del 25.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de De Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

BULLETIN FOR MAY, 1914.



METEOROLOGICAL BULLETIN FOR MAY, 1914.

By REV. JOSÉ CORONAS, S. J.

Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was slightly higher than the normal and than that of last May, in all the stations. The highest pressures were observed on the 2d and the 22d, and the lowest on the 28th in the Visayas and Mindanao, and on the 31st in Luzon.

The mean temperature of the month was also slightly higher than that in the corresponding month of last year throughout the Archipelago. The extremes of temperature in Manila were 33.7° C. on the 15th and 21.4° C. on the 2d. In Baguio the absolute maximum was 26.5° C. in the valley and 26.8° C. on the top of Mirador, while the minimum was 14.0° C. in the valley and 15.4° C. on Mirador.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND-CLASS STATIONS FOR MAY, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from May, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from May, 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	758.37	+0.14	760.62	22	755.59	28	27.7	+0.4	34.4	27	21.9	15
Surigao	58.27		60.28	22	54.86	28	27.2		32.5	22, 25	22	17, 23, 25
Cebu	58.39	+ .20	60.54	22	55.45	28	28.5	+ .2	33.9	25	22.9	14
Iloilo	58.07	+ .16	60.33	22	55.44	29	28.4	+ .8	35.6	10	23.4	20, 21, 31
Ormoc	58.49	+ .25	60.65	22	55.45	28	27.5	+ .4	34.7	4	20.6	2
Tacloban	58.50	+ .31	60.71	22	54.96	28	27.6	+ .1	33.5	18	22	2
Capiz	58.44	+ .28	60.45	22	55.56	28	28.5	+1.3	34.7	6	23.4	16
Calbayog	58.48	+ .39	60.64	22	55.12	28	26.8	+ .1	34.2	25	21.6	24
Legaspi	58.39	+ .04	60.68	22	54.04	31	28.8	+ .8	35.1	21	22.1	24
Atimonan	58.52	+ .36	60.83	2	53.89	31	28.4	+ .8	33.9	24	21.9	5
Ambulong, Tanauan	58.06	+ .24	60.09	22	53.90	31	28.9	+1.2	37	10, 15, 17	23	17, 23
Paracale	58.72	+ .23	61.06	2	53.63	31	28.2	+ .6	33.6	25, 30	23.5	24
Manila	58.42	+ .15	60.52	2	54.40	31	28.5	+1.1	37.7	15	21.4	2
San Isidro	58.61	+ .22	60.87	2	54.50	31	29.1	+1.2	38.9	9	20.9	2
Dagupan	57.70	+ .08	60	2	53.54	31	29.2	+1	38.8	3, 5	23	12
Bolinao	58.07	+ .35	60.47	2	53.88	31	29.2	+ .8	36.4	13	23	5
Baguio ^a	636.87	+ .54	638.76	22	633.36	31	19.4	+ .8	26.8	12	15.4	7
Vigan	758.11	+ .33	760.55	2	753.50	31	29.2	+1	35.2	19	23.2	6
Tuguegarao	58.47	+ .28	60.69	2	54.10	31	29.5	+1.2	41.3	23	22.2	9
Aparrí	58.47	+ .44	60.83	3	54.20	31	28.1	+ .6	35.3	18	22	7

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—On an examination of the following table of rainfalls, it will be found that the number of stations having an amount of rain greater than the normal for the month and greater than that of last May is almost equal to the number having a less rainfall.

The amount of rain in Manila was 84 mm., an amount greater than that of May, 1913, by 43.5 mm., and less than the normal by 24.7 mm. The amount of rain that fell in Baguio was 436.2 mm., which is 10 mm. less than the normal, and 81.8 mm. more than the total of last May.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF MAY, 1914.

Station.	Total.	Departure from May, 1913.	Departure from normal.	Rainy days.	Departure from May, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from May, 1913.	Departure from normal.	Rainy days.	Departure from May, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	149.3	- 35	- 30.8	12	- 6	53.8	14	Sumay, Guam	77.6	+ 38.7		12	- 1	25.4	21
Isabela, Basilan	138	+ 23.4	+ 27.5	12	- 3	55.4	27	Calapan	115.5	-162.2		11	- 7	49	3
Zamboanga	124.7	+ 49.9	+ 51.9	7	- 4	52.8	11	Virac	^a 93					23.9?	31?
Davao	339.3	+201.6	+ 97.9	10	- 4	61	18	Nueva Caceres	163.5	+ 92.3	+ 62.5	11	0	83.1	18
Cotabato	316.1	+102.3	+ 87.8	15	+ 1	102.4	28	Batangas	116.2	+ 1.2		10	+ 2	59.7	27
Cagayan, Misamis	80.6	- 61.8		12	+ 2	34	15	Atimonan	110.4	- 23.1	- 45.8	11	- 5	34	19
Dapitan	179.5		+ 95.9	15		88.4	11	Ambulong, Tanauan	^b 166.1			11?		94.7	29
Butuan	197.4	- 41.5	+ 63.8	16	- 9	46	15	Silang	182.4	+ 20.5	+ 4.5	10	+ 3	54.4	29
Dumaguete	48.3	- 26.7		7	- 6	13.1	29	Paracale	66.5	- 69.2		13	- 4	24.9	10
Yap, W. Carolines	134.2	+ 27.3		22	- 4	22.4	15	Santa Cruz, Laguna	126	+ 80.5		8	- 3	45.2	20
Tagbilaran	28.1	+ 12.5	- 72.6	5	+ 2	10.9	18	Manila	84	+ 43.5	- 24.7	11	+ 2	43.8	18
Iwahig	189.7			17		30.2	20	Antipolo	264.1	+224.9		10	0	77.8	19
Surigao	258		+130.4	16		56.7	11	Iba	370	+142.2		15	0	209.3	31
Maasin	337.4	+137.3	+223.4	5	- 2	128.7	27	San Isidro	194.2	+109.3	0	14	+ 4	52.6	17
Cebu	63.8	- 19.8	- 26.6	11	- 2	14.7	13	Tarlac	217.2	+ 64.9	+ 25	13	+ 2	66	6
Hoibu	263.9	+107.4	+101	12	- 2	136.7	30	Baler	252.3	- 37.8	- 42.5	18	- 4	54.4	10
San Jose Buenavista	411.2	+274.8	+246.2	13	- 3	169.4	30	Dagupan	175.6	-153.7		19	+ 5	45.2	5
Cuyo	190	- 62	+ 27.7	13	- 4	61.2	29	Bolinao	229.5	+ 13.3	+ 52	14	+ 2	61.9	31
Ormoc	104.8	+ 18.2	+ 29.5	13	+ 3	19.1	27	Baguio	436.2	+ 81.8		10	+ 3	65.1	31
Guiuan	186.8	-264.6		18	+ 3	34.8	27	San Fernando, Union	150.5		- 26	13		59.7	19
Tacloban	130.9	-212.6	- 12.2	17	- 2	37.9	27	Echague	95.4	+ 34.8		8	- 2	45.5	10
Capiz	90.3	- 92.7	- 86	9	- 8	42.6	15	Candon	92.6	-278	-127.8	7	- 2	26.2	18
Borongon	169.8	-447.3	- 64.5	20	- 1	24.9	17	Vigan	78.7	-284.4	- 48.5	10	- 2	17.5	14
Calbayog	172.3	- 34.7	+ 5.2	17	0	32	9	Tuguegarao	123.7	+ 9.2	+ 4.6	7	- 1	48.2	9
Masbate	63.9	- 20.4	- 9.3	6	0	34	29	Laoag	76.9			6		36.6	14
Romblon	100.5		- 19.3	14		26.4	8	Aparri	10.6	-164.6	- 99.1	2	- 6	6.6	6
Batag	102	-244		9	- 5	34.5	25	Santo Domingo, Batanes	254.3	+ 92.2	+ 14.8	14	+ 1	99	3
Gubat	68.5	-171.2	- 40.9	10	- 1	22.1	30								
Legaspi	67.7	-246.9	- 60.1	13	- 3	23.6	29								

^a 25 days of observation only.

^b 30 days of observation.

DEPRESSIONS AND TYPHOONS.

Only two typhoons were announced by the Observatory during the month. Both of them occurred during the last ten days of the month and only the second passed close to the Philippines.

The typhoon of May 20-26.—According to the observations received from Guam and Yap, it appears that this typhoon was in process of formation in the Western Carolines to the south of Guam from the 20th to the 22d. On the afternoon of the 23d the Observatory announced it as being situated to the north of the Western Carolines, moving to the west. The track followed by this typhoon, as shown on the weather maps, was indicated in the following weather notes published on the 24th, 25th, and 26th.

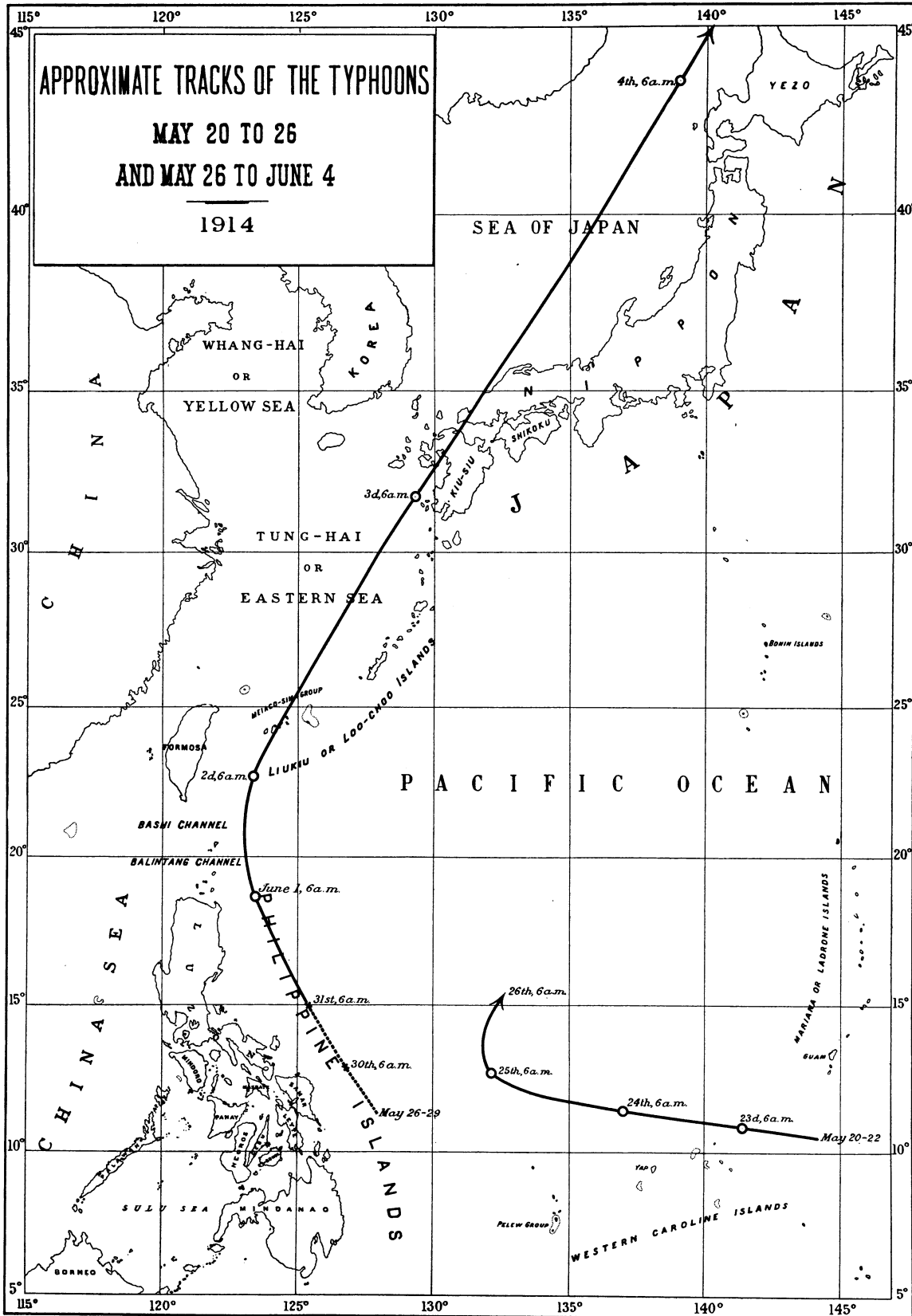
May 24, 11 a. m.: The typhoon over the Pacific is situated to the NW of Yap, Western Carolines, in about 12° or 13° lat. N., moving apparently to W by N.

May 25, 11.30 a. m.: The typhoon over the Pacific was situated at 6 o'clock this morning to the E of Samar in about 132° long. E and between 12° and 13° lat. N, moving apparently to W or W by N.

May 26, 11.10 a. m.: The typhoon over the Pacific is recurving northeastwards to the E of southern Luzon. Hence it is not dangerous for the Philippines.

In all probability the typhoon filled up on the 26th, shortly after having recurved to the NE.

The typhoon of May 26 to June 4.—The former typhoon had scarcely disappeared to the E of southern Luzon, when a new depression presented itself to the E of Samar. This storm was probably the same as that which appeared a few days later as a true typhoon to the E of Luzon moving to the NNW. If this supposition is correct, then it must have remained almost stationary from the 26th to the 29th to the E of Samar. During the morning of June 1, the vortex passed at its least distance from Aparri by the E and NE causing the barometric minimum 749.2 mm. In the afternoon of the same day it passed by the E of Santo Domingo de Basco, Batan Islands, where the barometer fell to 743.2 mm. at 4 p. m.



From the 2d the typhoon moved to the NNE, crossing the NW part of the island of Kiusiu, Japan, on the morning of the 3d.

Below are some of the notes published by the Observatory concerning the track of this typhoon:

May 31, 4.30 p. m.: The depression of the preceding days seems to have increased again in intensity since yesterday. It appears to-day as a real typhoon within 300 miles to the E of the central part of Luzon, moving apparently to NNW.

June 1, 11.45 a. m.: The typhoon was situated this morning at 6 o'clock about 150 miles to the E of Aparri, moving NNW.

June 2, 11.30 a. m.: The typhoon is situated this morning to the E of Formosa, moving N. It will probably recurve northeastward later.

June 3, 11.30 a. m.: The typhoon has recurved northeastward since yesterday, its center being situated at 6 o'clock this morning near southwestern Japan.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es para todas las estaciones ligeramente mayor que la normal y la de Mayo del año pasado. Las presiones más altas se observaron el 2 y 22, y las más bajas el 28 en Visayas y Mindanao, y el 31 en Luzón.

La temperatura media mensual es en todas las estaciones ligeramente mayor que la del año pasado. Las temperaturas extremas para Manila fueron 33.7° C. y 21.4° C. registradas respectivamente los días 15 y 2. Las máximas y mínimas para Baguio fueron 26.5° C. y 14.0° C. en el valle, y 26.8° C. y 15.4° C. en la cumbre de Mirador.

Precipitación acuosa.—Examinando con cuidado el cuadro de lluvia que acompaña el texto inglés, hallamos ser casi iguales en número las estaciones que dan este mes un total de lluvia mayor que el año pasado y mayor también que la normal de Mayo, y las que dan un total menor.

La cantidad de agua recogida en los pluviómetros de Manila fué 84 mm., mayor que la de Mayo, 1913, en 43.5 mm., y menor que la normal de este mes en 24.7 mm. En Baguio cayeron en todo el mes 436.2 mm. de agua, cantidad que difiere en -10 mm. de la normal de Mayo, y en +81.8 mm. del total de lluvia del año pasado.

DEPRESIONES Y TIFONES.

Sólo dos tifones anunció el Observatorio durante este mes. Ambos ocurrieron en los últimos diez días y sólo el segundo pasó cerca de Filipinas.

Tifón de 20 a 26 de Mayo.—Según las observaciones de Guam y Yap, parece que se estuvo formando este tifón del 20 al 22 en las Carolinas Occidentales al S de Guam. El Observatorio de Manila lo anunció la tarde del 23 como situado al N de las Carolinas Occidentales, moviéndose al W. La trayectoria seguida por este tifón según se desprende de nuestros mapas del tiempo fué indicada en las siguientes notas ordinarias del tiempo de los días 24, 25 y 26.

Día 24, 11 a. m.: El tifón del Pacífico se halla al NW de Yap, Carolinas Occidentales, en los alrededores de 12° ó 13° lat. N, moviéndose aparentemente al W $\frac{1}{4}$ NW.

Día 25, 11.30 a. m.: El tifón del Pacífico se hallaba a las 6 de esta mañana al E de Sámar, entre 12° y 13° lat. N y en los alrededores de 132° long. E, moviéndose aparentemente al W o W $\frac{1}{4}$ NW.

Día 26, 11.10 a. m.: El tifón del Pacífico está recurvando al NE al E de la parte sur de Luzón. De ahí que no es peligroso para Filipinas.

Probablemente se deshizo este tifón el mismo día 26 poco después de haber recurvado al NE.

Tifón de 26 de Mayo a 4 de Junio.—Apenas había desaparecido el tifón anterior al E del sur de Luzon, cuando se presentó una nueva depresión al E de Sámar, la cual fué probablemente la misma que apareció unos días después convertida en verdadero tifón al E de Luzón, moviéndose al NNW. En tal caso hubo de permanecer casi estacionaria desde el 26 al 29 al E de Sámar. El día 1 por la mañana pasó el vórtice a la menor distancia de Aparri por el E y NE causando una mínima barométrica de 749.2 mm. La tarde del mismo día pasó por el E de Santo Domingo de Basco, Islas Batanes, donde el barómetro bajó hasta 743.2 mm. a las 4 p. m.

Desde el día 2 se movió el tifón al NNE, viniendo a travesar la parte NW de la isla Kiusiu, en el Japón, la mañana del día 3.

Véase a continuación lo que dijo el Observatorio sobre la trayectoria de este tifón en las notas ordinarias del tiempo de los días 31 de Mayo y 1, 2 y 3 de Junio:

Mayo 31, 4.30 p. m.: La depresión de los días anteriores parece haber aumentado de nuevo en intensidad desde ayer. Aparece hoy como un verdadero tifón a menos de 300 millas al E de la parte central de Luzón moviéndose aparentemente al NNW.

Junio 1, 11.45 a. m.: El tifón se hallaba a las 6 de esta mañana a unas 150 millas al E de Aparri moviéndose al NNW.

Día 2, 11.30 a. m.: El tifón se halla esta mañana al E de Formosa moviéndose al N. Recurvará probablemente al NE más tarde.

Día 3, 11.30 a. m.: El tifón ha recurvado al NE desde ayer, hallándose su centro a las 6 de esta mañana cerca de la parte SW de Japón.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pres- sure (mean).	Air temperature. ^b			Underground temperature.				Rela- tive humid- ity (mean).	Vapor pres- sure (mean).	Radiation.		Evaporation. ^b			
		Mean.	Maxi- mum.	Mini- mum.	0.25 meter.		0.50 meter.				1.50	2.50	Mini- mum on grass	Maxi- mum in sun. Black bulb in vacuo.	Free ex- posure (total)	Shelter (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.	8 a.m.				
1	759.93	28.5	35.8	22.2	30.5	31.7	30.8	30.9	29.1	28.2	62.2	17.3	18.9	56	8.2	6.8
2	60.52	28.1	36.2	21.4	30	31.5	30.7	31	29.2	28.3	62.5	17.2	19.5	56.3	8.6	6.2
3	60.14	28.5	36.3	23.1	30.6	31.9	30.8	31.1	29.3	28.5	63.5	18.1	19.9	56.5	7.9	5.9
4	59.20	28	35.7	22.2	30.4	31.3	30.8	30.8	29.2	28.4	64.2	17.8	18.7	49.1	7.1	5.3
5	57.85	28.1	36.6	23.1	30	31.3	30.5	30.8	29.3	28.3	68	18.9	20.2	58.8	7	5.3
6	58.36	28.8	36.9	24.3	29.7	31.2	30.4	30.4	29.2	28.3	64.4	18.4	21.3	56	7.5	5.7
7	59.37	28.6	36.2	22.9	29.8	31.5	30.3	30.7	29.3	28.5	66.9	19.2	19.8	55.2	7.9	5.7
8	58.96	27.8	36	22.2	30.2	31.5	30.5	30.7	29.3	28.5	71.5	19.6	18.8	56	5.9	4.5
9	57.37	29.3	37.2	24.5	30	31.5	30.5	30.8	29.3	28.5	70	20.8	22.2	55.3	7	5
10	56.24	28.8	35.4	24.6	30.7	32.2	30.7	30.8	29.3	28.4	75.5	21.9	22.3	55.4	4.2	3.5
11	57.20	28.5	36.4	24.4	30.9	32.5	30.8	31.1	29.3	28.5	78.2	22.3	23.6	55.3	4.4	3.4
12	58.65	28.7	35.8	24.4	30.8	32	31	31.1	29.3	28.5	69.7	20.1	23	54.9	6.3	4.7
13	59.10	28.6	36.4	22.7	30.6	32	30.9	31.1	29.3	28.5	64.8	18.4	19.8	58.1	7	5.2
14	59.28	29	36.3	22.7	30.6	31.8	31	31.2	29.4	28.7	61.9	18	19.1	57.4	8.7	6.5
15	59.23	30	37.7	24	30.8	32	31	31.1	29.4	28.7	62.6	19.2	21.2	56	8.9	6.7
16	59.14	29	36.6	24.6	31.2	31.9	31.2	31.2	29.4	28.7	70.4	20.8	21.4	56.7	5.8	4.3
17	59.30	28.6	35.4	23.5	30.9	32	31	31.1	29.5	28.6	70.4	20.2	20.2	54.9	7.2	5.1
18	59.36	28.6	35.9	24.6	31.5	33.1	31.3	31.6	29.6	28.7	74.6	21.1	22.2	57.7	4.6	3.5
19	58.94	27.7	34.8	23.9	30.9	32	31.4	31.5	29.6	28.8	80.2	21.8	22.3	55.5	4	2.9
20	58.73	28.2	35.2	24.7	30.9	32.2	31.2	31.5	29.7	28.7	79.1	22.3	23.2	55.6	3.8	2.9
21	59.78	27.7	34.9	24.9	30.9	32	31.2	31.5	29.6	28.7	83.9	22.9	23.5	60	2.7	2.1
22	60.49	28.7	34.7	24	30.8	32.2	31.2	31.4	29.7	28.8	77.2	22.2	22.3	54.5	5	3.6
23	59.91	28.7	35.2	23	30.8	32	31.3	31.6	29.7	28.8	74	21.2	20.1	54.7	5.9	4.2
24	58.83	28.2	34.8	24.2	31.5	32.8	31.6	31.8	29.7	28.7	79.2	22.3	22.7	53.8	3.6	3.3
25	58.52	28.5	36	23.2	31.2	32	31.6	32	29.7	28.7	74.9	21.2	21.5	55.8	5.6	4
26	58.66	28.2	34.9	25.6	31.3	32.9	31.6	31.8	29.7	28.8	78.3	22.1	22.3	54.2	3	2.4
27	57.02	28.6	34.9	24.7	31.2	32.5	31.6	31.8	29.8	28.8	78.9	22.3	23.2	54	4.7	3.3
28	55.73	28.3	34.2	24.7	31.8	32.9	31.8	31.9	30	28.8	80.6	22.8	22.8	53.8	4.3	3.2
29	55.47	27.7	33.9	25.1	31.5	32.6	31.9	31.9	30	28.9	85.9	23.6	23.6	52.2	3	2
30	55.48	28.3	35.7	24.8	31	32.2	31.7	31.9	29.9	28.8	80.4	22.7	22.8	59.5	3.2	2.7
31	54.40	28.5	33.2	25.2	31.1	32.1	31.6	31.9	29.5	29	77.8	22.3	23.6	53.7	3.7	3.7
Mean	758.42	28.5	35.7	23.9	30.8	32	31.1	31.3	29.5	28.6	72.6	20.6	21.5	55.6	5.7	4.3
Total															176.7	133.6
Departure from normal	+0.05	+0.1	+2.1	0							-3.4	-1				

Day.	Wind.				Amount (mean).		Clouds.		Sun- shine.	Rain, 24 hours begin- ning mid- night.	Miscellaneous.
	Prevailing direction.	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	Upper.	Lower.	Form and direction.				
								0-10.			
1	ESE, SE	293.5	31	SE	2.8	Ci.	Cu.	E	10 55	☉ p.	
2	SE	219.5	23	SE	4.1	Ci.	Cu.	E	10 10		
3	SE	231	27.5	SE	4.6	Ci.	Cu.	E	9 10		
4	SE, ESE	217.5	24	SE	5.2	Ci.	Cu.	E	8 20	☉ p.	
5	SE, ESE	177.5	19	SE	4.8	Ci.	Cu.	E	8 45	☉ p.	
6	SE	206.5	16.5	WNW	4.7	Ci.	Cu.	ESE	10 00	☉ p.	
7	SE, W	226.5	19	SSE	3.6	Ci.	Cu.	E	10 45	☉ p.	
8	E quad.	197	21	NNE	4.9	Ci.	Cu.	E	9 00	☉ p.	
9	SE, W	210	18.5	SSE	4.7	Ci.	Cu.	E	10 10	☉ p.	
10	Variable.	164	18	SbyW	5.8	Ci.-S.	Cu.	ESE	7 45	☉ p.	
11	WSW	162.5	15	WSW	6.5	A.-Cu.	Cu.-N.	E	6 55	☉ p.	
12	Variable.	232	21	SE	6.2	Ci.	Cu.	E	8 45	☉ p.	
13	Variable.	196	22	W	3.8	Ci.	Cu.	E	8 50	☉ p.	
14	SE	277.5	27	SE	6.8	Ci.	Cu.	E	10 25	☉ p.	
15	SE	225	17.5	SE	5.3	Ci.	Cu.	E	11 00	☉ p.	
16	SE, W	224.5	25	SW	7.6	Ci.-S.	Cu.	E	6 05	☉ p.	
17	SW quad.	225.5	24	SSW	2.5	Ci.	Cu.	E	10 35	☉ p.	
18	SE quad.	148.5	19	WSW	6.7	Ci.	Cu.	E	8 05	☉ p.	
19	SW quad.	137	17.5	SW	6.1	A.-Cu.	Cu.	E	7 20	☉ p.	
20	E quad.	154	20	WSW	6	A.-Cu.	Cu.	E	7 45	☉ p.	
21	Variable.	92	13.5	WNW	8.2	A.-Cu.	Cu.	E	4 50	☉ p.	
22	SSE, WNW	156	16.5	WNW	7.6	Ci.	Cu.	E	7 05	☉ p.	
23	W quad.	142	14	WNW	3.2	Ci.	Cu.	E	10 00	☉ p.	
24	W quad.	165	17	W, SW	5	Ci.	Cu.	E	9 05	☉ p.	
25	WSW	137.5	15	SE	4.1	Ci.	Cu.-N.	E	9 25	☉ p.	
26	Variable.	155.5	16	WSW	7.4	Ci.-S.	Cu., Cu.-N.	E	4 50	☉ p.	
27	WSW	206	24	SW	5.2	A.-Cu.	Cu.	E	7 50	☉ p.	
28	SW quad.	226	25.5	WSW	4.7	Ci.	Cu.	E	8 40	☉ p.	
29	E quad.	161	19.5	SW	7.2	Ci.	Cu.	E	5 00	☉ p.	
30	SW quad.	164	17	SW	6.3	Ci.	Cu.	E	6 25	☉ p.	
31	SW	407	34	SW	8.5	Ci.-S.	Cu.	E	6 30	☉ p.	
Mean		198	20.6		5.5				8 24		
Total		6,137.5							260 25	84	
Departure from normal		-719.2			-0.2				+27 31	-24.7	

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[φ=16° 25' N; λ=120° 36' E; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Table with columns: Day, Pressure (mean), Air temperature at Mirador (Mean, Maximum, Hour, Minimum, Hour), Air temperature in the valley (Maximum, Hour, Minimum, Hour), Relative humidity (mean), Vapor pressure (mean), Radiation (Minimum on grass, Maximum in sun, Black bulb in vacuo), Evaporation (Free exposure, Shelter).

Table with columns: Day, Wind (Prevailing direction, Total movement, Maximum hourly velocity, Direction at the time of the maximum velocity), Clouds (Amount, Form and direction: Upper, Lower), Sunshine (h. m.), Rain (24 hours beginning 6 a. m.), Miscellaneous.

a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
b The barometric readings of this station are not reduced to sea level.
c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, MAY, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo							47			1.8			53.8	12.7		
Isabela, Basilan						.3	.8	24.9						13.5		
Zamboanga						14.5					52.8			1.3		
Davao										55.9	18.5		11.9	14.5	22.4	
Cotabato						27.4			5.1	4.8	10.7	16		9.7		
Cagayan, Misamis	.3					.3	.3			2				34		
Dapitan		5.1					18.3	5.3	1.5	10.7	88.4	2.8				
Butuan	25.1	30.8	2.5	11.2				1.5		32.8?	3.3	18.8	.3	2	46	
Dumaguete														.8	5.8	
Yap, Western Carolines	6.6	2.5		15.8	22.3	.3	2	6.1		4.9	.3	3.6		8.4	22.4	
Tagbilaran	5.8														2.5	
Iwahig	1.3	7.1						18						1.7	22.6	
Surigao	5.1	3.1	13.1	5.6	18.3	34.3			1	21.1	56.7	1.5		1.5		
Maasin										17.5	12.7					
Cebu	.3							6.6					14.7		14.5	
Iloilo								18	2						1.8	
San Jose, Buenavista								10.5			.3					
Cuyo															2	
Ormoc			1.8			1.3	1.3			2.6				15.2	.3	
Guiuan	1	4.1	16		27.9	12	4.3	.3	9.1	1.8	12.9					
Tacloban	1.3	.5	4.9	4.3		1.5	2.8	9.1	4.5	1.8					.5	
Capiz														6.4	42.6	
Borongan	1.5		10.9	2.8		16	7.6	7.1	11.9	4.9		17	.3	4.6		
Calbayog			3.8	7.7			25.2		32	19.6	7.2	1.8	.5	4.5		
Masbate															1	
Romblon								26.4	1.3	2				5.1	3.8	
Batag				1			1.3	1.5	12.7							
Gubat			1				2.5	1.3	4.8							
Legaspi							4.9		6.4	.5		2.3		.5		
Sumay, Guam								1.3				3.8			1.3	
Calapan			49		15.2			3.3	6.6	1	2.8			3.3	(a)	
Virac				1.3	1.5	.3	13.7	4.6	5.1	1.5		1	2.8			
Nueva Caceres			13.6			1.6	12.4	.1								
Batangas																
Atimonan					6.6				5.4							
Ambulong, Tanauan												11.4			1.5	
Silang									.8	35.6	7.9					
Paracale	.3			2.6			1.8	10.9	.5	24.9				.5		
Santa Cruz, Laguna														2.9		
Manila								2		2.9						
Antipolo										5.6						
Iba				6.9				5.8		6.1		1.4	11		3.5	
San Isidro															.4	
Tarlac						66			4.1	2	29.2					
Baler	4.8		3.6	5.3	8.1			26.9	21.4	54.4	4.8	.5	6.6		1.5	
Dagupan	8.6				45.2	.8		5.1		.8	1.3	1.3				
Bolinao	1.5				20.8				1	12.4					22.9	
Baguio					5.3	1.3		14	10.2	26.7		5.8	1.8	5.4	30.7	
San Fernando, Union	13.2				3.8		.3			1.5		1				
Echagüe									30.7	45.5		.3			.3	
Candon									3							
Vigan						9.7							4.8	17.5		
Tuguegarao				1.8	28.9	.5			48.2	16.8				36.6		
Laoag				5.6											9.7	
Aparri						6.6										
Santo Domingo, Batanes		2	99	2.2	23.4	28.8	5.2	.2				.5				

* No observation.

Daily rainfall at the stations of the Weather Bureau, May, 1914—Continued.

Station.	Day of month.														Total.			
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.		31.		
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.		
Jolo	1.3	13.2						7.9	0.8	0.5	0.3			9.7	0.3	149.3		
Isabela, Basilan				1			2	18.5	.8	1	55.4	14.7	4.1		1	138		
Zamboanga								.3			18.5	34.3	3			124.7		
Davao	19.3	61		33	49.5	53.3										339.3		
Cotabato		3.3	34	19.8	8.4	2.6		.3			28.2	102.4	43.4			316.1		
Cagayan, Misamis	1.3		.3	14.2	4.3	21.8					7.6	1.5	.3			80.6		
Dapitan		1.8			18.3						5.1	6.4	7.7	.5		179.5		
Butuan		1.5		1.8	5.1						8.6?			6.1?		197.4		
Dumaguete	3.8	4.9									9.2		13.1	10.2		48.3		
Yap, Western Carolines			.8		5.3	.5	10.7	1.5	.3		.3		17.5	.3		134.2		
Tagbilaran		10.9									1.8			7.1		28.1		
Iwahig	13.1	5.6	17	30.2	1.1		20.6	17	.3		18	55.7	3	7.1	16.7	189.7		
Surigao															6.1	9.1	258	
Maasin									48.3	54.3	128.7	56.9		19		337.4		
Cebu	8.4	6.1	9.1				.8				3.3		.5	4.3		63.8		
Iloilo	27.4			19	3.5		13.5	2.5	3.3	1.8				136.7	31	263.9		
San Jose, Buenavista				1.5	.8			29.7	8.1	18.5	5.1	43.2	52.1	169.4	62.5	411.2		
Cuyo	2.5		8.4	4.3	.8			4.3		28.2	16.7		61.2	22.6		27.2	190	
Ormoc	.3			12.4				8.7			9.1	3	19.1	9.4	9.4		109.9	104.8
Guiuan	2								2	19	34.8	8.6	31					186.8
Tacloban			.3	20.6	4.3				2.5	3.1	37.9	1.3	.3	.3		29.1		130.9
Capiz	6.1	12.7	.3						4.1	14.8	1.4		.3			1.3		90.3
Borongan	24.9		6.1						8.9	10.4	20.1	4.3	8.9	.3	1.3	169.8		169.8
Calbayog				19.6					2	14.2	24.8	2.3	.5	1		3.6		172.3
Masbate							2			.5	.8			34	20.5	7.1		63.9
Romblon		1	4.8	3		1				9.7	8.6			20.3	13.5			100.5
Batag									34.5	25.9	3	8.9	4.3	8.9				102
Gubat									10.9	13.2	5.1			22.1	7.6			68.5
Legaspi	.8	1								3	2.5			23.6	20.4	1.8		67.7
Sumay, Guam	1.3	5.1	2.5	14	25.4	8.9	8.9	3.8								1.3		77.6
Calapan				.5							29.2			4.3				115.5
Virac	(a)	(a)	(a)	(a)	(a)	14	?			2.1	15.5	.3		4.1	1.3	23.9		93
Nueva Caceres		83.1								4.9	9	3.4	6.5		2.8			163.5
Batangas		.5	.8	.8				19.3			16.8	59.7	15.7	1.8	.5			116.2
Atimonan		1	34	1.5					6.1	18.1			.3	1.6		9.1		110.4
Ambulong, Tanauan			4.3	5.1	26.9				7.6				3.8	94.7	2.5	1.5		166.1
Silang	22.9	13	30.5	2.5	4.6						10.2			54.4				182.4
Paracale										10.9	8.4	2.6			1.8	1.3		66.5
Santa Cruz, Laguna		1.8	21.3	45.2	27.7							25.9		.7	.5			126
Manila		43.8	.5	.9	1.3				2.5		2.3		11.8			10.4		84
Antipolo		48.8	77.8	1.2	51.6				.8		21.9	35.3		20				264.1
Iba			1	.2	26.7					3.1	1	2.3		8.6	89.7	209.3		370
San Isidro	52.6	5.6	32	.5	1.8					3	6.7	6.8	17.8	4	22.9	11.7		194.2
Tarlac			7.1	54.6	1.5	10.2				8.9	2.3	1.8		26.7	3.8			217.2
Baler	4.3	10.7		8.9									16.3	6.4	37.3	30.5		252.3
Dagupan			1.8	1.3	1.5	44.2	.8	2	14.5			3.6	6.6	2.5	5.8	27.9		175.6
Bolinao		1.3	22.3	2.4		34.6	18.5		2.3					24.1	3.5	61.9		229.5
Baguio	23.6	44.4	52.3	1	37.3	6.7	7.6	17	5.6	24.4	16.2	5.1	16.8	11.9	65.1	436.2		436.2
San Fernando, Union			59.7	19.6	12.4		5.8	2.5	5.6		1.3		16	.5	13.2	150.5		150.5
Echague		.8		16.5							1							95.4
Candon		26.2	12.4	1.3	1.8	12.4					1			20.8	13.7			92.6
Vigan		2.5	5.8		2.8	9.4	7.1	8.4			.3			9.4	1			78.7
Tuguegarao			3.8													17.8		123.7
Laoag					18.5		5.3	1.5								5.6		76.6
Aparri																4		10.9
Santo Domingo, Batanes					36.3	5.6		.1	34.3						8			254.3

^a No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, MAY, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Dapitan.		Butuan.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.9	21.9	32.6	22.7	31	24.1	33.7	20.2	36.5	21.6	32.9	21.9	33.7	25.5	28.8	23.5
2	32.9	21.9	32.8	21.5	30.9	23.1	34	21	36.6	22.2	33.2	21.6	33.4	25.5	30.1	22.2
3	31.4	22.1	33.8	22.1	32.6	23.5	34.3	22.9	37.3	24.1	33.5	22.5	34.7	25.3	29.8	23.8
4	31.3	22.4	34	22.9	32.1	24.5	34.2	21.4	36.2	23.1	33.9	21.9	32.5	26.5	30.4	23.1
5	32.5	23.1	31.6	23.6	32.1	24	35.7	21.3	36.3	22.1	33.2	22.4	33.4	26.1	31.8	22.5
6	32.6	22.4	32.9	22.6	30.1	23.5	32.8	22.9	35.3	23	33	23.6	34.4	26.3	30.1	24.2
7	30.4	23.5	33.2	23.1	30.2	22.6	34.2	22.5	34.9	22.1	33.4	24.2	35.4	25.3	32.5	24
8	30.5	22.6	32.1	22.1	30.7	23.5	33.7	22.1	36.3	22.9	33.7	24	35.4	24.2	32.5	24.4
9	32.6	22.4	32.6	22.6	31	24.1	35.9	22.7	37.3	24.1	33.4	23.7	34.6	24	32.5	24.4
10	32.9	22.8	33.1	22.4	30	24.4	34.4	22.4	35.4	24.6	33.3	24	34.3	25.8	31.2	24.9
11	30.1	23.6	32.1	22.6	29.4	25	31.1	24	29	24.3	30.1	26	33.9	27.3	24.7	24.7
12	33.2	22.4	33.2	23.1	30	23.1	34.4	22.7	33.3	23	33.5	23.6	31.4	25.5	30.5	24
13	32.4	24.5	31.6	23.5	30.5	24	34.5	22.9	33.8	22.7	33.8	23.9	32.4	24.5	32	22.9
14	30.3	23.3	32.6	23.4	31.7	24	32.7	22.3	32.9	23.3	33	24.9	32.4	23	32	23.5
15	31	22.5	29.6	23.3	28.9	24.5	33.2	23	34.1	23.4	33	24	33.1	23.5	32	23.1
16	33.4	23	33.2	23.8	30.9	23	32.7	22.5	32	22.5	29.7	23.7	33.1	23.5	28.6	23.1
17	31.5	23.8	34.1	23.3	31.5	24.9	33.3	22.5	33.6	23	33	24.5	33.4	23.6	32.1	24.4
18	31.5	22.8	34.1	22.6	31	23.5	33.5	22.3	34	23	33.5	24	34.6	23.4	32.5	23.5
19	31.9	23.1	32.6	23.1	30.1	24.1	32.7	21.6	33.1	23.4	33.7	25	36.5	23.9	32.2	24.7
20	31.6	22.5	32.8	23.1	30	24.5	33.3	22.6	32.1	22.4	33	24.5	35.9	24.4	32.7	24
21	32.9	22.7	32.6	22.4	29.9	23.5	32.7	23	31.8	22.9	31.9	23.5	34	24.2	32.9	24.1
22	32.9	23.4	33.4	23.1	30.2	24	32.7	22.9	32.2	23.1	32.5	24.2	35.1	22.5	32	23.9
23	32.5	23.3	33.9	23.1	30.5	23	32.7	22.6	34.2	23.6	31.6	23	34.9	23.8	32.5	23.9
24	32.6	22.8	31.8	24.6	30.6	23.6	32.7	23.2	33.8	24	32.4	22.4	36.4	23.4	31	23
25	32	22.8	31.6	23.1	30.6	23.4	32.3	22.5	32.9	22.9	33	23.6	34.7	23.7	32	22.5
26	32.8	23	32.1	23.3	30.5	24	32.2	23	33.2	24	33.5	22.9	36	23.9	30.6	23.9
27	31.4	23.7	31.8	23.3	28.9	24	31.2	22.5	29.3	23.3	32.4	25.7	33	24.5	30.6	27.1
28	28.8	24.3	28.1	23.6	27.8	22.1	31.1	23.5	27.8	22.7	31.8	25.3	31.7	24	30.3	25.2
29	33	22.7	31	23.3	29.4	23.4	30.7	22.5	30.9	22.9	33.2	24.8	29.8	23.6	31.1	24.1
30	31.5	24.3	31.9	23.1	30.9	23	31.2	22.7	30.5	21.2	32.5	24.5	33.3	23.3	31.6	24.6
31	29.9	24.4	32.6	23.6	29	24.6	31.2	24.1	30.3	23.1	32.2	25.5	34.4	22.5	32.1	24.7
Mean	31.8	23	32.4	23	30.4	23.8	33.1	22.5	33.4	23	32.8	23.8	33.6	24.3	31.2	24

Day.	Dumaguete.		Yap, Western Carolines.		Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.4	26	33.8	26.1	31	23.4	34.3	22	30.2	24.1	31.1	24.6	30.5	24	31.1	25.4
2	30.7	25.8	33.3	24.7	32.8	22.9	32.8	24.4	30.4	22.7	32.6	23.8	31.5	25	33.5	25.5
3	30.1	26.3	31.7	24.4	32.1	23.8	34.6	23.3	30	23.6	31.5	24.9	31.8	26	32.6	25.9
4	30.4	26.6	32.8	24	33	23.2	34.1	22.4	30.1	23.7	32.5	24	31.2	25.2	33.5	26
5	30.6	24.6	31	24.5	33.3	22.3	34.5	23.3	29.6	22.4	31.8	23.3	32.5	25.4	34.2	25.6
6	30.6	25.7	33.4	23.9	33.2	23.4	35.5	22.3	29.6	23	32.5	25	32.1	25.9	34	25.6
7	30.6	26.1	33.2	25	33.1	23.9	34.6	23.3	29.9	22.8	31.6	24.2	30.5	26.5	34.4	26
8	31.2	25.2	31.3	25.7	32.3	23	34.7	24.2	31.2	23.8	32	24.5	32.7	26	33.5	25.5
9	30.3	25.5	33.1	25.8	33.2	23.9	34.3	24.9	31.2	24	32	24.1	33	25.9	34.5	25.8
10	30.3	25.8	33.6	25.2	33.4	24.2	35.5	23.1	30.1	24.4	30	24.5	33.1	26.4	35.6	24.8
11	29.2	26.9	32.7	24.9	30.9	24.9	35.3	23.1	26.9	22.8	30.8	23.8	30.5	26.2	33	25.8
12	30	25.8	32.7	26.2	32.1	26.3	35.6	23.6	29.7	22.6	30.6	24.5	31.5	25.8	32.4	25.6
13	31.1	26.8	32.5	25.3	33.5	26.1	35	23.4	31.3	22.8	31.5	24.2	32.4	26	32.2	24.9
14	30.3	25.1	31.4	27	32.6	23.1	34.6	23.4	30.3	23	31	24	32.5	22.9	32.9	25.5
15	29.3	25.1	29.2	24.5	33.8	21.9	35	23.3	30.4	22.6	32	24	32.8	25	33	25.6
16	30.8	24.1	33.2	23	32.5	24.1	33.3	23.4	29.5	22.4	30	24.2	32.5	23.7	33.2	25
17	30.7	23.8	32.6	24.5	32.6	24	32.1	23.4	31.7	22	31.5	24.2	33	24.4	33.4	24.4
18	30.2	24.6	33.3	25	32.9	23.57	33	23.4	31.2	22.3	32.5	24.5	33.5	23.3	31.9	24.5
19	30.8	24.6	34	25.4	31.1	23.5	33.7	22.9	32.4	23	31.8	25	32	23.5	32	24.4
20	33.6	24.2	33.7	23.5	31.5	24.3	33.6	22.4	32.2	23.8	32.1	24.6	31.9	25	33	23.4
21	33.2	25.9	33.8	24.6	32.8	24.1	32.9	22.3	31.7	22.8	31	25.6	33.3	25.7	32.3	23.4
22	31.6	24.5	33.7	25.3	31.3	24.1	33.6	21.9	32.5	23.4	32.5	24.8	33	25.5	33.7	24.2
23	31.1	24.2	30.2	26.1	32.4	23.7	31.8	23.4	31.2	22	33.1	23.7	33.5	25.5	34.8	24
24	31.6	24.4	32.3	24.5	32	24.1	34.2	22.1	31.3	22.3	32	25.4	32.8	26	33.3	23.7
25	32.1	24.2	33.7	25.4	34.2	23.5	35	21.9	32.5	22	32.5	24.6	33.9	24	33.3	24
26	33	24.7	34	25	34	24.5	33.3	22.3	28.5	25	28.9	22.8	31.9	26.8	32	24
27	33	25.7	33.7	24.5	34.4	25.3	32.3	22.1	29.6	23.4	29.5	24.6	33.5	25.7	30.6	24.4
28	33.5	25.2	32.9	25.1	33.5	24.7	32	23.2	30.9	25.8	32.1	24.3	33.1	25.7	32.2	24.5
29	32.6	24.7	30.4	26.3	33.6	25.6	33.2	24	30.7	24.9	31.5	24.2	32.5	26.2	31.9	24.9
30	32.8	24.6	31.4	22.2	32.3	24.6	31.8	23.9	31.4	23.6	30.6	26	31.3	26.2	30.1	25
31	31.2	23.6	32.7	27	32.1	24.5	32.6	23.3	30.6	23.6	29.8	25.4	29.7	26	29.5	23.4
Mean	31.2	25.2	32.6	25	32.7	24	33.8	23.1	30.6	23.2	31.4	24.4	32.3	25.3	32.8	24.9

Maximum and minimum temperatures at the stations of the Weather Bureau, May, 1914—Continued.

Day.	San José Buenvista.		Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.	
	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	34.2	23.6	34.8	26.9	32.3	22.9	31.9	24.5	31.6	24.4	33.8	25.6	31.5	24.1	31.7	24
2	35.7	24	33.8	26.7	33.5	20.6	31.9	23.9	32.7	22	33.7	25.5	32.1	22.8	33.9	22.3
3	35.6	22.6	34	27	32.6	24.3	31.2	24.5	31	24.3	34.3	25.8	31	23.5	33.5	23.5
4	35.7	24.1	33.2	27.4	34.7	22.8	31.8	24.9	32.8	24.6	34.1	25.7	31.6	23.2	33.5	21.9
5	36	23.6	33.6	27.1	33.9	21.8	31.6	25.3	32.3	23.6	34.4	26	31.3	22	31.7	22.5
6	35.7	24	34	27.4	32	22.1	31.9	24.4	32.8	25.3	34.7	25.9	31.6	23.9	32.7	22.9
7	36.8	24.1	34.5	27.7	31.6	23.9	31	25.5	30.2	25	34.4	25.8			30.9	23.7
8	33.3	24.5	30.7	27	32.9	22.9	32.7	24.6	32.6	23.3	34.4	25.9			32.2	22.9
9	33.8	24.4	33	25.1	33.6	22.1	32.8	24.4	32	24	34.3	26			31.8	23.4
10	35.6	24.5	34.7	26	31.1	23.8	32.2	25.3	30.5	25.2	34.3	26.6	30.7	26.1	31.5	23.6
11	34.7	25.5	33	26.5	33.8	23	29.5	24.4	29.8	23.4	34.4	26.9	31.4	23.3	30.9	22.1
12	35.2	24.5	34.3	27.3	33.6	21.9	32.3	24.4	32.3	23.6	34.2	25.1	32	22.7	31.3	23.3
13	35.2	24	34.7	27.2	31.8	22.2	33.1	25.6	33	24.8	33.7	25.8	32.3	23.7	31.8	22.7
14	35.3	24	33.5	27.3	32.3	22.2	32.4	25.4	32.5	24	34.2	25.7	31.6	23.5	31.7	22.6
15	35.2	24.3	32.6	26	32.4	21.2	32.8	23.1	33.3	23.4	32.9	25.6	32.1	22.4	33.1	21.7
16	35.3	24	31.7	23.9	31.2	24.4	30.2	25.1	32	24.4	33.3	23.4	32.1	22.9	31.1	23.3
17	33.8	25	33.7	24.5	32.6	23.8	33.4	23.1	32.8	24.6	33.8	24.5	32.1	23	32.2	23.4
18	32.4	25.1	33.6	24.3	32.5	24.1	32.4	24.5	33.5	24.3	32.2	24.2	32.1	23	33.6	23.8
19	33.9	24.8	31.7	25.6	31.9	23.4	32.7	23.6	32.9	23.2	32.9	23.5	32.6	22.9	32.5	22.6
20	33.4	24.5	33.2	24.8	32.2	22.9	34.2	23.4	32.8	24.1	33.4	24	32.4	22.8	33.1	22.2
21	33.2	23.5	33.8	25.4	32.5	23.7	33	24	32.7	23	33.8	24.1	32.6	22.6	32.2	23.1
22	35.1	24	33.3	24.9	32.3	22.8	33.8	23.2	32.6	24.4	33.7	24.2	32.5	22.2	32.5	23.1
23	34.8	23	32.7	24.9	32.4	21.5	34.4	23.1	33.2	23.5	33.4	24.2	32.8	22.3	32.4	22.6
24	34.8	24	33.7	24.3	31.7	22.8	33.4	24.2	32.6	24	33.3	24.2	33.1	21.9	32.6	21.6
25	33.7	23	34.3	26.6	31.3	21.6	34	23	32	24.5	33.7	24.1	33.4	21.6	34.2	22.5
26	32.2	24	30.7	27.2	30.3	24.3	30.5	25.4	28.7	25.4	31.2	24.9	29.1	23.3	31	24.8
27	31.2	24.1	32.7	27.5	30.6	25.4	32.6	24.9	30.5	25	33.7	26.7	32.1	24.9	32.6	23.9
28	32.3	24.1	32.8	24	31.9	24.8	32.6	25	30.5	25.4	33.7	26.6	33.5	24	32.7	23.5
29	30.3	24.1	32.3	26.6	31.7	23.6	31.3	25	31.9	25.5	34.4	25.5	33.9	22.8	31.2	23.7
30	30.7	23.4	29.2	24.1	32.5	24.8	30.9	24.8	32	25.8	34.4	25	33.4	24.2	32	23.3
31	28.7	23.7	30	24.5	30.8	24.8	29.8	27	30.9	24.2	31.7	24.1	31.6	25.7	28.7	25.6
Mean	34	24.1	33	26	32.3	23.1	32.2	24.5	32	24.2	33.7	25.2	32.1	23.3	32.2	23.1

Day.	Masbate.		Romblon.		Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.	
	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	35.8	26	34.3	24.7	31.3	23.4	32.1	25.9	34.2	25.9	30.6	25.2	32	23.5	34	24.5
2	35.5	26.2	34.6	26.2	31.3	23.6	32.9	25.8	33.6	26.1	30.8	25.6	32.5	23.4	32.6	22.2
3	37	27	35	24.1	31.9	23.3	32.8	27	33.8	25.7	30	25.6	33.6	23.4	33.2	23.1
4	34.8	26.6	34.5	26.3	31.8	23.5	32.9	26.8	34	25	30.8	26	33	22.1	33.5	21.8
5	35.2	26.4	35.3	26.2	31.5	24	32.8	26.4	33.6	25.3	31	26	31.6	24.1	31.3	21.9
6	36.2	26	35.8	25	31.9	24.5	33.2	26.2	34.5	25.5	31.8	26	31.5	21.9	32	21.7
7	36	26	35.6	25.3	30	24.4	32	27.5	32.9	26.1	31	26	32.5	22.6	32.8	21.4
8	36.4	26.2	35.2	25.8	30	24	33	25.5	32.6	25.6	30	25.6	32.2	23.5	32.6	24
9	35.8	25.5	34.7	25.3	31	24.7	32.5	25.6	34.3	25.3	32	24.8	32.3	23	32.4	24.1
10	34	26.6	34.1	25.9	30.4	23.6	32.1	26.3	33.3	25.9	31.4	26	28	23.9	29	24.4
11	34.8	26.6	34.5	25.5	30.7	24.5	32.7	26.8	33.6	26.2	31.4	26	32	23	33	22.3
12	36.4	26	34.8	24.7	30.5	23.8	32.7	26.5	33.6	26.5	31.4	26	32.6	24	32.7	22.1
13	35	26.4	34.2	26.3	31.5	24	33.6	26.9	33.3	24.1	30.6	24.2	33.5	26.5	33.1	22.5
14	35.2	26.5	35.1	24.9	31.9	23.7	33.5	24.2	33.7	26	31.4	26.2	31.5	25.5	31.9	23.2
15	35.6	26.2	35.5	25.3	31.8	23.5	33	24.6	34.5	26	31.4	26.2	33.5	23.5	33.7	22
16	36.4	26	33.8	23.5	32	23.5	33.2	24.4	34.1	26.3	30.8	25.4	32.5	23.7		
17	34.4	26.4	33.8	23.3	31.9	23.5	33	24.4	34.3	24	31.2	25.8	32.5	22		
18	35.2	26.4	34	24.9	32.5	24	33.1	24.7	34.1	24	30	25.4	32.5	23.1		
19	35	26	33.3	24	32.2	23.1	33.2	25.6	34.1	23.5	30.6	24.8	33	23		
20	37.4		34.5	24.3	32.7	22.4	33.2	25.1	34.2	23.9	30	25	33	23.5		
21	37	26.4	34.8	24.5	32.5	22.7	34	24.8	35.1	23	29	24.4	33.3	24		
22	36.2	26.2	35.5	24.7	32.4	23.2	32.9	24	34.8	23.6	29.4	25.6	34.5	23.1		
23	36.6	26.2	35.6	24.7	33	23.6	32.9	24	33.6	23.7	30	25.6	34.2	23.5	31.7	
24	34.8	25.8	35.1	24	32.8	23	32.6	23.9	34.6	22.1	30.2	25	34.7	23	32.9	21.8
25	35.8	26.2	35.2	23.8	32.8	24.5	34	24.3	34.6	22.8	31.8	25.6	36	22.6	33	22
26	34.6	27.5	35.6	24.7	32.8	21.7	29.5	22.5	32.5	23.5	31	24	34.5	23.5	31.4	23.1
27	34.6	27	34.5	24.9	31.2	23.4	27.9	23.8	33.6	25	30.8	23.4	35	23.5	34	24.2
28	35	27.4	34.1	24.6	31.4	24.3	28.9	25.4	34.4	23.5	30.6	23	32.5	24	31.3	23.8
29	33.2	26	35.6	24.9	31.1	23.7	28	25.8	34.9	23.3	31	24.6	33	23.6	30.6	23.2
30	33.6	24.8	34.2	25.1	29.5	23.5	30.5	25.6	31.9	23	31.4	23.6	34.8	22.9	33.8	23.3
31	31.4	26	34	26.8	27	23.5	28.3	24.2	28.8	24.8	31.8	26.4	35.5	24	29	24.3
Mean	35.3	26.3	34.7	25	31.3	23.6	32.2	25.3	33.7	24.7	30.8	25.3	33	23.4	32.3	22.9

Maximum and minimum temperatures at the stations of the Weather Bureau, May, 1914—Continued.

Day.	Nueva Caceres.		Batangas.		Atimonan.		Ambulong, Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	34.5	20	36.9	22.8	32.8	24	35.1	23.6	31.3	20.5	32.2	24.5	34.1	23.4	35.8	22.2
2	34.4	19.6	35.3	23.4	32.3	23.1	35.8	24.5	31	20.9	32.3	23.8	34.5	23.4	36.2	21.4
3	34.7	19.5	37.3	24.4	32.8	25	35.2	24.5	31.4	19.4	32.7	24.2	34.5	23.8	36.3	23.1
4	33.4	20.3	37.2	24.4	33.2	27.1	35	25.4	30.5	19.1	31.8	24.8	34	24.4	35.7	22.2
5	34.5	20	35.8	24.2	32.7	21.9	35.6	25	30.1	19	31.8	24.5	34.8	23.9	36.6	23.1
6	34.8	19.4	36	25	31.8	22.7	35.8	24.4	30.7	19.4	32.8	24.1	35.8	24.5	36.9	24.3
7	33.8	20.2	37.3	23	32.7	26.5	33.8	23.6	31.3	19.5	33.1	24.4	34.5	24.2	36.2	22.9
8	31.6	22.3	37.5	24	32.4	26.1	35.2	24	31.6	19.2	32.5	25.9	33.2	24	36.2	22.2
9	33.1	21	35.8	24.9	32.8	23.9	36.1	24.9	31	19.5	32.2	25	35.7	24.2	37.2	24.5
10	33	22.2	35.2	25.8	33.8	24.4	37	25.3	31.6	19	31	24.5	33.9	24.4	35.4	24.6
11	35.4	22	34.6	25	31	24.9	36.2	24.9	31	20.2	31.2	24.6	35.5	25	36.4	24.4
12	33.6	20.5	37.2	25.4	33.8	26	34.3	24.9	31.7	19.3	32	24.3	34.6	25.2	35.8	24.4
13	34.3	20.3	35.3	23.6	32.8	26.8	34.9	24.2	30.5	19.2	31.8	24.8	34.8	24.4	36.4	22.7
14	32.6	19.5	36.4	24.4	33.3	26.7	35	25.5	30.9	19.7	31.3	24.1	35	24	36.3	22.7
15	34.8	21.5	35.4	25.9	32.9	26.1	37	25	31.1	20	32.2	25.8	35.4	24.8	37.7	24
16	34.4	21.2	36.4	24.6	33.5	24.2	35.2	23.9	31.5	20.4	31.8	25.9	35.8	24.2	36.6	24.6
17	35.3	21.5	35.4	23.6	32.8	23.6	37	23	31.3	19.6	32.2	23.8	34.9	23.2	35.4	23.5
18	35.5	21.1	35.8	25.6	33.6	23.8	35	24.8	29.3	19.9	32.6	24.3	35.7	24.9	35.9	24.6
19	34.1	21	35.3	24.9	33.1	23.1	35.2	24.1	29	19.7	32.8	23.7	33.2	24.1	34.8	23.9
20	35	21.9	35.1	25.1	32.5	23.8	36	24.3	29	19.2	32.3	24.4	33.9	23.7	35.2	24.7
21	35.1	21.9	35.4	25.4	33.4	23.7	33.5	24.9	28.6	19.6	33.3	24.2	33.5	23.5	34.9	24.9
22	34.9	21.9	36.4	24.5	31.8	24.3	34.9	24.1	29.5	19	32.8	24.4	33.2	22.5	34.7	24
23	34.2	20	34.9	23.6	32.5	24.9	35.1	23	30.2	20.1	33.2	23.7	34.4	23.4	35.2	23
24	33.2	19.8	35.3	23.6	33.9	24.4	36.1	23.9	30.8	19.5	32.8	23.5	34.4	24.5	34.8	24.2
25	32.3	21.5	34.3	23.1	32.6	23.9	34.5	23.5	30.9	19.2	33.6	23.6	35	23.8	36	23.2
26	32.8	22.9	33.4	24.6	30.1	24.7	35.3	24.2	29.7	19	32.3	25.5	33.9	24.8	34.9	25.6
27	32.6	23.3	32.5	24.2	32.3	25	36.4	24.8	29.4	19.1	32.8	26.5	34.5	24.5	34.9	24.7
28	33.1	22.9	32.5	24	32.6	23.9	34	24.9	29	19.4	33	25.3	32.4	23.2	34.2	24.7
29	34.1	21.2	31.3	24.3	32.2	25.1	33.6	23.5	29.6	19.6	33.1	24.5	33.6	23.5	33.9	25.1
30	34	21.8	34.4	23.8	31.4	24.6	35.6	23.5	29.4	19.2	33.6	24.5	33.7	23.5	35.7	24.8
31	29.7	23.3	33	25.1	33.3	24.8	32.3	24.5	29	18.9	31.6	25.9	32.8	23.4	33.2	25.2
Mean	33.8	21.1	35.3	24.4	32.7	24.6	35.2	24.3	30.4	19.5	32.4	24.5	34.4	24	35.7	23.9

Day.	Antipolo.		Iba.		San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	36.4	23.4	36.4	24	34.5	22.7	35.2	21	32.5	21.5	37.5	23.9	36.1	25.1	26.6	15.6
2	36	22.6	34.7	21.9	36.7	20.9	36.6	20.1	35.5	21	36.7	24.1	35	25.1	24.9	15.6
3	36.5	23.4	35	22.6	36.3	24.4	37.2	22.9	32.9	22.4	38.8	25	35.5	27.1	25.4	16.1
4	36.8	22.9	37	25.5	36.4	23.4	37.7	22	34.7	22.7	38.3	25	36	25.3	26.3	16
5	36	23.4	33.8	24.5	35.8	24.5	37.2	22.6	34.5	23.7	38.8	24.1	36	23	26.5	15.5
6	36.6	24	34.5	22.5	33	23.1	37.2	22.9	34.9	22.6	37.2	23.5	34.6	23.6	25.5	16.2
7	36.9	22.8	34.6	22.1	38.2	22.4	36.7	22.4	36.7	21.5	36.5	23.5	34.6	25	26.2	15.4
8	37.4	23	34.8	23	37.1	23.3	36.8	22.4	36.1	21.7	38.6	24.4	34.6	25.2	25.9	16.2
9	37.2	24.3	34	23.3	38.9	25	37.2	22.5	33.2	24.2	36.5	24	33.1	25.4	25.5	16.4
10	37.7	24.2	34.1	24.5	38.1	24	36	23.7	36.7	23.5	37	24.1	33.5	24.6	24.7	16.2
11	36.8	24.6	34.8	25	37.8	23.4	36.9	23.8	32.5	23.4	36.3	23.1	34	24.5	25.9	16.5
12	36	23.1	35	23	35	23.4	36.2	22.4	33.5	23.8	37.4	23	34.9	24.8	26.8	16.5
13	36.3	23.8	35.2	24.1	36	24	36.3	23.3	33.6	23.2	36.8	24.8	36.4	25.2	25.3	17
14	36.1	24	35.4	23.6	36.4	23.8	36.5	22.5	33.5	22.6	37.4	24.7	35.9	25.7	24.8	16.2
15	37.8	23.8	34.8	24.5	37.4	23.6	37.2	22.8	36.5	22.2	37.7	24.4	34.9	25.9	24.4	16.5
16	36.3	23.9	35.1	24.3	37	25.2	36.2	25	33.9	22.5	37.1	26	32.9	25.4	24.8	15.7
17	36.5	22.8	33.6	23.5	37.8	23.4	37	25.1	37.1	23	36.5	24.9	33.9	25.6	23.8	15.7
18	37.2	24	34.4	25.1	36	23.5	36.7	23.3	34.1	23.8	37.3	24.5	34	25.9	25.7	15.8
19	32.6	23.3	33.5	23.3	35.2	25	36.2	24.1	33.7	23.7	37.7	25.2	33.9	25.9	25	15.8
20	33.6	22.8	34.4	24.5	35	24.2	37.2	23.8	31.2	24.8	37.2	24.1	34	25	26.2	15.7
21	33.8	23.7	33	25	34.5	24.7	35.6	24.7	31.3	24.8	34.8	25	33.1	25.6	23.6	16.6
22	34	22.9	33	22.8	36.5	23.5	36.7	23.2	31.2	24	36.7	23.9	33.2	23.5	26.2	16.4
23	34	21.4	33.8	24.1	35.9	23.2	36.7	24	31.4	22.6	35.5	23.4	32.9	23.7	24	15.7
24	34.2	23.8	34.1	22.5	36.5	24.9	37.3	24.5	31.5	22.87	33.8	25.1	33.6	25	25.2	16.3
25	34.1	22.2	34.5	23.8	36.9	24.1	36.8	24.2	32.3	23.6	34.9	25	33.6	25.1	24.4	16.3
26	33.5	23.6	32.7	23.9	36	24.4	37.5	23.9	33	24.2	35.1	24.5	32.9	24.6	24.5	16.8
27	33.5	23.3	34.2	23	35.9	23.9	37.5	24.2	32	24.5	35.2	24.5	34.1	26	24.3	16.5
28	32.7	22.6	33.4	24.2	35.4	24	36.2	24.4	32	24.2	34.8	25	33.7	25.5	24.3	16.6
29	32.5	23.6	33.8	24	35.3	23.9	37.3	24.3	32.1	24.4	35.2	25	34.3	26.1	24.3	16.4
30	33	22.8	34.2	23.2	35.6	24.7	36.6	25.7	32.2	24.8	37.1	25.4	33.7	24.5	25	17
31	32.6	22.8	34.2	23.9	34	24.3	35	25.1	32.9	25.1	34	24.9	33.5	25.1	24.8	17
Mean	35.3	23.3	34.3	23.7	36.3	23.8	36.7	23.4	33.5	23.3	36.6	24.5	34.3	25.1	25.2	16.2

Maximum and minimum temperatures at the stations of the Weather Bureau, May, 1914—Continued.

Day.	San Fernando, Union.		Echagüe.		Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	36.6	26.1	36.1	19.4	33	25	33.7	25.7	39.8	23.3	35.8	24.3	33.8	22.4	31.8	25.4
2	34.2	25.1	36.9	20.3	32.5	26.5	33.1	25.5	40.4	23	35.9	25	34.6	23.8	32.3	26.4
3	34.9	25.9	37.3	21.3	32.7	26.5	33.2	26.1	39.5	24	37.2	24.9	32.4	23.6	26.6	22.8
4	35.8	26.4	36	21.3	33.3	27	33.8	26.4	39.2	24.6.	35	25	31.6	23.2	28.2	22.4
5	35.4	25.8	37.3	20.8	33.1	25.1	34.2	26.2	40.1	23	35.2	22.9	33.6	22.8	27.8	23
6	35.7	24.5	37.7	22.4	33	25.5	34.2	23.2	38	24.2	35.8	24	35.2	22.7	29.9	22.1
7	33.8	24.2	37.4	22.8	32.9	25	32.9	24.1	37.7	23	35.5	23.1	31.6	22	30.4	23.3
8	36.4	25.5	37.3	21.4	33	25	33.4	26.1	39.8	24.6	36.2	24.5	32.4	24.1	31	23.9
9	37.1	25.5	37.2	22	33.5	26.5	33.7	26.7	39.6	22.2	36.3	24.6	34.6	22.6	31.6	25.4
10	35.8	25.8	36.7	22.7	33.7	26.9	33.7	26.2	37.4	22.5	36.2	25.4	33.1	23	31.5	24.2
11	36.1	24.3	34.8	22.7	32.6	26.1	33.7	26.5	34.4	23.3	36.4	24.9	31.2	23.4	31.4	24.6
12	35.8	25.7	36.5	23.4	33	26	34.5	26.2	38.5	24.6	36	24.6	32.8	23.6	32	24.2
13	36.4	25.6	36.1	22.5	33.2	25.5	34.1	26.4	39.1	25	36.6	24.5	33.5	24.1	32	26.5
14	36.7	25.3	36.5	22	33.5	25.8	33.6	25.5	39.2	24.7	36.5	25	33.9	24.6	32.6	27.1
15	36.6	26.4	37.3	21.5	33.9	26	33.3	25.5	40.1	24	35.1	24.4	34.9	24.4	32.2	27.3
16	35.7	27.7	36.8	25	33.6	26.2	33.8	25.7	40	25.5	36	24.5	34.9	23.6	32.4	24
17	36.1	26.6	36.2	21.7	33.2	26.4	33.6	26	37.3	24	36.2	25.4	33.2	24.6	32.9	22.8
18	36.8	26	36	22.3	33.7	24.5	34.8	25.7	39.5	24	36.7	24.3	35.3	24.1	31.4	24
19	37.6	26.6	36.6	21.9	32.6	26.5	35.2	25.2	40.4	25.5	36.4	25.6	34.4	24.7	32.7	24.8
20	34.1	24.2	38.3	24	32.6	25.2	33.6	25.2	39.9	25.2	35.6	23.9	34.1	24.2	33	25
21	32.9	24.9	35.9	23.5	32.1	25.1	34.2	26	39.2	24.5	35.7	25.1	33.6	24.6	33	25.8
22	33.5	24.5	36	23	32.6	25.5	34.2	25.2	39.3	23.6	35.5	23.6	33.4	24.4	30.8	24.9
23	35.1	25.1	37.9	22	32.5	25.5	33.4	25.4	41.3	26	35.9	26.5	33.8	26	31.9	26
24	33.9	24.1	37.7	21.4	33.4	25.1	34	23.8	39.7	24.9	35.1	24.5	32.9	25.4	32	24.7
25	34.2	24.9	37.1	23	33	25.5	34	25.3	38.6	25	37	23.8	32.9	23.6	30	23.3
26	34.3	24.9	36.9	23.4	33.5	26.4	34.2	26.7	37.2	24.4	36.1	25.4	32.5	25.2	30.1	24.7
27	34.9	24.4	36.8	23.5	33.4	26	33.8	26	40.6	24.5	36.2	24.6	32.6	24.9	32	23.8
28	34.7	25.6	37.5	22.4	32.9	26.8	33.9	26.5	39.5	24	36	25.1	32.5	24.4	32	23.5
29	34.9	26.2	37	24	33.5	26.7	34.3	25.3	39.5	24.4	36.3	24.9	32.4	24	32.7	23
30	34.2	25.2	37.1	24.4	33.5	27	33.3	26.7	39.5	24.2	35	23.9	33.1	24.1	32.2	23.8
31	34.1	25.1	34.8	24.4	32.2	26.9	33.2	26.4	32.2	25.3	36.9	25.6	31	26.1	30.2	25.8
Mean	35.3	25.4	36.8	22.4	33.1	25.9	33.8	25.7	38.9	24.2	36	24.6	33.3	24	31.3	24.5





SEISMOLOGICAL BULLETIN FOR MAY, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

5, 15^h 30^m [6, 1^h 00^m]. Guam (Mariana Islands). Earthquake of intensity IV, very short duration.

19, 0^h 30^m 54^{s*} [19, 8^h 30^m 54^s]. N of Luzon. Earthquake of intensity IV, felt in the extreme north of Luzon, beyond lat. 18° N. Its origin must have been in the Babuyan Islands, 500 kilometers from Manila. The fact that it had greater intensity in the stations of the W of northern Luzon than in the eastern stations indicates that the epicenter was to the W of the group.

20, 14^h 48^m 00^{s*} [20, 22^h 48^m 00^s]. Central and eastern Luzon. Earthquake of intensity III-IV whose origin was close to the eastern coast of Luzon and not far from Baler Bay, at a distance of about 150 kilometers from Manila. It was felt in the Provinces of Nueva Ecija, Nueva Vizcaya, Isabela, and the northern part of Tayabas. As has been repeated several times and recently in the article "The relation of seismic disturbances in the Philippines to the geologic structure,"² several seismotectonic lines cross one another in this bay and are the cause and origin of the earthquakes which affect for the most part the central and southern parts of Luzon. The seismic calm which has been noted for some years past is somewhat strange.

22, 9^h 53^m 55^{s*} [22, 17^h 53^m 55^s]. SW of Luzon. Oscillatory earthquake of intensity III and duration 10 seconds. This earthquake was felt in the Province of Batangas and in the western part of Cavite Province; its place of origin was some 120 kilometers from Manila, in the China Sea to the NW of Mindoro. The seismographs in Ambulong recorded oscillations from the W and the vertical component there had more intensity than in Manila, all of which goes to prove that the situation of the place of origin was to the NW of Mindoro and not far from the coast of Luzon.

29, 20^h 10^m [30, 4^h 10^m]. Laoag (NW of Luzon). Oscillatory earthquake, direction ENE-WSW, intensity III, duration 2 seconds. It was perceptible throughout all the northern part of Ilocos Norte. It seems to have taken its origin in the cordillera and must have been very superficial since it was not recorded by the seismographs in Baguio, which is less than 200 kilometers from the capital of Ilocos Norte.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), insular time being added for the convenience of Philippine readers.

² The Philippine Journal of Science. Vol. VIII, No. 4, Sec. A; August, 1913.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N : $T_0=6.4$, $\epsilon=4.4$, $\frac{r}{T_0^2}=0.045$;
 A_E : $T_0=6.3$, $\epsilon=3.5$, $\frac{r}{T_0^2}=0.052$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
136	1	I	e F	<i>h. m. s.</i> 5 43 6 50				
137	4	Iv	eP L F	4 16 46 17 04 21				
138	9	I	e F	0 44 00 1 22				
139	12	I	eP L M _N F	20 50 03 50 38 50 51 21 06	3	111		
140	14	I	e F	0 27 32 52				
141	14	Iv	eP L F	20 47 15 47 29 50				
142	15	Iv	eP L F	12 47 05 47 23 51				
143	17	Iv	eP L M _N F	7 58 00 59 57 59 28 8 22	4	62		
144	18	I _r	eP L F	3 22 01 25 48 47				From the horizontal pendulums. Time signal not working in the Wiechert seismograph.
145	18-19	I _r	e L F	23 50 41 0 02 11 24				Do.
146	19	Iv	eP L M _N F	0 30 54 31 56 32 19 42	7	27		N of Luzon. From the horizontal pendulums. Time signal not working in the Wiechert seismograph.
147	19	I	e F	4 48 25 5 14				From the horizontal pendulums. Time signal not working in the Wiechert seismograph.
148	19	I	e F	6 44 46 7 05				Do.
149	19-20	I	eP L F	23 49 26 52 01 0 26				Do.
150	20	Iv	eP L M _E M _N F	14 48 00 48 15 48 23 48 25 15 01	1-2 1-2	245 262		Central and E of Luzon.
151	21	Iv	eP L F	4 52 50 56 21 5 23				
152	22	IIv	eP L M _N F	9 53 55 54 07 55 06 10 21	4-5	1,075		SW of Luzon.
153	24	I	eP L F	15 02 02 04 11 14				
154	25	I	eP eS eL M _E M _N	3 15 03 16 58 19 16 21 00 21 28	11 11	53 40		End overtaken by following earthquake.

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
155	25	Ir	eP	h. m. s.				Maximum and end in N-S component lost by the pen thrown off by the force of the shock.
			eS	3 25 26				
			eL	27 40				
			M _E	30 01				
			M _N	31 09	11		133	
F	31 42	9-10		75				
156	26	IIr	F	4 52				
			eP	14 27 46				
			eS	32 00	5-6			
			eL	37 00	6-7			
			M _{E1}	41 15	15		1194	
			M _{E2}	47 21	15		1285	
M _{E3}	53 28	13-14		1061				
F	17 02							
157	27	I	e	2 15				
F	27							
158	28	Iv	eP	6 26 49				
			L	27 04				
			F	30				
159	28	Ir	e	9 38 03				
			L	41 48				
			F	59				
160	29	IIr	eP	4 53 03				
			iS?	58 00				
			eL	5 03 41				
			M _{E1}	06 51	15		135	
			M _{N1}	07 42	12	148		
			M _{E2}	08 36	12		150	
			M _{N2}	09 27	11	130		
F	6 10							

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

5, 15^h 30^m [6, 1^h 00^m]. Guam (Islas Marianas). Temblor de tierra de intensidad IV, duración muy corta.

19, 0^h 30^m 54^{s*} [19, 8^h 30^m 54^s]. N de Luzón. Temblor de tierra de intensidad IV sentido en el extremo septentrional de Luzón al N del paralelo 18°. Su origen debe situarse a 500 kilómetros de distancia de Manila en el grupo de las Islas Babuyan. El haber tenido mayor intensidad en las estaciones del W que en las del E del N de Luzón indica que el epicentro estaba hacia el W de dicho grupo.

20, 14^h 48^m 00^{s*} [20, 22^h 48^m 00^s]. Centro y E de Luzón. Temblor de tierra de intensidad III-IV, cuyo origen se hallaba cerca de la costa oriental de Luzón hacia el seno o bahía de Baler, a unos 150 kilómetros de Manila. Sintióse en las Provincias de Nueva Écija, Nueva Vizcaya, Isabela y parte N de Tayabas. Según hemos repetido muchas veces y últimamente en el artículo "The relation of seismic disturbances in the Philippines to the geologic structure,"¹ en esa bahía se cruzan varias líneas sismotectónicas, en las que se originan los terremotos que más afectan a la parte central y sur de Luzón. Es algo extraña la calma sísmica que en esta región se viene observando desde hace muchos años.

22, 9^h 53^m 55^{s*} [22, 17^h 53^m 55^s]. SW de Luzón. Temblor oscilatorio de intensidad III, duración 10^s. Este temblor se sintió en la Provincia de Batangas y parte W de la Cavite; su origen se hallaba a unos 120 kilómetros distante de Manila, seguramente en el Mar de la China al NW de la isla de Mindoro. Los sismógrafos de Ambulong registraron oscilaciones procedentes del W y la componente vertical tuvo allí más intensidad que en Manila, todo lo cual confirma la situación del origen, al NW de Mindoro y a poca distancia de la costa de Luzón.

29, 20^h 10^m [30, 4^h 10^m]. Laoag (NW de Luzón). Temblor oscilatorio, dirección ENE-WSW, intensidad III, duración 2^s. Este temblor fué perceptible en toda la parte septentrional de la Provincia de Ilocos Norte, según consta de avisos recibidos de otras poblaciones. Su origen parece se hallaba hacia la cordillera y debía ser muy superficial, puesto que nada registraron los sismógrafos del Observatorio de Baguio, distante menos de 200 kilómetros de la capital de Ilocos Norte.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de De Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

¹ The Philippine Journal of Science. Vol. VIII, No. 4, Sec. A; August, 1913.

BULLETIN FOR JUNE, 1914.

METEOROLOGICAL BULLETIN FOR JUNE, 1914.

By REV. JOSÉ CORONAS, S. J.

Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was less than that of last June in all parts of the Philippines and especially in the Island of Luzon. In Manila it was 0.33 mm. less than the normal. The highest pressures were recorded on the 6th, the lowest on the 18th or 19th.

The mean monthly temperature varied but little from that of last year and from the June normal. The extreme values for Manila were 35.5° C. on the 14th, and 22.7° C. on the 20th. In Baguio the absolute maximum of the month both on the top of Mirador and in the valley was 26° C.; the absolute minima were 11.8° C. on Mirador and 12° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR JUNE, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from June, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from June, 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	758.18	—0.49?	760.12	6	756.07	18	27.3	—	33.6		23.3	25
Surigao	58.10	— .45?	60.22	6	55.12	18	27.3	—	32.5	21,29,30		
Cebu	58.10	— .62	60.25	6	55.37	18	28.2	—0.1	33.9	14	22	23
Iloilo	57.95	— .47	59.73	6	55.72	18	27.5	0	33.7	13	22.4	19
Ormoc	58.26	— .54	60.34	6	54.78	18	27.1	0	33.2	16	21.9	14
Tacloban	58.10	— .76	60.49	6	53.14	18	27.2	— .1	33.5	29	23	1
Capiz	58	— .60	59.80	6	55.40	18	27.3	+ .3	35	4	23.2	6, 26
Calbayog	57.90	— .78	60.27	6	51.08	18	26.6	— .2	33	16	22.7	12, 13, 15
Legaspi	57.52	—1.24	60.38	6	49.64	18	28	— .4	35.1	5	23	3
Atimonan	57.44	—1.02	59.76	6	51.98	19	27.7	0	33.6	6	22.9	19
Ambulong, Tanauan	57.21	—1.04	59.51	6	53.22	19	27.5	— .1	35.2	10	23	Various
Paracale	57.51	—1.34	59.90	6	51.10	19	27.9	+ .2	34.6	5	22.3	19
Manila	57.62	—1.03	59.94	6	53.26	19	27.4	— .4	35.5	14	22.7	20
San Isidro	57.70	—1.05	60.10	6	52.95	19	27.5	— .4	36	13	22.1	19
Dagupan	56.67	—1.28	59.17	6	52.15	19	28	— .5	37.3	17	21.9	20
Bolinao	56.96	—1.14	59.32	6	52.54	19	27.6	— .3	34.4	18	21.1	20
Baguio ^a	635.74	— .98	637.92	7	631.94	19	18.7	— .2	26	17, 18	11.8	20
Vigan	756.87	—1.37	759.25	6	752.28	19	^b 28.2	—	^b 34.1	28	^b 21.6	20
Tuguegarao	57.06	—1.37	59.38	23	51.31	1	28.4	— .1	40	14, 17	22.5	25
Aparri	56.93	—1.30	59.28	7	50.40	1	27.6	— .4	35	15	21.6	30

^a The barometric readings of this station are not reduced to sea level.

^b 27 days of observation.

Rainfall.—The majority of the stations in the Islands had a greater total rainfall than last June and also greater than the normal for the month. In Manila there were 367.9 mm. of rain, which is 172.1 mm. more than during June, 1913, and 132 mm. more than the normal. In Baguio 457.8 mm. of rain fell; of this amount 186.9 mm. and 105.6 mm. fell on the 1st and 19th, respectively.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF JUNE, 1914.

Station.	Total.	Departure from June, 1913.	Departure from normal.	Rainy days.	Departure from June, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from June, 1913.	Departure from normal.	Rainy days.	Departure from June, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	296.9		+113.1	16		80.8	17	Sumay, Guam	117	+48.4		17	+2	21.6	27
Isabela, Basilan	136	-122.9	-68.4	15	-8	22.4	17	Calapan	212.2	+63.9		16	+1	54.6	19
Zamboanga	94.9	+29.1	+5.7	11	-4	29.2	1	Virac	311	+115		20	+2	105.9	18
Davao	278.6	+63	+46.3	14	-2	53.3	21	Nueva Caceres	424	+211.6	-234.6	19	+2	165.4	18
Cotabato	206.4	+44	+39.4	21	-2	38.4	13	Batangas	303.4	+284.4		13	+5	80.5	1
Cagayan, Misamis	133	+8		14	-1	33	21	Atimonan	424.4	+253.2	-258.3	10	+7	119.4	18
Dapitan	154		+18.9	17		26.1	8	Ambulong, Tanauan	360.1	+154.2		18	+6	70	2
Butuan	148.6	-70.6	+1.4	20	-3	39.4	17	Silang	425.6	+283.7	-166.7	15	+3	89.4	2
Dumaguete	90.8	+106.6		15	+1	18.8	22	Paracale	259.8	+75.1		12	+7	138.1	18
Yap, W. Carolines	195.1	-107.7		24	+8	31.3	25	Santa Cruz, Laguna	365.7	+213.8		18	+7	135.9	19
Tagbilaran	111.9		-30.7	7		39.4	24	Manila	367.9	+172.1	-132	13	-1	109.7	3
Iwahig	83.3			16		24.6	4	Antipolo	624	+395.4		14	+2	253.5	19
Surigao	230.4		+108	16		63.5	24	Iba	787.1	+473.9		20	+4	167.7	19
Maasin	257.1	-211.7	-105.7	10	-6	50.6	22	San Isidro	259.1	+83.6	55.4	15	-2	92.5	19
Cebu	202.9	+32.6	+27.3	18	+3	32	12	Tarlac	257.2	-19.4	32.2	12	-4	94.3	19
Iloilo	383.4	-227.3	+172.6	19	+4	67.5	18	Baler	375.6	+266.7	-124	17	-1	162.3	19
San Jose Buenavista	640.8	+459.1	+281.7	26	+7	101.3	30	Dagupan	424.6	+236	98.8	14	-1	124.5	22
Cuyo	526	+371.6	+240.9	19	+5	91.5	30	Bolinao	487.2	+124.9	87.3	17	-3	139.9	19
Ormoc	297.4	+214.9	+110.9	17	+4	37.8	16	Baguio	457.8	+51.3	+50.2	18	-7	186.9	1
Guiuan	208.6	+33.3		15	-5	60.9	17	San Fernando, Union	376.3	+60.6	+77.5	13	-6	112.9	1
Tacloban	287		+82.5	15	-2	99.2	18	Echague	69.2	+1.6		9	0	28.2	19
Capiz	217.8	+43.5	-72.7	22	0	34.3	18, 19	Candon	315.2	-129.8	-17.7	11	-8	101.4	1
Borongan	232.2	+98.4	-4.3	19	-1	63.5	18	Vigan	311.5					155	1
Calbayog	301.9	+241.2	+140.9	22	+5	116.8	18	Tuguegarao	158.9	+63	+32.4	7	-9	38.4	19
Masbate	104.4	+70.4	-14.6	11	+2	41.5	18	Laoag	291.4	+8.6		12	-4	98.2	5
Romblon	392.5		-208.2	22		79.5	19	Aparri	89.6	-34.5	-30	9	0	39.4	3
Batag	327	+243.5		9	-1	190.6	18	Santo Domingo, Batanes	104.9	+45.9	-50.7	12	+1	55.4	1
Gubat	249.6	+195.9	+116	15	+4	71.9	18								
Legaspi	271.8	+215.8	+90	18	+9	173.5	18								

* 27 days of observation.

DEPRESSIONS AND TYPHOONS.

Two typhoons and one depression affected the Philippines during the month; the most important of these was the one which crossed the Islands of Samar and Luzon on the 18th and 19th.

Depression of June 4-7.—After the typhoon at the end of May had dissappeared, there remained an area of low pressure for a few days in the China Sea to the W of northern Luzon. On the 4th and 5th there appeared a fairly well-developed depression which moved to the NE, as was mentioned in the ordinary weather note of the 5th. This depression traversed the Balintang Channel during the night of the 5th and filled up on the 6th and 7th to the E of Formosa and the Liukiu Islands.

The Samar and Luzon typhoon, June 15-24.—To judge from the observations made in the Pelew Islands, it would appear that this typhoon was in process of formation from the 15th to the 16th about half way between Yap and the Visayas in 10° lat. N and 132° long. E.

The first signs of its existence were noted in the Philippines on the morning of the 17th, and the Observatory hastened to send the first warnings of a typhoon situated to the E of the Visayas. On the 18th, at the same time that urgent warnings were wired to the governors of the provinces threatened by the typhoon (Samar, Sorsogon, and Albay), the following notes were sent to the shipping houses and newspapers in Manila.

June 18, 9.10 a. m.: To-day the typhoon is approaching the northern part of Samar, moving WNW.

June 18, 4.30 p. m.: The typhoon is now over the northernmost part of Samar, moving WNW, toward Sorsogon Province. It threatens to cross the southern part of Luzon to-night and to-morrow.

In order that the reader may follow the track of the typhoon from the time it appeared off the E of Samar on the 18th till it reached the southern part of the Formosa Channel on the 21st, we publish in Plate III the isobars corresponding to 10 p. m. of the 17th, 6 a. m. and 10 p. m. of the 18th, 2 and 10 p. m. of the 19th, and 6 a. m. of the 21st.

The observations made on board the steamship *Germania*, which was in the vortex of the storm, give a good idea of the intensity and development of the typhoon half a day before it reached the coast of Samar. These observations are given below, and in Plate II is reproduced the barographic curve obtained on board by a Richard barograph, though part of the curve has been completed by means of direct observations, because the paper on the barograph was not wide enough to record the lowest readings. The vortical calm and the swell coming from all directions were observed by the *Germania* at 10.10 p. m. of the 18th, when the barometer read 700 mm.

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE STEAMSHIP "GERMANIA," JUNE 17 AND 18, 1914.

[Position: 11° 32' latitude N, 126° 55' longitude E.]

Date and hour.	Barometer.	Wind.		Remarks.	Date and hour.	Barometer.	Wind.		Remarks.
		Direction.	Force.				Direction.	Force.	
June 17:	mm.		0-12.		June 17:	mm.		0-12.	
Noon	756.1	NNE	3		10.05 p. m.	710.2	NEbyE	12	
1 p. m.	55.5	NEbyN	4		10.10 p. m.	700	Calm		Swell from all directions.
2 p. m.	54.5	NE	5		10.30 p. m.	705.6	Calm		Do.
3 p. m.	53.2	NNE	6	From 4 p. m. of the	10.50 p. m.	20	SW	12	
4 p. m.	52.9	NNE-NE	8	17th to 4 a. m. of the	Midnight	30	SW	12	
5 p. m.	51.5	NNE-NE	8	18th hurricane	June 18:				
6 p. m.	51.2	ENE	8	squalls with torren-	1 a. m.	38	SW	12	
7 p. m.	49	ENE	9	tial rain and fre-	2 a. m.	44.5	SW	11	
8 p. m.	47	EbyN	10	quent lightning.	3 a. m.	47	SW	10	
9 p. m.	42	NEbyE	12		4 a. m.	49	SW	10	
9.30 p. m.	36.5	NEbyE	12		5 a. m.	50.7	SW	6	
9.45 p. m.	30	NEbyE	12		6 a. m.	53	SW	6	
10 p. m.	12	NEbyE	12						

From a letter of the excellent observer of Borongan, Rev. Cesareo Montes, O. F. M., we take the following extremely interesting data concerning the point where the typhoon entered the coast of Samar and the intensity it displayed near the vortex:

The typhoon must have entered the island of Samar between the town of Taft (11° 53' lat. N; 125° 26' long. E) and Dolores (12° 03' lat. N and 125° 30' long. E), though very close to the second. According to data supplied me personally by the padres of these two towns, I find that in Taft the first winds between 11 and 12 p. m. of the 17th were from the NW and W, backing to the SW. These last were the strongest and caused the complete destruction of the town and the abaca and coconut plantations.

In Dolores, the first winds between 11 p. m. and 12 p. m. of the 17th were from the NW and N accompanied by light squalls, and they went on increasing in force till 6 a. m. of the 18th when their fury was extraordinary—unroofing houses, tearing down warehouses, and uprooting coconut palms. At 11 a. m. the wind veered from N to E, in which direction it remained with slight force for about five minutes. The vortical calm was then observed, the sky cleared, the sun shone out in all its brilliancy for about seven or eight minutes. A few moments later the wind jumped to ESE, or "el Teino" as the Visayans call it, and completed the work of destruction. Only one house could resist the force of the wind from the second quadrant and even this was very much out of the perpendicular.

The barometric minimum in Dolores was observed at 11 a. m. of the 18th, and was 704.8 mm. according to a new aneroid which had been compared recently in this station of Borongan.

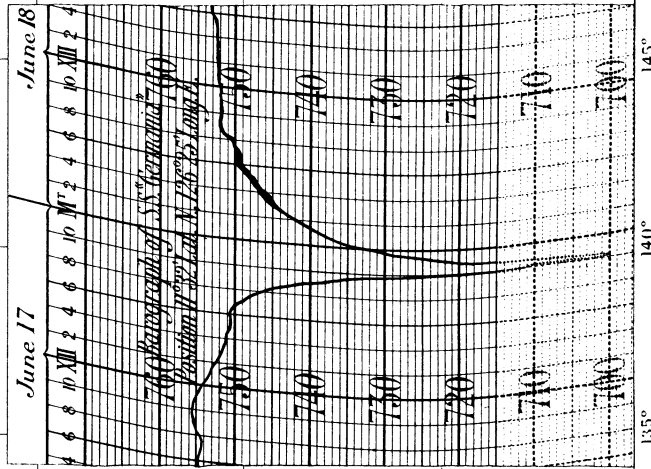
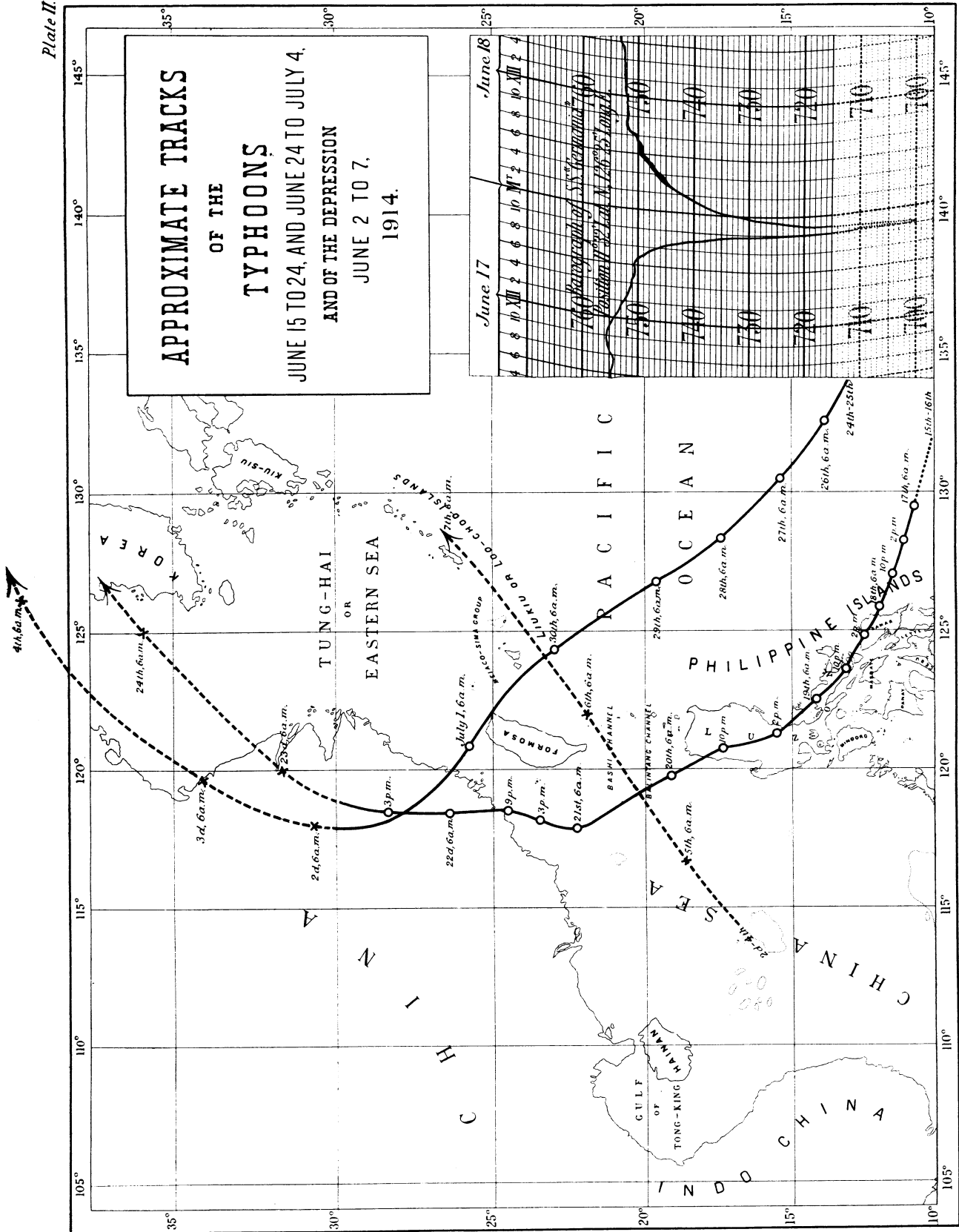
The damage caused by the typhoon in the towns near the vortex is incalculable; all the houses are destroyed and the plantations leveled to the ground. Dolores especially suffered, for 90 per cent of the coconut palms were lost.

I add also a few notes on the hurricane wave which invaded the Islands of Tubabao, Hilabán, and other islets to the E of Dolores. The rise of the water was about 3 meters and it remained at this height for an hour, after which it fell rapidly. There were no casualties, for, besides this happening in broad daylight, the people have learned from experience of what happened in previous years and fled at once to the higher ground where the water could not reach. The rise of the water was also very rapid in Dolores, but it was not so high, only about 2 meters.

In the following table we give the observations made on board the steamship *Coblentz*, which was at a short distance to the N of the vortex, and also those made at Batag, a station to the N of the vortex, and at Borongan to the S.

Plate II

**APPROXIMATE TRACKS
OF THE
TYPHOONS
AND OF THE DEPRESSION
JUNE 15 TO 24, AND JUNE 24 TO JULY 4,
JUNE 2 TO 7,
1914.**



METEOROLOGICAL OBSERVATIONS FOR JUNE 17 AND 18, 1914.

Day and hour.	Steamship "Coblentz."					Borongan.					Batag.				
	Position.		Pressure.	Wind.		Pressure.	Wind.		Weather.	Rain, 24 hours beginning 6 a. m.	Pressure.	Wind.		Weather.	Rain, 24 hours beginning 6 a. m.
	Lat. N.	Long. E.		Direction.	Force.		Direction.	Force.				Direction.	Force.		
June 17:	o /	o /	mm.		0-12.	mm.				mm.		0-12.		mm.	
6 a. m.						756.83	Calm		or		757.07	E			
2 p. m.						55.68	NE	2	or	47.5	56.15	NE	4	c	
4 p. m.	12 45	124 28	755.84	NNE	2								4	o	
June 18:															
1 a. m.			53.31	NEbyN	6	53	WNW	3	oq						
2 a. m.			51.36	NE	7	50.90	WNW	3	oqu						
3 a. m.			50.16	NEbyE	9	50.40	W	4	oqu						
4 a. m.	12 28	125 56	48.85	NEbyE	10	49.84	W	4	oqu						
5 a. m.			46.73	NEbyE	10	47.69	W	5	qur		52.77	NE	4	o	
6 a. m.			45.22	NEbyE	10	45.09	W-WSW	6	oqu		52.26	NE	5	o	
7 a. m.			44.43	EbyS	11	41.18	WSW	7	oqu		51.90	NE	6	o	
8 a. m.			44.64	EbyS	11	39.72	SW	9	qur		51.56	NE	7	o	
8.30 a. m.						39.15	SW	10	qur		50.79	NE	7	op	
8.45 a. m.						38.99	SW	10	qur						
9 a. m.			44.84	EbyS	11	39.09	SW	10	oq		50.56	NE	8	op	
10 a. m.			45.12	EbyS	11	43.07	SW	7	oqr		49.41	NE	9	oq	
11 a. m.			46.92	ESE	12						46.31	NE	9	rq	
Noon	12 32	126 11	47.81	ESE	12						40.02	NE	10	oq	
1 p. m.			48.81	SEbyS	12						37.84	NE	10	oq	
1.30 p. m.											37.40	ENE	10	oq	
2 p. m.			49.69	SEbyS	12	50.88	S	7	oqr	63.5	37.40	E	11	oq	
2.05 p. m.											36.55	E	11	oq	
2.10 p. m.											37.85	E	10	oq	
2.30 p. m.											39.35	E	10	oq	
3 p. m.			51.09	SE	11										
3.05 p. m.			51.39	SE	11						42.13	E	8	o	
4 p. m.			52.19	SE	11						45.62	E	8	o	
5 p. m.											48.11	E	7	o	
6 p. m.											49.77	E	7	o	
7 p. m.											51.78	E	7	o	

We do not intend to describe the effects of the typhoon along the whole of its track; suffice it to say that these effects were much more destructive in Samar than in Sorsogon, and in Sorsogon than in Albay, and so on till on leaving the island of Luzon between Ilocos Norte and Ilocos Sur the force of the wind was but of small importance. Among the disasters at sea, the most important was the grounding of the *Churruca* at the entrance of Sorsogon Bay.

With regard to the direction of the typhoon in its movement of translation across the Philippines, we may say that in crossing Samar and Sorsogon it moved to the WNW, which made it extremely dangerous for Manila and in general for the provinces in the S of Luzon; happily, however, it curved considerably to the N from Albay, and still more so from Ambos Camarines, so that all danger for the capital disappeared.

The following notes were published in Manila concerning the typhoon:

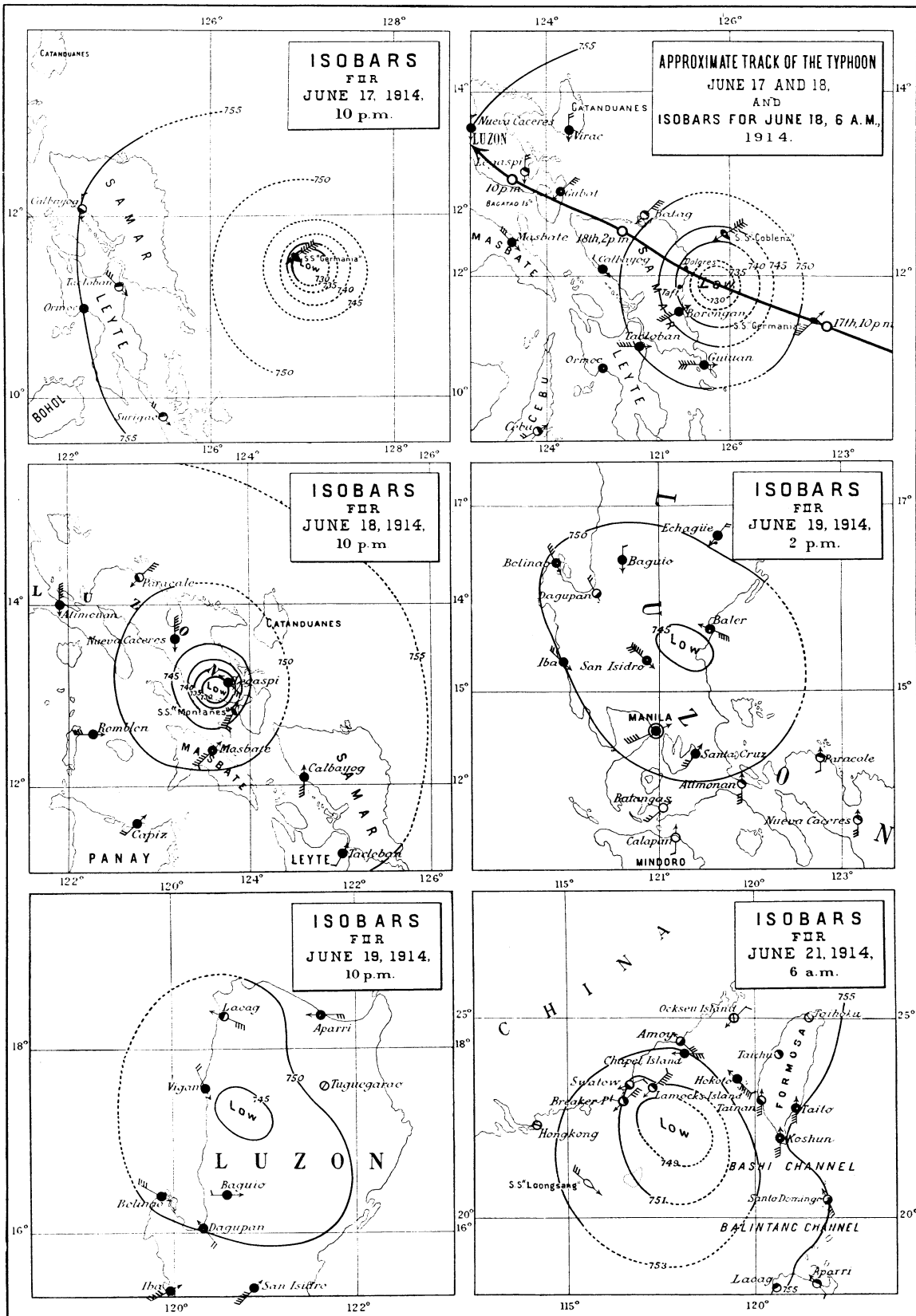
June 19, 11.50 a. m.: The typhoon passed across the Provinces of Sorsogon, Albay, and Camarines last night, the center at 6 o'clock this morning being over or near the eastern part of Tayabas Province to the E of Atimonan, moving NW by W or NW.

June 19, 7 p. m.: The typhoon has been inclining more to the N since this morning. At present its center lies near or over the northern part of Nueva Ecija Province moving NW by N or NNW toward the Mountain and Union or Ilocos Provinces.

As a matter of fact, the inclination northwards was so great during the afternoon and evening of the 19th, that the typhoon left the island between Ilocos Norte and Ilocos Sur, for the observations of Vigan and Laoag clearly indicate that the vortex passed at almost equal distances from each station.

The rate of progress of the typhoon in the Philippines was 10 miles an hour from 6 a. m. of the 18th to 6 a. m. of the 19th, and 14 miles an hour from 6 a. m. of the 19th till 6 a. m. of the 20th.

The typhoon entered the Continent to the N of Amoy during the night of June 21 in a northly direction. The series of isobars in Plate III are sufficient to show the



N. B. - The barometric readings have been reduced to standard gravity

greater depth, intensity, and development of the typhoon at its arrival in the Philippines on the morning of the 18th, as compared with what it had in Luzon to the N of Manila on the night of the 19th, and in the China Sea on the 20th and 21st.

The following typhoons warnings were sent from Manila to the observatories of the Far East:

- June 17, 9 a. m.: Typhoon E of the Visayan Islands, direction unknown.
- June 18, 8.45 a. m.: Typhoon E of the Visayan Islands, moving WNW.
- June 18, 3.15 p. m.: Typhoon over the eastern Visayas, moving WNW.
- June 19, 9.35 a. m.: Typhoon ESE of Manila, near or over southern Luzon, moving WNW or NW.
- June 19, 12.45 p. m.: Typhoon ENE of Manila, moving NW.
- June 19, 6.35 p. m.: Typhoon N of Manila, moving NW or NNW.
- June 19, 10.25 p. m.: Typhoon crossing northern Luzon, moving NNW or N.
- June 20, 10.25 a. m.: Typhoon W of Balintang channel, moving NNW.

The typhoon of June 24–July 4.—From observations made in Yap and the Pelew, it is evident that this typhoon was forming on the 24th and 25th to the NW of Yap, in about 134° long. E and 13° lat. N. It moved to the NW on the 26th and 27th, to the NNW on the 28th and 29th, and inclined again to the W on the 30th in the direction of the most northerly part of the island of Formosa, which it struck with great intensity during the night of June 30. On July 1, the typhoon entered the Continent close to Foochow, and on the same night it recurved to the N and NE beginning to fill up gradually.

Mr. H. Kondo, director of the observatory of Taihoku, Formosa, very kindly sent us the isobars and barometric curves of the storm together with the following notes relative to the effects of the typhoon in the north of Formosa:

The typhoon was severe and destructive in North Formosa. In the early part of the typhoon season, as in May or in June, such a severe center has never been experienced in North Formosa; during the last eighteen years only two typhoons of equal severity have struck southern Formosa.

The following table gives the barometric minima and highest wind velocity observed during the storm at the stations of Formosa. The readings for Keelung and Taihoku are the records for the month of June.

Station.	Barometric minimum	Day and hour.	Maximum force of wind.	Direction.	Day and hour.
	<i>mm.</i>		<i>m.p.s.</i>		
Keelung	723.8	30, 10 p. m.	42.4	W	30, 10 p. m.
Taihoku	726.9	30, 11 p. m.	27.2	WNW	30, 10 p. m.
Taichu	745.1	30, 7 p. m.	15.5	NNW	30, 6 p. m.
Karenko	738.1	30, 12 m. n.	10.7	SW	30, 10 a. m.
Tainan	748.3	30, 6 p. m.	15.3	NNW	30, 12 noon.
Taito	739.4	30, 8 p. m.	22.6	SSW	1, 7 a. m.
Koshun	746.4	30, 5 p. m.	21.4	W	30, 10 p. m.
Pescadores	747.6	1, 3 a. m.	18.8	NNW	30, 10 p. m.

The official statistics of the loss of life and property are as follows:

Persons killed	51	Houses entirely destroyed	1,159
Persons disappeared	17	Houses partly destroyed	1,342
Persons injured	9	Houses injured	3,577

The following telegrams were sent by Manila Observatory to the observatories of Tokio, Zikawei, Taihoku, Hongkong, and Phulien:

- June 25, 6.50 a. m.: Typhoon NW of Yap, direction unknown.
- June 26, 10.15 a. m.: Typhoon NW of Yap, moving NNW or N.
- June 27, 8.30 a. m.: Typhoon E of Luzon, more than 300 miles distant, moving NW.
- June 28, 8.30 a. m.: Typhoon E of northern Luzon, more than 300 miles distant, moving NW.
- June 29, 8.30 a. m.: Typhoon ENE of Aparri, moving NW or NNW.
- June 30, 8.50 a. m.: Typhoon E of southern Formosa, moving NNW.
- June 30, 5.30 p. m.: Typhoon E of Formosa, moving NW or NNW.
- July 1, 10.00 a. m.: Typhoon near or over the northern part of Formosa Channel, moving NW.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es para todas las estaciones de Filipinas menor que la del año pasado, especialmente en la Isla de Luzón. La de Manila se diferencia de la normal en -0.33 mm. Las presiones más altas tuvieron lugar generalmente el día 6, y las más bajas el 18 ó 19.

La temperatura media mensual difiere muy poco así de la del año pasado como de la normal de Junio. Los valores extremos para Manila fueron 35.5° C. y 22.7° C. observados respectivamente los días 14 y 20. En Baguio la máxima absoluta de todo el mes fué 26° C. para la cumbre de Mirador y para el valle: la mínima absoluta fué 11.8° C. para el Mirador y 12° C. para el valle.

Precipitación acuosa.—La mayor parte de las estaciones de Filipinas dan este mes un total de lluvia mayor que el año pasado y mayor también que la normal de Junio. En Manila se recogieron 367.9 mm. de agua, cantidad que difiere en $+172.1$ mm. de la de Junio, 1913, y en $+132.0$ mm. de la normal de este mes. En Baguio cayeron 457.8 mm., siendo de notar que en solos los días 1 y 19 se recogieron respectivamente 186.9 mm. y 105.6 mm.

DEPRESIONES Y TIFONES.

Dos tifones y una depresión influyeron durante este mes en Filipinas siendo el más importante el que atravesó las Islas de Sámar y Luzón los días 18 y 19.

Depresión de 4 a 7 de Junio.—Después del tifón de fines de Mayo de que hablamos en el Boletín de dicho mes, quedó por algunos días un área de baja presión en el Mar de China al W del norte de Luzón. Los días 4 y 5 aparecía una depresión bastante desarrollada que se movía al NE según anunció el Observatorio en la nota ordinaria del tiempo del día 5. Atravesó esta depresión el canal de Balintang la noche del 5 al 6 y durante los días 6 y 7 se fué deshaciendo al E de Formosa y de las Islas Liukiu.

Tifón de Sámar y Luzón, 15 a 24 de Junio.—A juzgar por las observaciones hechas en las Islas Palaos, parece se estuvo formando este tifón del 15 al 16 a mitad de distancia entre Yap y las Islas Visayas, en los alrededores de 10° latitud N y 132° longitud E.

Las primeras señales de su existencia se tuvieron en Filipinas la mañana del 17, apresurándose el Observatorio a enviar los primeros avisos de un tifón situado al E de las Visayas. El día 18, al propio tiempo que se enviaban avisos apremiantes a los Sres. gobernadores de las provincias más amenazadas por el temporal (Sámar, Sorsogón y Albay), se dijo lo siguiente en dos notas distribuidas a los periódicos y casas navieras de Manila:

Día 18, 9.10 a. m.: El tifón se está acercando hoy a la parte norte de Sámar, moviéndose al WNW.

Día 18, 4.30 p. m.: El tifón se halla ahora en la parte más septentrional de Sámar, moviéndose al WNW en dirección a la Provincia de Sorsogón. Amenaza atravesar esta noche y mañana la parte sur de Luzón.

A fin de que nuestros lectores puedan ir siguiendo por sí mismos la trayectoria seguida por este tifón desde que apareció al E de Sámar el día 18 hasta que llegó a la parte sur del canal de Formosa el día 21, damos en la Lámina III las isobaras de 10 p. m. del 17, 6 a. m. y 10 p. m. del 18, 2 y 10 p. m. del 19 y 6 a. m. del 21.

Las observaciones hechas a bordo del vapor *Germania* que se halló en el vórtice del tifón dan una buena idea de su grande intensidad y desarrollo medio día antes de que llegase a la costa de Sámar. Copiamos parte de estas observaciones en la tabla siguiente.¹ Además, en la Lámina II incluimos una copia de la curva barográfica obtenida en dicho barco con un barógrafo Richard, si bien parte de ella se ha completado por medio de las observaciones directas por no alcanzar el papel del barógrafo lecturas tan bajas. La calma vortical juntamente con marejada que venía de todas direcciones se observó a bordo del *Germania* a 10.10 p. m. de 18, habiendo bajado el barómetro hasta 700 mm.

De una carta del inteligente observador de Borongan P. Cesáreo Montes, O. F. M.,

¹ Véase esta tabla y la otra que se menciona más abajo, en el texto inglés.

entresacamos los siguientes datos interesantísimos sobre el punto de la costa de Sámar por donde penetró el tifón y la intensidad con que desfogó el temporal en las cercanías del vórtice:

El baguio ha debido entrar en la isla de Sámar por entre los pueblos Taft ($11^{\circ} 53'$ lat. N; $125^{\circ} 26'$ long. E) y Dolores ($12^{\circ} 03'$ lat. N; $125^{\circ} 30'$ long. E), aunque mucho más cerca del segundo. Según datos facilitados personalmente por los padres de los indicados pueblos, en Taft los primeros vientos entre 11 y 12 de la noche del 17, fueron del NW y W, rolando al SW. Estos fueron los más fuertes y los que causaron la ruina total de la población y el destrozo completo en los plantíos de abacá y cocoteros.

En el pueblo de Dolores, los primeros vientos entre 11 y 12 del mismo día 17, fueron del NW y N racheados y con ligeros chubascos, aumentando así en fuerza hasta las 6 de la mañana del 18 en que la furia del viento era extraordinaria—comenzando a destechar casas, tirar camarines y tronchar cocos, dejando a toda la población con medias casas y sin vivienda segura. A las 11 a. m. el viento roló del N al E soplando de esta dirección con poca fuerza por unos cinco minutos. Entonces se observó la calma vortical, despejándose el cielo y viendo al sol con toda su claridad por espacio de unos siete u ocho minutos. A los pocos momentos, el viento saltó al ESE, o el *Teino* que llaman los visayos, acabando por barrer todas las casas que medio arruinadas y deshechas dejaron los vientos del N. De todas las casas de la población, sólo una pudo resistir a medias el empuje de los vientos del segundo cuadrante, quedando en pie y bastante inclinada.

La mínima barométrica en el pueblo de Dolores y a las 11 a. m. del 18, fué 704.8 mm. observada en un barómetro anoroide casi nuevo y recién confrontado en esta estación de Borongan.

Los daños causados por el baguio en los pueblos próximos al vórtice, son incalculables: todas sus casas destruidas y toda plantación arrasada. Particularmente el pueblo de Dolores es el que ha sufrido de lleno las furias del baguio, calculándose la pérdida de los cocos en un 90 por ciento.

A lo dicho conviene añadir aquí algunos datos sobre la ola del huracán que invadió rápidamente las Islas de Tubabao, Hilabán y otros islotes al E de Dolores, viéndose obligados los habitantes de estas islas a abandonar sus viviendas y remontarse a parte segura en busca de refugio. La subida del mar, según atestiguan los mismos habitantes, fué de 3 metros poco más o menos, permaneciendo en esta altura cerca de una hora, después de la cual volvió el agua a bajar otra vez con descenso rápido. Desgracias personales no ha habido, pues, además de haber tenido esto lugar en pleno día, los habitantes en tales casos escarmentados con lo ocurrido en años anteriores huyen pronto y se refugian a sitios más elevados a donde la subida de la mar no pueda alcanzar. En el pueblo de Dolores la subida de las aguas fué también rápida, pero más suave y de menos altura. Se calcula que subió allí el mar unos 2 metros.

En la tabla siguiente reunimos las observaciones hechas a bordo del vapor *Coblentz*, que se halló a poca distancia al N del vórtice, juntamente con las de Batag y Borongan, estaciones situadas respectivamente una al N y otra al S del mismo vórtice.

No es nuestro ánimo detenernos en describir los efectos causados por este tifón a lo largo de su trayectoria así en el N de Sámar como en las varias provincias de Luzón por donde pasó. Solamente diremos que dichos efectos fueron mucho más destructores en Sámar que en Sorsogón, y en Sorsogón más que en Albay, y así sucesivamente hasta que al abandonar el baguio la Isla de Luzón por entre Ilocos Norte e Ilocos Sur la fuerza de los vientos era ya de poca importancia. Entre los diferentes percances marítimos que ocurrieron en los alrededores del SE de Luzón, merece citarse como el más notable el haber quedado embarrancado el vapor mercante *Churruca* en la entrada de la bahía de Sorsogón.

Cuanto a la dirección en que se movió este baguio en su movimiento de traslación a través de Filipinas, bastará decir que al atravesar Sámar y Sorsogón se movía al WNW, dirección sumamente peligrosa para Manila y en general para las provincias del S de Luzón; pero afortunadamente se inclinó notablemente al N desde la Provincia de Albay y más aún desde la de Ambos Camarines con lo cual desapareció todo peligro para la capital del Archipiélago.

Véase a continuación lo que dijo el Observatorio en dos notas dadas al público de Manila la mañana y tarde del 19:

Día 19, 11.50 a. m.: El tifón pasó la noche pasada a través de las Provincias de Sorsogón, Albay y Camarines, hallándose su centro a las 6 de esta mañana en, o cerca de, la parte E de la Provincia de Tayabas al E de Atimonan, moviéndose al NW $\frac{1}{4}$ W o NW.

Día 19, 7 p. m.: El tifón se ha estado inclinando más y más al N desde esta mañana. Su centro se halla al presente en, o cerca de, la parte norte de la Provincia de Nueva Ecija, moviéndose al NW $\frac{1}{2}$ N o NNW, en dirección a las Provincias Montañosa y Unión o Ilocos.

Efectivamente, fué tal la inclinación al norte en la trayectoria de este tifón la tarde del 19, que vino a abandonar la isla, según queda indicado arriba, por entre Ilocos Norte e Ilocos Sur, pues las observaciones de Vigan y Laoag indican claramente que el vórtice pasó casi a igual distancia de ambas estaciones.

La velocidad de traslación que llevaba este baguio en Filipinas fué de 10 millas por hora desde 6 a. m. del 18 a 6 a. m. del 19, y de 14 millas por hora desde 6 a. m. del 19 hasta 6 a. m. del 20.

El tifón penetró en el Continente por el NE de Amoy la noche del 21, moviéndose al N. La serie de isobaras que damos en la Lámina III basta para hacer ver la mayor profundidad, intensidad y desarrollo que tenía este tifón al llegar a Filipinas la mañana del 18, comparada con la que tenía en Luzón al N de Manila la noche del 19 y en el Mar de China los días 20 y 21.

Los siguientes avisos de tifón fueron transmitidos por el Observatorio de Manila a los demás centros meteorológicos del Extremo Oriente:

Día 17, 9 a. m.: Tifón al E de las Islas Visayas, dirección desconocida.

Día 18, 8.45 a. m.: Tifón al E de las Islas Visayas, moviéndose al WNW.

Día 18, 3.15 p. m.: Tifón cruzando las Visayas orientales, moviéndose al WNW.

Día 19, 9.35 a. m.: Tifón al ESE de Manila, en, o cerca de, la parte sur de Luzón, moviéndose al WNW o NW.

Día 19, 12.45 p. m.: Tifón al ENE de Manila, moviéndose al NW.

Día 19, 6.35 p. m.: Tifón al N de Manila, moviéndose al NW o NNW.

Día 19, 10.25 p. m.: Tifón cruzando la parte norte de Luzón, moviéndose al NNW o N.

Día 20, 10.25 a. m.: Tifón al W del canal de Balintang, moviéndose al NNW.

El tifón de 24 de Junio a 4 de Julio.—Según observaciones hechas en Yap y Palaos, se estuvo formando este tifón los días 24 y 25 al NW de Yap, en los alrededores de 134° longitud E y 13° latitud N. Se movió al NW los días 26 y 27, al NNW el 28 y 29, y se inclinó de nuevo al W el día 30 en dirección a la parte más septentrional de la isla de Formosa en donde desfogó con grande intensidad la noche del 30 de Junio al 1 de Julio. El día 1 de Julio penetró el tifón en el Continente por cerca de Foochow y la noche del 1 al 2 recurvió al N y NE, si bien se fué deshaciendo gradualmente desde el día 2.

Agradecemos a Mr. H. Kondo, director del observatorio de Taihoku, Formosa, las isobaras y curvas barográficas que se dignó enviarnos juntamente con los siguientes datos referentes a los efectos de este tifón en el norte de Formosa:

El tifón fué intenso y destructor en el norte de Formosa. En los principios de la época de tifones como Mayo y Junio nunca se había experimentado en el norte de Formosa un tifón de tanta intensidad. Durante los últimos diez y ocho años sólo ha habido dos tifones en Junio, los cuales desfogaron con grande intensidad en la parte sur de la isla.

La siguiente tabla da las mínimas barométricas y la máxima fuerza de los vientos observadas en Formosa durante el tifón. Las de Taihoku y Keelung son las más notables que se han registrado hasta ahora en el mes de Junio.

Estaciones.	Mínima barométrica.	Día y hora.	Máxima fuerza del viento.	Dirección.	Día y hora.
	<i>mm.</i>		<i>m. p. s.</i>		
Keelung	723.8	30, 10 p. m.	42.4	W	30, 10 p. m.
Taihoku	726.9	30, 11 p. m.	27.2	WNW	30, 10 p. m.
Taichu	745.1	30, 7 p. m.	15.5	NNW	30, 6 p. m.
Karenko	738.1	30, 12 m. n.	10.7	SW	30, 10 a. m.
Tainan	748.3	30, 6 p. m.	15.3	NNW	30, 12 m. d.
Taito	739.4	30, 8 p. m.	22.6	SSW	1, 7 a. m.
Koshun	746.4	30, 5 p. m.	21.4	W	30, 10 p. m.
Pescadores	747.6	1, 3 a. m.	18.8	NNW	30, 10 p. m.

Las estadísticas oficiales de las pérdidas en vida y hacienda causadas por este baguio son como siguen:

Personas muertas	51	Casas completamente destruídas	1,159
Personas heridas	9	Casas parcialmente destruídas.....	1,342
Personas desaparecidas	17	Casas damnificadas	3,577

El Observatorio de Manila envió como de costumbre los siguientes avisos de tifón a los observatorios de Tokio, Zikawei, Taihoku, Hongkong y Phulien:

- Junio 25, 6.50 a. m.: Tifón al NW de Yap, dirección desconocida.
- Junio 26, 10.15 a. m.: Tifón al NW de Yap, moviéndose al NNW o N.
- Junio 27, 8.30 a. m.: Tifón al E de Luzón, más de 300 millas de distancia, moviéndose al NW.
- Junio 28, 8.30 a. m.: Tifón al E de la parte norte de Luzón, más de 300 millas de distancia, moviéndose al NW.
- Junio 29, 8.30 a. m.: Tifón al ENE de Aparri, moviéndose al NW o NNW.
- Junio 30, 8.50 a. m.: Tifón al E de la parte sur de Formosa, moviéndose al NNW.
- Junio 30, 5.30 p. m.: Tifón al E de Formosa, moviéndose al NW o NNW.
- Julio 1, 10.00 a. m.: Tifón en, o cerca de, la parte norte del canal de Formosa, moviéndose al NW.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Table with columns for Day, Air temperature (Mean, Maximum, Minimum), Underground temperature (0.25, 0.50, 1.50, 2.50 meters), Relative humidity, Vapor pressure, Radiation (Minimum on grass, Maximum in sun, Black bulb in vacuo), and Evaporation (Free exposure, Shelter total). Includes monthly and mean data.

^a All the mean values given in this table are deduced from hourly observations. ^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[φ=16° 25' N; λ=120° 36' E; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Table with columns: Day, Pressure (mean), Air temperature at Mirador (Mean, Maximum, Hour, Minimum, Hour), Air temperature in the valley (Maximum, Hour, Minimum, Hour), Relative humidity (mean), Vapor pressure (mean), Radiation (Minimum on grass, Maximum in sun, Black bulb in vacuo), Evaporation (Free exposure, Shelter). Rows include daily data from 1 to 30 and Mean/Total values.

Table with columns: Day, Wind (Prevailing direction, Total movement, Maximum hourly velocity, Direction at time of maximum velocity), Clouds (Amount, Form and direction: Upper, Lower), Sunshine (h. m., mm.), Rain (24 hours beginning 6 a. m.), Miscellaneous. Rows include daily data from 1 to 30 and Mean/Total values.

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d Deduced from five observations.
^e This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.
^f As the Cassella Sunshine recorder was broken during the typhoon, beginning with June 20 the sunshine observations will be taken definitively from the records of the quadruple-register.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, JUNE, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Jolo	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Isabela, Basilan	34.3			7.6		2.5	1.3		20.1		51.3	2.8	1.3			
Zamboanga	21.1					2	1.3					4.1		.8		.3
Davao	29.2			11.7	2.5	27.9	17.3	33						3.3		12.2
Cotabato	8.2			13.7		2.5	5.6				19.8		38.4	1.3	8.1	8.9
Cagayan, Misamis	1.5	1.5	6.4	15		2	2.3	26.1			8.9	9.4		.5	9.9	19
Dapitan	.3			3.1		3.6	5.1			1	2.8			.3	.3	9.1
Butuan	3.8		4.6													37.1
Dumaguete	3.3		1.7					4.9								4.8
Yap, Western Carolines	.8			4.3		12.2	4.6		.5	.3	4.1	2	1	2.5		6.6
Tagbilaran															4.8	24.6
Iwahig	17.3		.3	24.6		.1										2.6
Surigao	26.7			7.6			5.1					4.1		3	3.8	.8
Maasin																12.1
Cebu			.5							4.6		32	12.2	2.	3.8	38.4
Iloilo	14.8	5.3	9.1		1.3	9.4							21.9			12.5
San Jose Buenavista	8.4	29.2	3.3	.3	1.5		10.4	7.4	1.3		.3	28.4	9.7			54.6
Cuyo	74.7	83.3	21.3	4.6						1.3			5.6	3.8		6.1
Ormoc	25.6		.8					6.9								1.5
Guiuan							34	15		.3	8.4				4.3	6.9
Tacloban	13				.5	2					1				9.4	7.6
Capiz	1.8	12.7	2.8	.3	2	17.8						4.6		31.2	1.3	1.5
Borongan	36.1			5.3	8.6		2.3	5.1			1.8			.3	.5	10.9
Calbayog	13	.5	7.9	3.6			.8	13.5	6.6		1.3				2.5	9.1
Masbate	3.8	26.7	4.1													7.6
Romblon	41.9	59.2	18	.3					5.6	3.6	3.6		2.5			11.9
Batag	7.6		2	7.4												3.6
Gubat	2.5	17.8	12.5	3.8	2.5						1.3			1	23.9	25.4
Legaspi	1	21.9	15.2								3	.5	2.8		1.8	9.2
Sumay, Guam	6.4	12.7							2.5	1.3	2.6			1.3		
Calapan	37.6	20.3	17.7	.3								.3			.5	3.8
Virac	2.3	7.9	10.9	1				4.6		8.9			1.3		10.2	4.3
Nueva Caceres	50.3	22.7	2	7.1				4.7		2		20.8	3		20.1	27.9
Batangas	80.5	44.4	27.4	5									.8			27.7
Atimonan	17.7	33.8	57.9													14
Ambulong, Tanauan	32	70	42.2					30.7				.8	2.5		4.3	
Silang	51.1	89.4	58.4			26.2			6.4			10.4				
Paracale	8.6	3.6	6.9	.5									7.9		1.8	
Santa Cruz, Laguna	19.8	56.1	49.8	1		.3	18.8					.3				.2
Manila	21.3	106.3	109.7	.3				6.4								3.3
Antipolo	33.8	192	59.5													
Iba	129.8	95.5	45.6	125.9	53			10.9		5.6	5.6	33.3	1.1			
San Isidro	8.7	53.4	38.4	7.1	1.6				.5				5.6	1.5		
Tarlac	5.6	6.3	36.3	17.5	1.5											25.9
Baler		13.2	13	.5								57.1	6.4		9.2	7.1
Dagupan	20.1	3.4	23.7	42.7	23.6								4.9			
Bolinao	36.2	45.1	26.1	85.1	67.1	1			2.8			1.5		1.5		.3
Baguio	186.9	6.3	10.7	53.2	34.2	7.9			1.3				2.8			3
San Fernando, Union	112.9	14.2	2.5	45	43.7									19.6		
Echague	.8		2.8									4.1				
Candon	101.4	55.1	1	13.7	66.3									3		
Vigan	155	(a)	(a)	(a)	84.5									16.5		
Tuguegarao	13.7	33.2	32.5											41.4		
Laoag	81.2	11.2	33.6	31.2	98.2	1.5			6.1				4.6			
Aparri	.3	2.8	39.4	25	3.8											
Santo Domingo, Batanes	55.4	2.3	.3	1.2	17.9	4										

* No observation.

Daily rainfall at the stations of the Weather Bureau, June, 1914—Continued.

Station.	Day of month.														Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo	80.8	.8	3.1	4.1	1.1		5.6						2.8		296.9
Isabela, Basilan	22.4	9.1	12.4			3.8	8.4			12.7			5.1	4.6	136
Zamboanga		12.4	6.1	12.4		23.1	.5			3.8				3.8	94.9
Davao		4.6	8.9		53.3	30.5	38.6						34.8		278.6
Cotabato	22.8	9.4	1		20.1	15.3	.3	1.5	6.6	19.8	.8		1.8	.5	206.4
Cagayan, Misamis	3.3	1.5		10.9	33	27.7	.8				3.8	8.1		.5	133
Dapitan	4.3			.5		2.5	21.1	13.7	8.6			14.7		10.4	154
Butuan	39.4	1.5	4.8		7.4	1	11.2	10.4		8.9		.8		4.3	148.6
Dumaguete	.5	9.9				18.8	5.1	3.6	13.5	13.2	1.5	1.3		8.4	90.8
Yap, Western Carolines	4.5		20.6	18.3	5.8	6.3	14.5	13	31.3	15	2.8	2.3		20.3	195.1
Tagbilaran				8.6	6.1	1	12.4	39.4					8.1	6.9	111.9
Iwahig				6.3		.2	9.5	2.2	4.6	.2		1	4.4	1.5	83.3
Surigao	56.4	3.8	1			.8	5.4	63.5	6.6	28.2				1.5	230.4
Maasin	30.7	24.6			15	50.6	33.8	40.1		6.6					17.3
Cebu	14	12.2	2.1		18	12.5	24.4	27.9		1.3					22.9
Iloilo	32.2	67.5	49	23.4	4.8	2.5	2.8	22.1	1	6.9		14.7	20	15	383.4
San Jose Buenavista	8.1	78.2	39.4	59.5	14.5	5.8	1.3	6.4	63	17.8	43.7	30.2	65.3	101.3	640.7
Cuyo	7.4	8.7	7.4	3.8	84.6			4.8		1.8	9.7	33	72.1	91.5	526
Ormoc	12.4	33.9	1	.8	3.3	27.7	29.5	1.6	.3	35.6	30.4	.5	10.4	32	297.4
Guiuan	60.9	22.4					19.6	.8			27.7				208.6
Tacloban	35.1	99.2			4.3		32.3	.5	1.8	.3				2.8	56.9
Capiz	1.8	34.3	34.3	14.7		30.2	.3	5.3	6.1	.3		12.8	.9	.8	217.8
Borongan	47.5	63.5	1	4.3			13.2	2.5	.3		2.8				20.6
Calbayog	48	116.8	1.3		1	21.1	18.7	10.7	1.5	1				2.5	301.9
Masbate	6.4	41.5	5.6	.3						2.8		10.2	1.5	1.5	104.4
Romblon	40.7	39.6	79.5	32.3		5.8		.3		27.4	1.8		1.5	4.6	392.5
Batag	14	190.6					3.3	59.7	30.2	3					1.8
Gubat	50.8	71.9					1.5	2	27.4		3.8				249.6
Legaspi	7.2	173.5	5.6	2.8			8.4		2.8			1.3	4.3	4.1	271.8
Sumay, Guam			2.6	3.8	1.3	5.1	2.5	5.1	5		21.6	12.7	20.3	10.2	117
Calapan		34.6	54.6	6.4	1	.3	27.9	.5					1.3		212.2
Virac	13.2	105.9	42.2		79		.5		9.1	1.8	.5	7.4			311
Nueva Caceres	1.3	165.4	61.9	4.6		17	2.9	7	2.8			.5			424
Batangas	5.1	26.2	74.6	5.3				5.1				3	2.5	.3	303.4
Atimonan	51.8	119.4	109	11.4						8.9		.5			424.4
Ambulong, Tanauan	3	23.9	61.6	4	14.2	.8		26.4			14.5	23.6	9.1	.8	360.1
Silang		19.8	68.8	4.3	6.6	7.9		14.8		18		4.6	34.6		425.6
Paracale	25.6	138.1	25.4				9.9		19.3	11.7	.5				259.8
Santa Cruz, Laguna	.8	60.7	135.9	1	1.3	.8	2.8	.5	1.8		.8		13		365.7
Manila		1.6	71.7	8.3					1.3	8.6		23.7		8.4	367.9
Antipolo	2.6	40.6	253.5	1.8	.8				3.8	9.7	8.6	12.7	1.3		624
Iba	8.8	.8	167.7	67.8	17.1	.3			1.3		2.5		2.4	12.3	787.1
San Isidro		3	92.5	20.1			2.3	1.8		13	4.8	2.3	2.5		259.1
Tarlac		8.9	94.3	9.4	3.3			2.5		45.7					257.2
Baler	2	24.1	162.8	6.1	41.1	20.8	7.4		1.8	3					375.6
Dagupan	3.6	12.2	70.9	20.6	8.1	124.5			63.5						424.6
Bolinao	20.8		139.9	16.3		26.4		.5			3				13.6
Baguio	1.3	4.6	105.6	1.3	1.6	19.3	.8			3.8					9.7
San Fernando, Union		.3	103.7	2.6		18.3	.3							13.2	376.3
Echague	6.1	19.8	28.2				1	6.1							69.2
Candon			36.8	1.3		14			7.6	1.5					315.2
Vigan	13.2		11.8	1.1		.5			4						311.5
Tuguegarao		5.8	38.4		25.4	5.3		4.6							158.9
Laosg	18.5		3.5		1.8										291.4
Aparri		1.8	10.4		1.3	2.3								2.5	89.6
Santo Domingo, Batanes			7.7	2.3	1.3	.3	2					.6	9.6		104.9

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, JUNE, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Dapitan.		Butuan.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.6	22.7	32	23.1	29.5	24.9	30.7	25.3	33.2	23	32.4	24.8	32.4	24.8	31.5	24.6
2	32.9	23.4	32.6	22.2	30	22.5	31.7	23.5	33.5	22.6	33	24.9	32.7	24.8	32	24.1
3	33.2	24.2	33.6	22.9	30.5	24.9	31.7	22.3	33.4	22.6	32.4	24	33.7	23.3	31.8	24.9
4	32.4	23.6	34	22.7	31	24.2	30.2	22.9	33.8	22.2	33	23	35.7	24	31.5	24.1
5	33.8	24.5	33.6	23.9	31	25.4	32.2	22.2	33.8	21.9	32.1	22.8	34.3	22.6	34	24.4
6	34.9	23.4	34.2	23.1	30.5	24.4	31.8	22	32.3	22.9	32.3	23.2	34.6	23	32.8	24.7
7	30	22.6	32.8	23.1	30	23.5	32.2	22.1	34.5	22.1	32.4	23	36.1	24.4	31	23.6
8	30.5	22.2	32.6	23.1	30.1	23.5	32.5	21.5	34.1	21.7	32.6	22.7	35.8	23.9	32.5	23.5
9	30.2	21.8	30.6	22.1	29.9	23	32.6	22.5	34.7	23.4	33.3	24	34.7	24	34	24.4
10	30.7	21.9	31.8	21.7	29.9	23.5	32.5	24.3	33.2	23.6	33	24.5	32.3	23.5	34.5	23.6
11	31	22.1	32.2	22.1	29.7	23.9	32.7	23	33.4	23.4	32.9	23.5	34.2	23.3	33.2	24.6
12	31.9	21.8	31.2	22.6	29.1	23.4	32.2	22.2	33.3	23.2	33.1	25.2	35.7	23.8	33.2	23.6
13	31.6	21.1	31.6	22.2	30.6	22.9	32.7	22.3	34.7	23.3	33.3	25.1	30.1 ⁷	23.3	34.1	23.8
14	31.5	21.8	32.1	22.9	31.3	23.5	33.2	22.9	32.5	22.5	33.1	23.8	35.2	23.2	32.3	23.9
15	32.9	21.5	32.6	23.1	29.5	23.8	32.7	21.9	32.5	23.6	33.5	23.6	34.7	23.2	32	24.5
16	31.9	21.8	32.1	22.5	30	23.4	32.8	23.5	30.9	23.6	33.5	24.3	35.9	24.2	31.5	23.9
17	31.8	22.3	30.1	22.1	29.1	23.5	29.2	21.9	30.1	23.6	33.5	24.3	35.9	24.2	31.5	23.9
18	29.6	22.1	29.6	22.8	28.3	24	31.9	22.2	30.2	23.4	31.6	23.7	33.6	23.8	26.1	24.3
19	32	23.8	32.6	22.1	30.5	23.6	31.2	23	30.5	22.9	31.2	24	31.5	23.3	27.3	23.7
20	31.9	23.9	33	22.1	30	23.5	31.2	21.3	32.3	23.3	32.9	24.4	31.9	23.8	31	22.7
21	29.7	23.3	33.1	23.5	28.5	23.8	32.7	22	32.1	23.1	32.3	22.9	33.5	22.5	30.5	23.4
22	32	21.9	32.8	22.1	29.4	23	30	22	30.6	22.8	31.5	23.2	31.9	24	29.5	24.6
23	30	22.2	30.8	23.5	28.5	21.8	30.1	22.6	27.4	22.6	28.3	24	33.3	23	26.5	24.2
24	31.4	22.5	32.7	23.8	30.4	23.3	28.7	22.3	29.7	22.8	30.7	22.8	30.1	23.5	28.5	23.1
25	32.8	22.8	33.6	22.6	29.5	23.4	31.2	21.3	30.6	22.4	30.1	22.5	32.3	23	28.1	23.6
26	31.9	22.8	31.1	23.1	29.5	24.5	30.7	23	29.8	22.7	30	23.4	30.9	23.3	27.5	24.2
27	32.9	23.1	32.1	22.5	30.3	23.4	30.2	23.5	28.8	22.8	31	24.2	30.9	23.5	29.6	23.9
28	32.8	25.1	31.6	22.5	30.5	23.4	30.7	23.4	30.7	22.6	33	22.5		22.6	31.7	23.7
29	28	24	32.2	23.8	29.5	24.2	30.2	24.3	30.9	23.5	32.3	24.2	34.3	23.8	30.6	24.6
30	32.4	23.8	32.8	23.3	31	24	30.7	22.8	32.5	23.6	32.9	24	31.7	23.2	30.8	24.5
Mean	31.6	22.8	32.3	22.8	29.9	23.6	31.4	22.7	32.1	22.9	32.2	23.7	33.3	23.5	31	24

Day.	Dumaguete.		Yap, Western Carolines.		Tagbilaran.		Iwahig.		Surigao. ^a		Maasin.		Cebu.		Iloilo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.4	25.9	33	25.2	33.6	25.9	28.8	23.3	31.8	24.8	30.4	26	30.4	27	28.5	24
2	29.8	24.6	33.1	26.2	31.6	25.3	30.1	22.6	31.5	23.8	29.8	24.3	32.6	26.4	30	26
3	32.3	24.6	32.7	26.9	31.6	24.4	31.2	24.3	31.2	24.8	30.5	26.4	31.9	25.9	30	24.4
4	31.1	23.5	33.8	25.5	31.6	24.9	32.5	22.5	31.5	24.1	31.5	25.5	32.4	26	30.5	25.1
5	31	24.8	33.9	24.5	31.6	24.6	33.1	21.4	31.3	23.9	31.7	24.2	32.1	26.2	30.5	25.8
6	31	24	33.8	25.5	32	23.7	32.7	22.8	31.6	24.8	32.5	25.1	32	25.7	33.4	24.3
7	30.8	24	33	24.2	32.5	23.6	33	21.9	30.5	24.6	32.4	24.4	33.1	25.8	32.2	25.4
8	30.5	25.1	33.7	24.4	31.8	23.9	32.8	22.6	30.7	24.3	31.5	24.4	33	26.3	32.5	25.8
9	30.2	25.5	34.4	25	32.3	23.6	33.2	22.6	31.2	24	32.8	24.3	33.1	26.7	32.3	25.4
10	31.5	25	33.2	24.5	31.6	23.9	32.3	22.8	31.6	25.6	32.5	25	32	26.4	31.9	26
11	31.1	24.8	33.7	24.5	32.2	24.1	32.8	22.9	30.3	24.3	32.6	24.4	33.4	23.5	32.7	25.4
12	30.3	25.4	33.2	24.3	31.9	23.7	33.5	21.8	31.3	24	32	24	32.3	25.4	32.7	23.5
13	30.8	25	33.7	24.1	31.3	24	33.5	22.3	31.9	23.9	34	24.6	32.9	23.7	33.7	24.5
14	32.3	24.9	31.7	25.2	32.2	24.5	33.1	21.6	30.8		31.5	24.2	33.9	24.9	32.6	25.4
15	31.3	25	32.7	24.5	33.4	24.1	33.3	22.4	30.5		30.8	23.6	33.5	26	33.1	25.5
16	32.3	25.3	33.7	26.3	31.4	24.2	34.4	22.3	30		30.6	24.2	33.8	23.8	32.2	22.9
17	31.7	23.6	33.7	23.6	31.4	23.6	33	22.8	27.9	24.9	30.5	24.4	30.5	23.5	32.2	23.1
18	30.8	24.1	33.7	24.4	28.9	25	34.3	22	28.2	24	30	24	28.6	24	28.2	24
19	32.1	23.9	32.1	25.2	31.2	25.2	31.5	25.3	32.2	23	31.5	25.7	30.5	25	26.6	22.4
20	32.7	24.2	32.2	23.3	32.4	25.5	32.8	22.9	31.9	24.5	31.3	26.2	31.3	26	30.4	23.1
21	32.3	23.8	32.1	25	31.1	23.6	31.5	21.8	32.5	24.1	31.9	24	30.3	22.8	29.6	23.4
22	30.7	24.8	33	25.6	31.7	23.4	32.5	23.3	31.6	24.3	31.1	23.3	31	23.2	29.7	24.4
23	30.1	23.1	32.3	24	29.9	24.5	32.9	22.9	30.2	24.5	28.7	24.4	31.6	22	31.5	24.3
24	31.5	23.9	32.1	24.2	31.5	23.7	32.8	22.8	29.9	23.4	29.6	23.3	31.9	23.6	30.6	24.4
25	29.2	22.6	29.8	23.2	28.3	23.3	32.6	22.3	27.7	23.2	30.8	23.2	29	24	30.4	24.1
26	30.8	23.5	29.1	22.9	31.3	24.1	32.2	22.7	29.6	25	30.6	24.4	30.1	24.5	30.1	24.5
27	30.6	23.5	31.7	24.3	30.1	24.8	31.5	22.9	31.2	22.4	29.6	23.6	30.3	25.6	29	24.5
28	33.3	24.5	31.7	26.1	31	25.7	31.7	22.9	32.4	27	29.9	25.2	30.5	26	29.8	25.4
29	33.8	23.9	32.2	24.1	31.6	24.7	31.5	24.1	32.5	25.4	29.5	25.3	30.6	26	27.8	23.5
30	32.5	23.5	32.7	23.2	30.6	23.7	32.9	22.9	32.5	25	30.6	24.5	29.8	22.7	28.7	23.5
Mean	31.4	24.3	32.7	24.7	31.5	24.3	32.5	22.7	30.9	24.4	31.1	24.5	31.6	25	30.8	24.5

^a For this station the minimum temperatures from 1st to 26th are taken from a self-recording instrument.

Maximum and minimum temperatures at the stations of the Weather Bureau, June, 1914—Continued.

Day.	San José Buenavista.		Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1	28.8	25	29.3	24.1	31.2	23.4	30.6	27.3	31.5	23	29.9	25.6	34	23.6	31.1	23.7
2	30.3	24	30	23	30.9	25.3	30.4	25.1	31	23.2	30.5	25.2	33	22	31	24
3	30.1	24.1	28.7	23.5	30.9	24.2	31.3	27.5	31.9	25.6	31.9	23.7	31.8	24.1	29.7	24.5
4	31.3	24.6	31.3	24.3	31.2	23.6	31.4	26.8	31.8	24.6	35	24.2	32.1	23.6	31.3	23.4
5	32.6	25	31.8	24.2	32.3	23.4	31.5	26.1	32.2	24.4	32.6	23.9	32	23.4	31.4	23.9
6	34.7	23.7	31.8	25.1	32.1	22.9	31.8	26.1	32.5	25.8	34.2	23.2	32.2	22.8	31.5	22.9
7	33.2	24.1	32.2	24.8	32.1	22.2	32	23.5	32.5	24.2	33.2	24.2	31.4	22.8	31.6	22.8
8	33.3	23.6	32.7	25.4	32.1	23.6	31.5	23.2	32.7	24.1	33.5	24.7	31.7	23	32.6	23.6
9	33.8	24.1	32.8	25.1	31.7	22.5	31.2	23.5	32	24.4	33.5	25.6	32.5	23.3	32.8	23
10	34.3	25.4	32.7	25.6	32.5	21.1	31	23.5	32.5	24.6	33.8	24.5	32.5	22.6	31.6	24
11	33.8	24.7	32.7	24.8	32.8	22.6	32.4	24.3	32.1	24.6	33.6	25	32.3	23	31.4	23.8
12	34.2	24	32.4	25.8	32.7	22	32.1	23.6	32.4	23.8	32.9	23.6	32.6	23	31.6	22.7
13	32.8	24.6	32.4	25.1	32.3	22.2	32.7	23.5	33.1	24	32	24.5	32.8	22	31.9	22.7
14	33.1	24.6	30.5	23.9	32.5	21.9	32.4	23.6	33.2	24.6	32.4	23.5	32.6	23.3	32.3	22.9
15	34.3	24	32.9	24.4	32.2	22.2	31.8	26.5	33	24.8	33.2	24.2	32.6	23.4	32.2	22.7
16	33.5	24.5	31.4	27.4	32.2	22.8	29.9	24.5	33.3	24.8	33.3	25.2	31	23.3	33	23.2
17	32.7	23.1	31.7	25.1	31.8	23	27.6	23.2	29	24.3	33	24.7	28.6	22.9	32	22.8
18	29.9	23.4	31.4	25.8	28.5	23.7	28.4	22.7	26.8	23.2	29.8	23.8	32.8	22.6	26	23.3
19	28.7	23.3	29.6	26.1	30.2	25.3	31	26	30.6	24	26.4	23.7	33	23.6	28.7	24.2
20	28.7	24.1	29.3	24.5	31.4	24.3	32	25.6	32.4	23.8	32.3	23.2	32.1	23.1	31.2	22.8
21	30.7	23	30.5	24.7	31.4	23.1	32.4	23.6	32.8	23.7	32.9	23.4	31.6	22.9	32.9	23.5
22	31.8	23.7	30.9	23.1	30.8	23.8	31.7	23.6	31.4	23.9	32.8	23.4	31.5	22.3	32.4	23
23	32.2	23.6	31.6	24.2	31.7	22.9	31.6	25.1	32.6	24.2	31.8	23.5	32.1	22.7	31.6	22.8
24	31.9	24.7	31.2	25	30.8	22.5	31.7	24.4	30.8	24.4	31.8	24.4	31.1	23.9	29.4	23.5
25	31.7	23.4	29.9	24.4	30.4	22.6	29.9	23	30	24	31.8	24.2	32.5	22.7	31.4	23
26	32.3	23	32.3	25.3	29.8	23.3	29	24.7	28.7	24.4	31.9	23.2	30.5	23.7	29.6	23.7
27	28.2	24.1	31.2	25.9	28.2	23.9	28.7	25.6	28.4	24.6	31.5	24.9	31	24.2	28.8	24.1
28	28.6	23.5	30.4	25	30.8	25.2	30.8	25.5	32.6	23.3	33.5	23.7	34	24.2	30.4	26
29	28.6	23.6	28.5	24.5	30.5	24.4	30.3	27.4	33.5	24.4	31	23.8	34.6	23.6	29.8	24.2
30	28.8	21	26.5	23.3	30.1	23.9	30.3	26.6	31.8	23.4	31.9	23.8	34.3	23.6	30.2	24.8
Mean	31.7	23.9	31	24.8	31.3	23.3	31	24.9	31.6	24.2	32.3	24.2	32.2	23.2	31	23.5

Day.	Masbate.		Romblon.		Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1	30.5	23.8	32.1	23.8	31	23.6	30.6	26.3	31.1	25.4	31.6	25	33.2	25.5	29.7	24.9
2	30.8	26.6	29.8	23.8	30	21.5	29.2	26.7	29.3	23.9	29.8	25.4	28.5	23.5	29.6	24.7
3	33.5	22.6	32.1	21.7	29.5	23.9	30.7	23.2	31.2	23	31	26.6	33.1	23	30.2	24.2
4	34.6	24.6	34.6	23.1	31	23	31.9	24.5	33.7	23.6	31	26	32.1	22.5	32.5	22.1
5	35.4	26.2	33.8	23.9	31	23	31.9	24.4	35.1	23.7	31.8	26	34	22.6	32.4	25.3
6	35.2	25.4	33.5	24.7	31	22.5	32.1	22.9	34.5	23.9	31.4	24	32.6	23	32	23.1
7	34.6	27	34.4	23.7	30	23.5	31.9	25.4	34.4	25.5	31.2	24.6	33.1	22.5	31.8	22
8	35.8	27.2	35.7	24.7	31	23.4	33.1	25.4	33.7	26.2	31.6	24.4	32.8	23.6	32.8	22.3
9	35.6	26.6	34.7	25.2	30	24.4	32.4	27	34.4	26.1	32.2	23.4	33	25	32.1	23.3
10	36.8	26.4	34.5	23.1	30.5	24.5	32.6	27.2	34	25.6	30.4	26	33.1	23	32.9	24
11	36.4	26.8	35.7	24	31.2	24.3	32.9	26.8	33.6	26.4	31.6	25	33.2	24.1	33	22.4
12	36.4	26.4	34.7	24.1	31	24.4	32.6	26.2	33.2	25	32	23.8	32.8	24.2	33.4	22.2
13	36.4		35	24	31.5	24.4	33.3	26.5	34.2	26.2	32	25.6	34	23	32.2	22
14	36.4		34.5	24.2	31.9	24.2	32.9	25.2	33.8	25.4	32	25.4	33.1	23.1	32.6	22.8
15	36	26.6	34.8	24.8	31.5	24	32.9	25.8	33.4	26.2	32	26.4	33.5	24.5	32.7	21.6
16	35.6	27.5	35	24.8	31.9	23.4	32.9	24.6	33.6	24.9	31	26.4	34.1	23	33.8	22.5
17	34.6	27.4	33.5	23.8	32	23.5	31.9	23.6	33.6	24.1	31.6	26.4	34.4	23	34	23
18	34.4	24.4	33	23.8			28.7	23.2	28.8	23.4	30.8	26.6	34.5	24.3	27.7	23.1
19	32.2	23.6	28.8	23.8	30.5	23	27.2	23.6	27.3	23.2	31	23	30.5	22.8	29	23.6
20	33.4	24.6	30.3	23.1	31	23.5	31.1	23.6	31.2	23.6	31.4	26	28.8	22.3	30.5	24.3
21	32	25.2	33.4	23.1	31.2	23.5	32.2	24.9	33.8	23.5	31	26	31.6	23	31.2	24.7
22	34.4	24.8	33.7	25.3	32	22.6	32	24	34.1	24.4	31.2	26	32	23.4	31	23.2
23	35.6	26.4	34.2	24.3	32	23.2	32	25.2	34.2	24.1	31.4	25.2	31.9	23	31.6	23
24	35.6	26.8	34.1	23.9	31	22.6	29.9	24.8	33.1	23.6	31	26.6	32.8	23.6	32.5	22.8
25	33.2	25.4	32.8	23.6	28.5	22	28	23.7	28.7	23.4	32	24.4	34.9	23.5	29.5	22.6
26	32.2	25.6	32.8	23.3	29.5	22.5	31.7	24.3	31.6	23.3	32	24	33	23.4	31.3	22.7
27	32.2	25.4	33.6	23.8	27.2	23.5	29.7	25.3	31	23.4	32.6	27	31.4	23.2	30.6	23.5
28	32.6	27.2	34.1	25.6	31.2	23.2	32.2	25.2	30.9	25.4	29.2	24.4	33.5	23	30.4	24.5
29	32.6	27.2	31.2	24.5	31.4	23.5	32.6	26	31.1	25.1	30	24.6	32.6	23.9	31.4	24.4
30	32.8	25.4	33.5	24.5	32	23.4	32.6	25.8	32.2	24.5	29	24.4	32	23.9	31.1	24
Mean	34.3	25.8	33.5	24	30.8	23.4	31.5	25	32.5	24.5	31.2	25.4	32.7	23.4	31.5	23.3

Maximum and minimum temperatures at the stations of the Weather Bureau, June, 1914—Continued.

Day.	Nueva Caceres.		Batangas.		Atimonan.		Ambulong, Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.2	22.4	31.3	26.3	30	25.4	29	25.2	28	18	30.8	26.3	30.4	25.6	30.2	24.7
2	28.6	22.8	27.1	23.6	28.4	24.3	27	24.5	27.6	17.5	28.8	24.6	28.2	24.1	27.6	24
3	30.7	21.4	26.6	23	28	23.6	26.9	23.6	27	17.7	29.2	24.3	27.2	24	26.5	23.4
4	32.5	21.9	33	23	31.5	23.7	33	23	26.7	18.3	32.4	24.3	28.4	24	33.1	23.1
5	33.1	22.1	33.8	23.6	32.5	25.7	31.8	25.2	27.5	18.8	34.6	25.1	33.6	22.5	33.5	24.1
6	34	23	33.1	24	33.6	24.1	34.3	23.6	29.2	18.5	33.8	25	33.6	22	33.8	24.2
7	35.2	22.4	34.5	23.5	32.5	24.1	35	23.5	29	18.9	32.8	25	34.2	23.5	35.2	23.8
8	34	21.9	34.3	24.8	32.5	24.3	34.3	23	30	18.6	33.2	25.2	33.7	24.8	34.3	23.8
9	34.1	21.6	34.8	24.6	31.5	24.7	34.8	24	30.6	18.9	33.2	25	34.1	24.5	34.5	23.2
10	33.8	21.1	34.5	24.6	31.8	24	35.2	24.2	30.3	18.7	33	23	34.2	23.5	34.5	24.4
11	35	22.1	34.3	24.2	31.5	23.8	35	24.1	30.7	18.4	32.8	25.1	33.9	23.6	34.6	24.5
12	34.3	21.3	34.8	25	32.7	23.5	35	24.4	31	19.3	33.6	24.4	33.7	24.5	34.9	25.3
13	34	21.1	34.5	24.4	32.4	24	34.8	23.5	30.6	19	32.8	23.9	34.6	24.6	34.7	24.5
14	34.6	21	35.3	24.4	31.4	24.3	34.9	23.9	30.1	18.4	32.4	24.2	34.8	24.7	35.5	23.3
15	34	20.8	35.4	24.8	33	24.4	34.5	23.9	29.7	18.5	32.3	25.6	34.1	24.8	34.9	24
16	33.6	22.8	33.3	23.4	31.7	26	33.9	23	30.5	19.1	32.8	25.4	32.3	23.8	34.3	22.9
17	32.8	21.4	32.4	23.6	32.1	25.6	33.3	24.5	30.8	18.7	32.7	24.8	34.1	23.8	34	23.2
18	28	22.4	30.3	23.5	28.2	24.3	31.4	24	29.4	18.2	29.5	24	27.8	23.8	33	24.1
19	28	22.5	26.8	22.6	27.3	22.9	26	23.6	28.3	17	27.8	22	27.8	23.5	28.6	23.2
20	31.3	22.8	27.2	22.6	29	24.2	28	23	28	17.5	30.8	24.6	27.8	24.5	28.7	22.7
21	32.6	22.5	31.5	23.8	31.1	24.9	32.2	23	28.7	18.7	31.1	24.6	29.9	22.9	31.6	23.6
22	33.7	23	31.8	23.8	30.5	24	33.8	23.4	29.3	18.8	31.7	24.1	32.9	23.6	33.3	24
23	32.5	22	33.5	22.6	31.4	23.9	33	23.7	29.8	18.3	32	24.5	32.9	24.7	33.7	24.3
24	33	22.3	31.8	24	30.4	23.5	32.3	23.5	30.1	18	31.8	24.7	31.5	24.7	32.6	23.9
25	28.5	22	31.8	24.6	31.4	24.8	32.3	23.5	29.2	18.5	29.7	24.4	32.3	22.5	33.2	23.6
26	30.8	22.1	32.3	22.7	30.5	24.2	33.7	23.4	30.5	18	29.8	24.2	32	23.4	32.5	23.3
27	33.1	22.9	32.3	23.4	31.4	24	33	24.3	30.9	18.8	31.2	24.6	32.9	23.4	32.8	23.7
28	32.5	23.8	32.6	25.8	31.8	24.4	32.6	24.6	31.3	19.6	33	25.3	32.2	25.2	33.1	27
29	32.2	24.8	32.4	25.6	31.6	26.4	30.8	24.9	31.5	18.8	33.8	26.2	31.9	25.2	32.1	26
30	32	24	30.3	24.3	31.9	25.5	30	25	29.1	19.2	34	26	31.1	24.5	32.3	24.8
Mean	32.4	22.3	32.3	24	31.1	24.4	32.4	23.9	29.5	18.5	31.9	24.7	31.9	24	32.8	24

Day.	Antipolo.		Iba.		San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.4	22.4	30.5	23.5	28.7	24.6	29.7	23.4	33.2	25.8	30.7	25	28.6	24.6	18.9	17.1
2	26.3	22.7	26.5	23.1	25.4	23.2	27.4	23.2	33.2	25.2	30.4	24.4	28.2	23.6	20.9	16.6
3	25.1	21.4	27	22.6	25	23	27.3	22.6	27.7	24.2	31.3	23.3	30.5	23.4	22.9	15.2
4	30.8	22.1	26.9	23	29.7	22.7	27.6	23	30.1	23.2	27.3	23.1	25.6	23.6	17.2	15.5
5	32.4	23.3	27.5	22.5	29.2	23.5	28.7	23.6	31.4	24.5	26.9	23.9	26.5	23.1	17.8	16.2
6	32.9	23.7	30.8	23.5	32.6	24	34.2	23.4	35.4	22.5	34	24	31.8	23.9	22.1	15.3
7	34	23	32	22.1	34.6	23.4	35.2	22.6	-----	22.1	35.8	24	33.6	22.7	24.6	15.8
8	34.3	23.3	32.5	23.3	34.5	24.4	36.2	24.4	34.2	24.8	35.8	25.2	33.1	24.2	25.6	16.9
9	34.7	22.7	32.8	23.4	35.5	24.1	36.2	24.4	34.1	24	37	24.8	32.5	24.7	25.6	16.6
10	34.9	22.8	33.3	22.2	35.3	24.6	36.8	25	31.6	24.2	36.5	24.7	33.1	25.6	25	16.5
11	34.2	23.1	32.9	23.6	35.5	24	36.4	24.3	31.7	24.1	36.3	25	33.5	25	25.3	16.4
12	34.3	23.7	32.6	23.8	35.6	25	36.7	24.4	34.4	24.7	35.5	25.6	33.6	25.4	25.4	16.9
13	35.3	23.6	32.4	23	36	24.5	36	24.3	36.7	24.2	37	24.9	32.9	24.6	25.7	16.2
14	35.6	22.7	32.5	24.1	34.6	23.8	35.6	23.4	32.1	24.1	35.8	24.2	33	24.3	24.6	16
15	34.4	22.6	33	22.5	35.4	23.2	36.7	23.1	31.6	24.6	36	24.5	33.5	23.9	25	16.6
16	32.7	22.2	33.1	23.4	33.9	24.2	37.7	24.5	31.2	23.5	33.8	25	33.5	23.3	24.9	16.3
17	32.8	21.8	33.5	23	35.5	23	36.6	23	35.9	24.6	37.3	24.5	34.1	24.8	26	15.4
18	32.7	22.5	32.8	23.6	34.9	24	35	24	31.9	23.9	36.6	24.6	34.4	24.4	26	16.1
19	24.7	21.7	27.2	24	27.1	22.1	26.5	23	30.6	24	29.2	23	30.7	24.2	19.6	16.1
20	27	21.7	29.5	24	26.5	22.4	27.2	22.8	28.9	22.2	29.9	21.9	26.4	21.1	21.5	11.8
21	29.9	22.3	28	22.5	29.1	23.5	27.8	23.6	30.6	23.5	29.8	24	29.1	23.8	19.2	16
22	32.6	22.5	31.2	23.5	32.5	24.5	28.8	23.9	29.7	23.8	35.2	22.6	31.1	22.5	24.8	16.1
23	33.7	22.8	34	24.3	33.2	24.9	34	23.9	31.3	23.6	34.3	23.3	33.1	23	24.8	16.3
24	33.2	22.9	32.5	23.4	30.8	24.4	31.7	24	30.9	24.6	33.9	25	32	24.4	23.2	16.4
25	32.4	22.8	32.1	22.3	32.8	23	34	22.5	30.7	23	35	23.5	32	24.7	23.8	16.1
26	32	22.3	32.4	22.8	34.2	23.2	31	24.5	31.4	23.6	32.9	24.1	32.8	25.1	25.7	15.2
27	31.4	23	32	24.5	31	24.5	33	24.4	32	23.9	33.8	25	32.5	24.6	22.9	15.9
28	30.9	23.8	32.3	23.5	32	24.3	34.5	23.7	33.6	25.1	32.8	26.6	33	24.6	24.4	15.8
29	28.8	24	33	23.5	33.7	24.5	35	23.6	34.2	25.5	33	25	32.6	23.5	23.2	14.7
30	29.4	23	31.3	25.3	32.4	25.2	33.7	24.7	35.7	25.2	33.4	24.5	31.6	24.2	23.1	15.1
Mean	31.9	22.7	31.3	23.3	32.2	23.9	32.9	23.7	32.3	24.1	33.6	24.3	31.7	24.1	23.3	15.9

Maximum and minimum temperatures at the stations of the Weather Bureau, June, 1914—Continued.

Day.	San Fernando, Union.		Echague.		Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.....	29.3	24.9	33.5	24.7	29.7	27	29.6	24.2	30.6	25	31	25.5	29.2	25.9	27.8	24.5
2.....	32.4	24	34.7	24.3	29.7	26	-----	-----	34.6	24.4	31.1	24.9	31.2	25.1	28.5	25
3.....	32.4	21.9	33.8	23.4	30	24	-----	-----	34.2	24	32.7	25.4	30.7	23.1	28.6	25.3
4.....	29.3	24	32.8	24	28.4	25.5	-----	-----	32.6	23.7	30.6	23.9	29.6	22.7	29	24.8
5.....	27.4	23.9	33.1	23	26.5	24	28.2	24.2	30.4	25	29.6	23.5	27.5	24.1	27.4	24.6
6.....	33.5	24.7	38	21.4	31.5	24.9	32	25.2	34.6	23.6	33.5	23.9	33.1	25.1	29.2	25.6
7.....	33.6	23.4	38.3	23.5	31.4	25.1	32.2	25.5	38.2	25.2	33.6	24.6	33.8	24.6	30.4	25.3
8.....	34.1	24.3	38.6	23.4	32.5	25.2	34	24.8	38	24.6	33.7	24.3	33.9	24.4	31.6	24.7
9.....	34.4	24.8	39.4	22.8	32.1	25.8	33.5	25.7	39	24.5	34.2	25.1	34.3	24.2	31.6	24.9
10.....	33.6	23.5	39.1	23.8	32.5	24.7	33.2	24.9	38.8	24.3	34.5	23.5	33.6	24.9	31	25.3
11.....	33.8	23.9	40.3	22.8	32.6	25.5	33	25.3	38.9	24	34.2	24.3	33.4	24.4	31	24.3
12.....	33.6	24.9	39.8	24.5	32.6	25.6	33.5	25.5	38.7	24.2	34.3	24.5	33.1	24.1	31.5	24.3
13.....	33.4	24.6	38.3	23.2	32.5	26	33	23.2	39.6	24.5	33.8	24.4	34.2	24.7	31.5	23.5
14.....	33.9	24.4	38	22.4	31.7	24	32.7	24.3	40	23	33.6	23.6	33.4	24.6	32.3	24.8
15.....	33.5	22.4	38.7	21.9	31.9	24	31.8	24.7	38.7	23	34.1	24.7	35	23.6	32.4	26.8
16.....	33.7	23.5	37	22.9	31.9	24.8	33.5	24.8	39.1	23	34.9	23.3	33	23.1	32.8	26.8
17.....	34	24.5	37.5	22.6	32.7	27	33.2	25.1	40	23.9	34.5	25	33.8	24	32.7	27
18.....	33.5	24.4	34.7?	22.8	32.4	25.4	33.4	25.4	37.6	24.6	34.1	24.9	34.4	24.1	32.7	27.2
19.....	30.6	24.8	25.6	23.3	28.5	26.7	31	25.3	27.3	23.9	32	25	29.1	24.1	32.6	26.5
20.....	29.2	21.7	31.1	21.3	28.2	23	28.2	21.6	33.1	26	30.5	24.5	33.1	25.1	32.3	26.1
21.....	30.1	24.3	33.8	22.8	29.6	23	29.6	25.8	35.2	25?	32	24.5	31.6	24.6	31.5	27.4
22.....	32.8	24.7	31.3	23.8	31.6	25.7	31.5	25.7	32.5	24	31.7	24.8	31.4	24	31.6	25.7
23.....	32.7	23.4	33.8	23.4	31.1	24.9	31	25.7	32.3	24.2	31.8	24.5	31.3	23.6	32.5	26.2
24.....	31.7	24.6	35.1	23.9	31	25.9	33	24.3	34.8	24.3	33.2	24	33.7	24	32.3	26.2
25.....	32.9	23.4	34.9	21.4	31.1	25.2	31.6	24.9	36	22.5	34	24.9	33	22.6	32.4	26.4
26.....	32.4	23.4	36.1	22.1	31.5	26.5	33.5	25.2	36	24	34.2	24.5	32.2	23.8	32.8	24.4
27.....	32.1	25	33.4	23.6	31.5	26.6	32.4	26.1	35.5	23.8	34	24.9	32	23	32	24.1
28.....	33.4	24.7	35	23.8	31.9	26	34.1	25	35	23.3	34.2	24	30.1	23.5	31.4	24.8
29.....	34.4	22.8	36.8	22.2	31.6	24.1	32	23.7	36.6	23.6	33.8	22.5	29.9	23.1	32	25.8
30.....	33.5	23.4	33.8	21.3	31.6	23.5	33	24.6	37.5	23	34.6	23	31.9	21.6	32.1	26.4
Mean.....	32.5	23.9	35.7	23	31.1	25.2	32.1	24.8	35.8	24.1	33.1	24.3	32.2	24	31.2	25.5

SEISMOLOGICAL BULLETIN FOR JUNE, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

2, 15^h 10^m [2, 23^h 10^m]. Dapitan (NW of Mindanao). Oscillatory earthquake, direction NW-SE, intensity III, duration 2 seconds.

3, 6^h 15^m [3, 14^h 15^m]. Palanoc (N of Masbate). Earthquake of intensity III.

4, 15^h 35^m 28^{s*} [4, 23^h 35^m 28^s]. NW of Mindanao, SW of Panay and the Island of Cuyo. Earthquake of large extension, whose origin was in the Jolo Sea near the Cagayan group of islets. Its meizoseismic area was very much prolonged in the NNW-SSE direction to more than 300 kilometers in length for it was felt in Dapitan, Cuyo and a great part of the Island of Panay with intensity IV.

6, 0^h 11^m [6, 9^h 41^m]. Guam (Mariana Islands). Earthquake of intensity IV.

8, 11^h 03^m [8, 19^h 03^m]. Laoag (NW of Luzon). Oscillatory earthquake, direction E-W, intensity II-III, duration 3 seconds.

25, 3^h 06^m [25, 11^h 06^m]. Calapan (NE of Mindoro). Earthquake of intensity II-III.

25, 5^h 25^m [25, 13^h 25^m]. Legaspi (SE of Luzon). Oscillatory earthquake, direction ENE-WSW, intensity III-IV, duration 4 seconds.

28, 7^h 32^m 53^{s*} [28, 15^h 32^m 53^s]. Batangas (S of Luzon). Oscillatory earthquake, direction SW-NE, intensity III, duration 5 seconds.

29, 10^h 50^m [29, 20^h 20^m]. Guam (Mariana Islands). Earthquake of intensity IV.

30, 15^h 56^m 15^{s*} [30, 23^h 56^m 15^s]. N of Luzon. Earthquake of large extension and small intensity, felt throughout all the provinces of Luzon, to the north of parallel 16° N. Its epicenter appears to have been within the island to the W of the Cagayan Valley in the eastern spurs of the central Cordillera, but the intensity did not pass No. IV of the scale in the stations of the central part of the valley, though the duration was great both to the east as well as the west of the epicenter.

30, 17^h 05^m 28^{s*} [July 1, 1^h 05^m 28^s]. NE of Mindanao. Earthquake of intensity IV. The origin of the shock was very probably in the northern part of the Agusan Valley. It had a long duration in Butuan, where the principal shocks appear to have proceeded from N and NNW. It was felt also in Surigao, but with much less intensity and with a direction SW-NE.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0h. Instrument: Wiechert seismograph; 1,000 kilograms. $A_N: T_0=6.4, \epsilon=4.4, \frac{r}{T_0^2}=0.045;$
 $A_E: T_0=6.3, \epsilon=3.5, \frac{r}{T_0^2}=0.052.$ Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
161	2	Iv	eP	h. m. s.				NW of Mindanao, SW of Panay and Cuyo Island.
			L	3 45 22				
			F	46 10				
162	4	Iv	eP	3 05 57				
			L	06 19				
			F	11				
163	4	Iv	eP	15 35 28				
			eL	36 23				
			M _N	36 48	4-5	123		
			M _E	36 52	5-6		114	
			F	16 05				
164	6	Iv	eP	11 43 44				
			iL	44 06				
			F	50				
165	7	Iv	eP	20 33 51				
			iL	36 39				
			M _N	36 45	6	43		
			F	57				
166	9	Iv	eP	5 28 00				
			L	28 24				
			M _N	28 29	3-4	18		
			F	33				
167	11	I	e	23 03				
			F	25				
168	12	I	e	8 32 36				
			F	51				
169	14	I	eP	20 21 23				
			F	36				
170	16	Iv	eP	14 15 00				
			F	20				
171	20	Ir	eP	7 29 44				
			i _E	31 13	5			
			i _N	34 03	9			
			eS _E	37 02				
			eS _N	37 04				
			i _E	38 13	6			
			i _N	39 53	7			
			eL _E	44 24				
			eL _N	44 32				
			M _N	48 42	8	55		
			F	9 05				
172	20	Ir	e	10 33 22				
			L?	42 00				
			F	11 12				
173	20-21	Ir	e	23 45 20				
			L?	54 00				
			M _N	55 41	8	25		
			F	0 22				
174	21	I	e	8 13 25				
			F	52				
175	23	I	e	4 03 53				
			F	31				
176	25	Iv	eP	0 11 54				
			L	12 15				
			M _N	12 36	1	75		
			F	25				
177	25	II _r	eP	19 13 02				
			iS	17 48				
			iL	21 47				
			M _N	24 44	8	475		
			M _E	25 45	10		561	
			F	21 32				
178	26	I	e	4 59 53			End overtaken by following earthquake.	

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.	
						A _N μ	A _E μ		
179	26	I	e F	<i>h. m. s.</i> 6 02 18 36				Batangas (S. of Luzon).	
180	28	Iv	eP L M _N F	7 32 53 33 10 33 29 39	2	220			
181	28	Iv	eP L M _N F	18 44 29 44 43 44 54 50	1	112			
182	30	IIv	eP eL M _E M _N F	15 56 15 56 51 56 56 57 08 16 26	4 3	959 775			Northern Luzon.
183	30	Iv	eP F	17 05 28 17					NE of Mindanao.

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

2, 15^h 10^m [2, 23^h 10^m]. Dapitan (NW de Mindanao). Temblor oscilatorio, dirección NW-SE, intensidad III, duración 2^s.

3, 6^h 15^m [3, 14^h 15^m]. Palanoc (N de Masbate). Temblor de tierra de intensidad III.

4, 15^h 35^m 28^{s*} [4, 23^h 35^m 28^s]. NW de Mindanao, SW de Panay e Isla de Cuyo. Temblor de tierra de grande extensión, cuyo origen se hallaba en el Mar de Joló hacia el grupo de los islotes Cagayanes. Su área meizosísmica debía ser muy prolongada en la dirección NNW-SSE de más de 300 kilómetros de longitud puesto que fué perceptible con intensidad IV en Dapitan, Cuyo y gran parte de la Isla de Panay.

6, 0^h 11^m [6, 9^h 41^m]. Guam (Islas Marianas). Temblor de tierra de intensidad IV.

8, 11^h 03^m [8, 19^h 03^m]. Laoag (NW de Luzón). Temblor oscilatorio, dirección E-W, intensidad II-III, duración 3^s.

25, 3^h 06^m [25, 11^h 06^m]. Calapan (NE de Mindoro). Temblor de tierra de intensidad II-III.

25, 5^h 25^m [25, 13^h 25^m]. Legaspi (SE de Luzón). Temblor oscilatorio, dirección ENE-WSW, intensidad III-IV, duración 4^s.

28, 7^h 32^m 53^{s*} [28, 15^h 32^m 53^s]. Batangas (S de Luzón). Temblor oscilatorio, dirección SW-NE, intensidad III, duración 5^s.

29, 10^h 50^m [29, 20^h 20^m]. Guam (Islas Marianas). Temblor de tierra de intensidad IV.

30, 15^h 56^m 15^{s*} [30, 23^h 56^m 15^s]. N de Luzón. Temblor de tierra de mucha extensión y poca intensidad, sentido en todas las provincias de Luzón situadas al N del paralelo 16° N. Su epicentro parece se hallaba dentro de la isla al W del gran Valle de Gagayán en los estribos orientales de la Cordillera Central; su intensidad sin embargo no pasó del grado IV en las estaciones de la parte central del expresado valle, aunque tuvo muy larga duración así al E como al W del epicentro.

30, 17^h 05^m 28^{s*} [1 de Julio, 1^h 05^m 28^s]. NE de Mindanao. Temblor de tierra de intensidad IV. El origen de este temblor probablemente se hallaba en la parte N del Valle del Agusan. Tuvo larga duración en Butuan, donde los principales choques parecían proceder del N y NNW; sintióse también en Surigao pero con mucha menor intensidad y dirección SW-NE.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

BULLETIN FOR JULY, 1914.

METEOROLOGICAL BULLETIN FOR JULY, 1914.

By REV. JOSÉ CORONAS, S. J.

Chief, Meteorological Division, Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was slightly greater than during July, 1913, but less than the normal. In Manila the pressure was 0.52 mm. greater than in 1913, and 0.46 mm. less than the normal. The highest barometers were observed generally on the 29th; the lowest on the 6th or 7th in Luzon, and the 23d in the Visayas and Mindanao.

The mean monthly temperature was a trifle higher than that of last July. In Manila it was equal to the normal and greater than last year by 0.5° C., while the extremes were 33.5° C. on the 31st and 22.7° C. on the 17th. In Baguio the extremes on Mount Mirador were 25.6° C. and 14.4° C., and in the valley 25.7° C. and 14.5° C.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR JULY, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from July, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from July, 1913.	Highest.	Day.	Lowest.	Day.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		<i>mm.</i>		<i>°C.</i>	<i>°C.</i>	<i>°C.</i>		<i>°C.</i>	
Tagbilaran	757.77	+0.23	759.36	31	755.92	23	27.9	+0.8	34.5	15	22.8	31
Surigao	57.43	+ .25	59.37	31	55.62	23	28.1	+ .4	33.6	12	22.8	29
Cebu	57.51	+ .26	59.39	29	55.67	23	28.1	+ .5	33	29	23.8	6, 30
Iloilo	57.51	+ .42	59.18	29	55.58	23	27.3	+ .5	31.8	30	22.3	1
Ormoc	57.73	+ .36	59.60	29	55.90	23	27.5	+ .1?	32.2	3	21.3	30
Capiz	57.28	+ .44	59.32	29	55.33	23	27.2	+ .7	35.2	10, 15, 16	22.2	29
Calbayog	57.21	+ .50	59.45	29	55.17	6	27.7	+ .4	33.1	15	22.3	30
Legaspi	56.53	+ .42	59	29	53.98	6	27.6	+ .4	34.8	30	22.6	8
Atimonan	56.26	+ .42	58.83	29	53.42	7	27.6	+ .6	34.4	15	22.6	17
Ambulong, Tanauan	56.31	+ .41	58.73	29	53.46	7	27.4	+ .8	34	19	22.5	29
Paracale	56.27	+ .37	59.12	30	53.26	7	28.2	+ .8	35.3	9	23.3	18
Manila	56.78	+ .52	59.33	29	53.66	7	27	+ .5	33.5	31	22.7	17
San Isidro	56.80	+ .66	59.40	29	53	7	26.8	+ .4	33.2	22	22.1	29
Dagupan	55.71	+ .48	58.46	29	51.74	7	27.1	+ .1	35.8	19	21.8	27
Bolinao	55.87	+ .61	58.76	29	51.47	7	26.7	0	33.1	19	22.2	27
Baguio*	634.65	+ .60	637.12	29	630.56	7	18.1	0	25.6	20	14.4	27
Vigan	755.76	+ .79	758.91	29	750.71	7	27.1	+ .1	32.2	1	21.7	26
Tuguegarao	55.39	+ .43	59.08	29	49.75	7	23.4	+ .6	38.5	24	22.6	15, 28
Aparri	55.10	+ .46	58.70	29	49.02	7	27.9	- .1	34.7	31	22.7	16

* The barometric readings of this station are not reduced to sea level.

Rainfall.—With the exception of the stations on the western coast of northern Luzon, practically all the rest had less rainfall than the normal and less also than last July. In Manila 399.3 mm. of rain fell, which is 171.3 mm. less than during July of last year, and 2.7 mm. less than the normal for the month. The total rainfall in Baguio was 1,464.7 mm. which is 155.6 mm. less than last year, and 426 mm. more than the July normal.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF JULY, 1914.

Station.	Total.	Departure from July, 1913.	Departure from normal.	Rainy days.	Departure from July, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from July, 1913.	Departure from normal.	Rainy days.	Departure from July, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	64.7	-16.8	-90.5	9	-4	16.8	4	Calapan	78.4	-293.3		12	-11	27.9	20
Isabela, Basilan	165.1	-18.9	-39.7	11	2	52.1	4	Virac	59.5	-313.5		10	-8	31.7	1
Zamboanga	133.5	-39.5	+32.7	9	2	42.2	4	Nueva Caceres	87	-314.9	-166.8	11	7	24.5	15
Davao	38.4	-44.5	-164.3	6	5	8.4	24	Batangas	140.8	-350.1		15	-8	29.5	6
Cotabato	245.4	-95.5	-41.8	13	9	47.8	2	Atimonan	58.2	-370.2	-165.7	12	7	19	3
Cagayan, Misamis	150	-25		14	1	41.4	21	Ambulong, Tanauan	219.1	-198.3		21	2	32.8	6
Butuan	25.1	-137.6	-95	7	8	7.6	21	Silang	450.5	-245.4	-24.2	17	5	59.7	6
Dumaguete	60.3	-93.7		9	6	26.7	30	Paracale	85.9	-373		12	7	32.2	15
Yap, W. Carolines	277.2	-151.4		25	+	64.8	17	Santa Cruz, Laguna	211.5	-176.3		19	7	48	16
Tagbilaran ^a	56.7					38.6?	30?	Manila	399.3	-171.3	-2.7	23	3	71.2	7
Iwahig ^b	69.6					13.5	25	Antipolo	613.5	-165.3		21	7	126.7	5
Surigao	97	-87.7	-58.7	8	-3	36.6	16	Iba	958	-699.5		27	-2	147.3	5
Maasin	138.2	-279.3	-132.9	6	-4	61.3	23	San Isidro	372.6	+47.9	+17	22	-2	51.6	29
Cebu	34.4	-107.8	-136.9	10	-8	7.9	6	Tarlac	412.1	-82.6	-21.6	21	4	78.5	29
Iloilo	389.9	-128.1	-62.3	17	-5	94.1	1	Baler	161.8	+12.3	-143.9	12	-6	46.8	18
San Jose Buenavista	675.6	-161.5	+80.6	23	-6	89.2	16	Dagupan	693.4	+84.7	+113.8	22	0	126.8	26
Cuyo	377.8	-245.6	-39.4	23	-2	54.1	16	Bolinao	799.9	-264.4	+121.3	25	-1	131.5	26
Mococ	153.8	-442.6	-157.9	11	-10	85.1	19	Baguio	1,464.7	-155.6	+426	27	3	213.4	26
Guiuan	98.9	-212.6		8	-9	47	20	San Fernando, Union	966	+129.7	+392.8	28	+6	136.9	7
Capiz	119.4	-225.9	-238.5	15	-2	56.4	17	Echague	230.2	-13.5		15	+1	124.2	15
Borongan	127.1	-146.3	-64.7	12	-7	57.9	19	Candon	1,003.7	-423.7	+291	22	+2	282.7	26
Masbate	108.1	-127.5	-101.8	9	-10	22.1	21	Vigan	1,086.8	-246.4	+408.5	29	+6	171.7	8
Romblon	115.6	-405.8	-182.4	15	-3	25.4	3	Tuguegarao	98.5	-430.8	-138.9	11	-7	34.6	14
Batag	41.1	-185.3		6	-5	18	20	Laags	1,098.8	+592		21	+1	155.4	8
Gubat	59.8	-290.4	-108.7	8	-10	17.1	5	Aparri	35	-183.4	-142.8	8	-4	11.9	15
Legaspi	191.7	-152.9	-64	16	-4	43.5	16	Santo Domingo, Batanes	119.2	-87.4	-167.4	14	-7	34	5
Sumay, Guam	643.7	+464.8		26	+5	96.5	23								

^a 27 days of observation.

^b 30 days of observation.

DEPRESSIONS AND TYPHOONS.

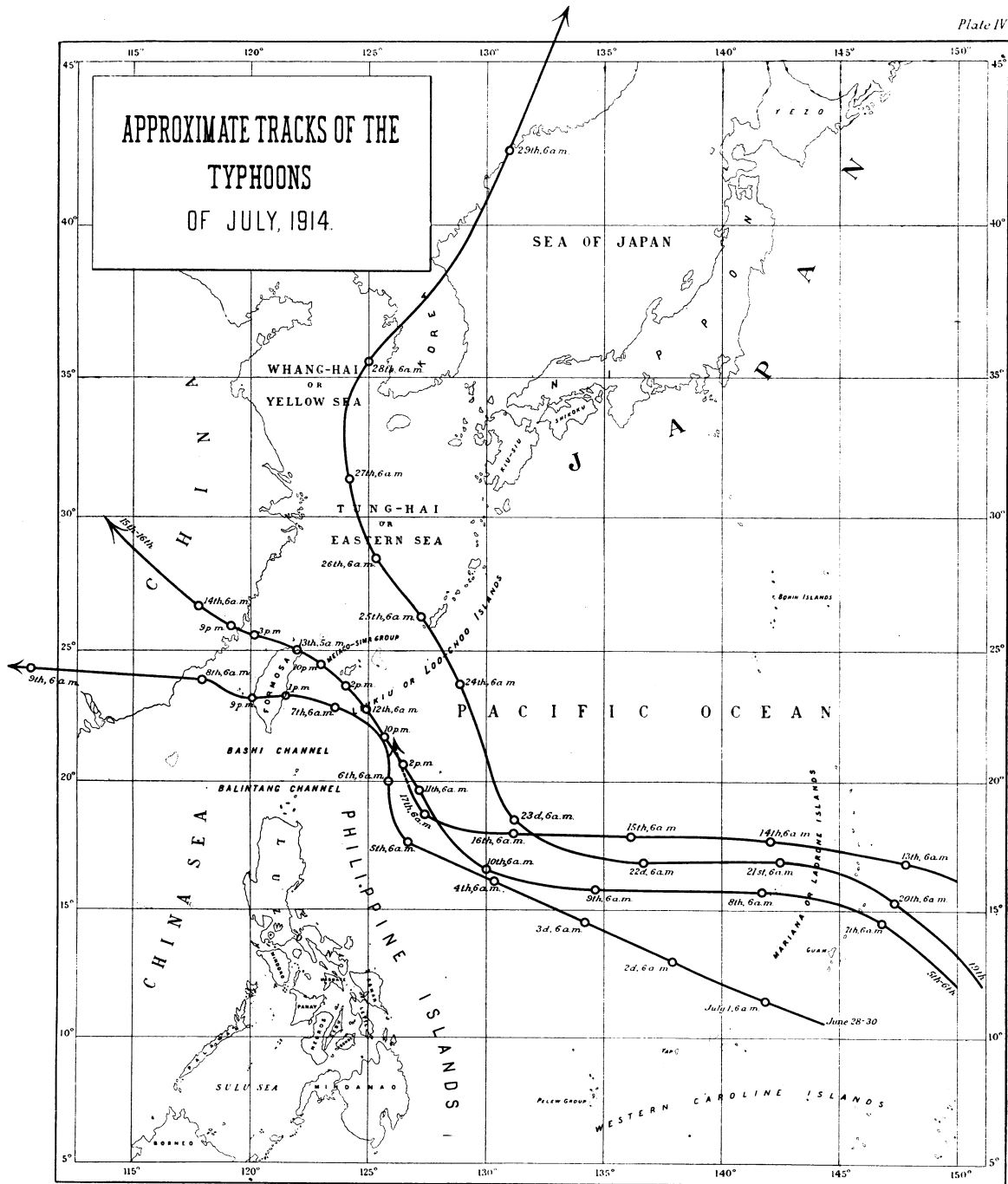
The Archipelago was under the influence of four different typhoons during the month, though none of the storms actually crossed the Islands. The tracks are given in Plate IV.

Two typhoons in Formosa: July 7 and 13.—From June 30 to July 13, three typhoons struck Formosa. In our June Bulletin we spoke of the first of these storms; we now take up the other two.

The typhoon of the 7th began near to the Western Carolines, to the S of Guam, not far from 10° lat. N and 145° long. E. According to observations from Guam and Yap, the typhoon was in process of formation from the 28th to the 30th of June, as was mentioned in the following note published on the 30th:

June 30, 11.30 a. m.: A typhoon has been forming for the last two days to the S of Guam over 1,000 miles distant from the Philippines.

The barometric minimum in Guam was almost identical with that in Yap, for the vortex passed just between the two stations in a WNW direction. The typhoon followed this direction with velocity of about 10 miles an hour, till the morning of the 5th when it began to move to the N at the same time that its velocity of translation decreased, so that it was no longer dangerous for the Philippines. During the afternoon of the 6th it recurved again to the W, at the same time becoming more developed and increasing again its velocity; from 5 a. m. to 1 p. m. of the 7th, or during the eight hours before reaching Formosa, the typhoon moved forward at the mean rate of 16 miles per hour, while actually crossing the island from 1 to 9 p. m. of the same day it had a velocity of only 10 or 11 miles, and while crossing the Formosa Channel, from 9 p. m. of the 7th to 5 a. m. of the 8th, it had the extraordinary speed of 17.5 miles an hour.



From the abundant material sent to us by Mr. H. Kondo, director of the observatory of Taihoku, concerning this storm, we take the following which will give a good idea of the force with which the typhoon broke over the island of Formosa.

The typhoon crossed the island on the afternoon of the 7th, only a week after the previous one passed to the North Sea on June 30. It was very severe, causing great damage. The following table gives the barometric minimum, the maximum force of the wind, and the rainfall in the stations of Meiacosima and Formosa.

Station.	Baromet- ric mini- mum.	Day and hour.	Maxi- mum force of wind.	Direc- tion.	Day and hour.	Rain in 24 hours.
	<i>mm.</i>		<i>m. p. s.</i>			<i>mm.</i>
Ishigakihima	739.9	7, 8 a. m.	47.0	ENE	7, 9 a. m.	5.0
Keelung	42.4	7, 4 p. m.	20.9	ENE	7, 3 p. m.	10.0
Taihoku	40.1	7, 3 p. m.	27.2	E	7, 10 p. m.	36.0
Karenko	31.0	7, 2 p. m.	37.8	NE	7, 10 p. m.	55.0
Taichu	30.1	7, 4 p. m.	20.0	NNE	7, 3 p. m.	2.0
Taito	33.0	7, 3 p. m.	21.3	S	7, 10 p. m.	95.0
Tainan	32.5	7, 5 p. m.	30.8	SSE	7, 11 p. m.	42.0
Koshun	36.1	7, 4 p. m.	21.3	W	7, 3 p. m.	111.0
Hokoto	34.0	7, 12 midnight	39.8	N	7, 5 p. m.	9.0

The official statistics of the damage done by the typhoon are:

Houses entirely destroyed.....	1,468
Houses partly destroyed.....	1,231
Houses damaged	2,802

The second typhoon which reached Formosa on the 13th formed to the ESE of Guam in about 13° lat. N and 150° long. E. Notice was given of it about seven days before it actually reached Formosa in the following warnings:

July 6, 11.50 a. m.: Another typhoon has been forming for the last two days to the ESE of Guam over 1,000 miles distant from the Philippines.

July 7, 11.55 a. m.: The typhoon of the Ladrone Islands is passing to the north of Guam, this morning, in the direction WNW or NWbyW.

Below are given the observations made in Guam during the passage of the typhoon to the N of that station. The barometric minimum 746.62 mm. was observed at 4 and 5 p. m. of the 7th with winds from SW, force 9.

METEOROLOGICAL OBSERVATIONS MADE AT SUMAY, GUAM, LADRONE ISLANDS, JULY 5 TO 9, 1914.

Date and hour.	Pres- sure.	Wind.		Weather.	Rainfall, 24 hours begin- ning 6 a. m.	Date and hour.	Pres- sure.	Wind.		Weather.	Rainfall, 24 hours begin- ning 6 a. m.
		Direc- tion.	Force.					Direc- tion.	Force.		
July 5:	<i>mm.</i>		<i>0-12.</i>		<i>mm.</i>	July 7:	<i>mm.</i>		<i>0-12.</i>		
6 a. m.	757.28	N	4	o		2 p. m.	747.39	WSW	8	o, q	
2 p. m.	55.20	NNE	3	o	5.1	3 p. m.	47.07	WSW	8	o, q	
July 6:						4 p. m.	46.62	SW	9	o, q	
6 a. m.	55.70	NNW	6	o		5 p. m.	46.62	SW	9	o, q	
10 a. m.	55.53	NNW	6	o, q		6 p. m.	47.50	SSW	9		
2 p. m.	53.53	NNW	6	o, q		8 p. m.	48.80	S	9		
7 p. m.	53.25	NNW	5	o, q		Midnight	49.22	S	9		61.0
Midnight	50.97			q	38.1	July 8:					
July 7:						2 a. m.	50.77				
2 a. m.	50.82			q		4 a. m.	49.97			q	
4 a. m.	49.80			q		6 a. m.	51.45	S	9	o, q	
6 a. m.	49.82	W	8	o, q		10 a. m.	52.65	SSE	7	o, q	
7 a. m.	49.50	W	8	o, q		Noon	53.02	SSE	6	o, q	
9 a. m.	49.39	W	8-9	o, q		2 p. m.	52.77	SSE	7	o, q	
10 a. m.	49.52	W	9	o, q		4 p. m.	53.35	SSE	7	o, q	64.7
11 a. m.	49.07	WbyS	10	o, q		July 9:					
Noon	48.64	WbyS	10	o, q		6 a. m.	57.15	SSE	6	o	
1 p. m.	47.92	WSW	8	o, q		2 p. m.	56.95	SSE	5		38.1

During the 7th, 8th, and 9th the typhoon moved almost directly west, as was mentioned in the weather notes of those days, but happily for the Philippines it inclined very much to the N on the 10th, as was stated in the following warnings:

July 10, 3 p. m.: The typhoon has been making very slow progress since yesterday: it may be that it tends to incline northwards, and if this be the case then all danger of stormy weather for Luzon will be at an end.

July 11, 8.30 a. m.: The inclination to the north of the path of the present typhoon is fully confirmed. Its center was situated at 6 o'clock this morning about 400 miles to the ENE or E of Aparri moving NW of NNW.

The typhoon kept this direction to the NNW or NW till the 12th, when it again curved in a very extraordinary manner to the W, and thus passed over the northern coast of Formosa at daybreak of the 13th. When it reached Formosa it was moving slowly, i. e., about 10 miles per hour. The following details were kindly furnished us by Mr. H. Kondo, director of the Taihoku Observatory:

The center moved slowly and decreased somewhat in intensity as it approached the island, while it was very severe in Ishigakihima. It was accompanied by heavy rainfall in southern Formosa and wrought great havoc. Some of the stations reported 1,000 mm. of rain in two days. The following table gives the barometric minimum and maximum force of the wind in our stations and in Ishigakihima (Meiacosima).

Station.	Baromet- ric mini- mum.	Day and hour.	Maxi- mum force of wind.	Direc- tion.	Day and hour.
	<i>mm.</i>		<i>m. p. s.</i>		
Ishigakihima	728.7	12, 4 p. m.	48.6	SE	13, 3 a. m.
Keelung	31.9	13, 5 a. m.	30.8	N	12, 10 p. m.
Taihoku	34.4	13, 6 a. m.	21.8	NNE	12, 9 p. m.
Taichu	39.9	13, 5 a. m.	21.0	NNW	12, 11 p. m.
Tainan	45.0	13, 12 noon	21.9	SSE	13, 1 p. m.
Taito	34.3	12, 10 p. m.	24.8	W	13, 7 a. m.
Koshum	42.6	12, 5 p. m.	30.5	SSW	12, 8 p. m.
Pescadores.....	43.6	13, 12 noon	31.1	SW	13, 9 p. m.

The official statistics of the damage done are as follows:

Persons:		Houses:	
Killed	27	Entirely destroyed	2,209
Missing	10	Partially destroyed	4,546
Injured	26	Damaged	4,985
Cattle:		Flooded	282
Killed	2,935		
Missing	2,567		

The typhoon of July 13-17, 1914.—The previous typhoon was still in the N of Formosa when the Observatory received information of the existence of another near the Ladrone or Mariana Islands. The following was said in the weather notes of the 14th and 15th:

July 14, 11.55 a. m.: Another typhoon appeared yesterday afternoon in the neighborhood of the Ladrone or Mariana Islands, moving to WNW.

July 15, 11 a. m.: The new typhoon of the Ladrone Islands is moving at present very much inclined to the W. Its center was situated at 6 o'clock this morning in about 135° long. E and between 16° and 20° lat. N moving W or WbyN.

The direction of the path was no doubt very dangerous for the islands situated between Luzon and Formosa; but, as the two previous typhoons, this also recurved to the N when at some distance from Luzon. It very probably filled up to the E of the Bashi Channel during the night of the 17th.

The typhoon of July 19-29, 1914.—This typhoon also formed at a great distance from the Philippines, and hence the Observatory was in a position to announce its existence when it appeared in the Ladrone Islands some six days before it reached the Loochoos. The following observations made in Guam on the 19th to the 22d show that the vortex passed to the N of that island during the afternoon of the 20th when the barometric minimum 751.85 mm. was registered with winds from WSW, force 7 and 8.

METEOROLOGICAL OBSERVATIONS MADE AT SUMAY, GUAM, LADRONE ISLANDS, JULY 19 TO 22, 1914.

Date and hour.	Pres- sure.	Wind.		Weather.	Rainfall, 24 hours begin- ning 6 a. m.	Date and hour.	Pres- sure.	Wind.		Weather.	Rainfall, 24 hours begin- ning 6 a. m.
		Direc- tion.	Force.					Direc- tion.	Force.		
July 19:	<i>mm.</i>		<i>0-12.</i>		<i>mm.</i>	July 21:	<i>mm.</i>		<i>0-12.</i>		<i>mm.</i>
6 a. m.	754.30	Calm		o		6 a. m.	753.37	SW	8	o, q	
2 p. m.	53.70	NNE	2	o		10 a. m.	54.05	SW	8	o, q	
6 p. m.	53.68	N	4	o	25.4	Noon.	53.67	SW	8	o, q	
July 20:						2 p. m.	52.65	SSW	8	o, q	
6 a. m.	52.40	WSW	6	o		3 p. m.	52.97	S	8	o, q	
9 a. m.	53.37	WSW	7	o, q		4.30 p. m.	53.32	S	8	o, q	
10 a. m.	53.22	WSW	7	o, q		6 p. m.	54.57	S	7	o, q	35.5
11 a. m.	52.90	WSW	7	o, q		July 22:					
Noon.	52.57	WSW	7	o, q		6 a. m.	55.25	S	7	o, q	
2 p. m.	51.85	WSW	7	o, q		10 a. m.	55.75	S	7	o, q	
4 p. m.	52.02	WSW	8	o, q		2 p. m.	54.37	S	7	o, q	
6.30 p. m.	52.75	SW	7	o, q	45.7	6 p. m.	55.35	SSE	5	o, q	24.1

From the afternoon of the 20th to the afternoon of the 22d the typhoon moved to the W; but on the 22d it began to incline to the N so decidedly that from 6 a. m. of the 23d to 6 a. m. of the 24th it took the direction NNW thus threatening to cross the Loochoos. As a matter of fact the vortex passed close to Naha at 4 a. m. of the 24th, when the barometric minimum 702 mm. was registered. The typhoon finally recurved to the NE when it was close to the Yellow Sea on the 27th, and crossed Korea on the 28th.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es algo mayor que la de Julio, 1913, pero menor que la normal. La de Manila se diferencia de la primera en +0.52 mm.; y de la segunda, en -0.46 mm. Las presiones más altas fueron observadas generalmente el 29; las más bajas ocurrieron el día 6 ó 7 en Luzón, y el 23 en Visayas y Mindanao.

La temperatura media mensual es ligeramente mayor que la del año pasado. La de Manila es idéntica a la normal y mayor que la de Julio, 1913, en 0.5° C. Las temperaturas extremas de Manila fueron 33.5° C. y 22.7° C. registradas los días 31 y 17 respectivamente. En Baguio las temperaturas extremas fueron 25.6° C. y 14.4° C. para la cumbre de Mirador, y 25.7° C. y 14.5° C. para el valle.

Precipitación acuosa.—A excepción de las estaciones de la costa occidental del norte de Luzón, casi todas las demás dan este mes un total de lluvia menor que la normal, y menor también que el año pasado. En Manila cayeron en todo el mes 399.3 mm. de agua, cantidad que difiere en -171.3 mm. de la de Julio, 1913, y en -2.7 mm. de la normal de este mes. La lluvia total de Baguio fué 1,464.7 mm., menor que el año pasado en 155.6 mm. y mayor que la normal de Julio en 426 mm.

DEPRESIONES Y TIFONES.

Cuatro son los tifones que han influido en Filipinas durante este mes, aunque ninguno de ellos ha atravesado nuestro Archipiélago. Véanse sus trayectorias en la lámina IV.

Dos tifones en Formosa: 7 y 13 de Julio.—Tres fueron los tifones que desfogaron en Formosa en menos de quince días, desde el 30 de Junio hasta el 13 de Julio ambos inclusive. En el Boletín de Junio dimos la trayectoria del primero; en este nos toca hablar de los otros dos.

El tifón del 7 tuvo su origen cerca de las Carolinas Occidentales, al S de Guam, no lejos de 10° latitud N y 145° longitud E. Según las observaciones de Guam y Yap, se estuvo formando este tifón en el lugar indicado del 28 al 30 de Junio, y así lo indicó el Observatorio en la siguiente nota dada al público el día 30:

Junio 30, 11.30 a. m.: Un tifón se ha estado formando estos dos últimos días al S. de Guam a más de 1,000 millas de Filipinas.

La mínima barométrica de Guam fué casi idéntica a la de Yap, habiendo pasado el vórtice casi a igual distancia de ambas estaciones moviéndose al WNW. El tifón siguió esta dirección con una velocidad de unas 10 millas por hora hasta la mañana del 5 en que, al propio tiempo que disminuía su velocidad de traslación, empezó a moverse al N, desapareciendo así todo peligro para Filipinas. El día 6 por la tarde se volvió a inclinar de una manera muy notable al W, adquiriendo mayor desarrollo y aumentando de nuevo en velocidad. Durante las ocho horas antes de llegar a Formosa, o sea, de 5 a. m. a 1 p. m. del 7, se movió con una velocidad media de unas 16 millas por hora; al atravesar la isla de Formosa, de 1 a 9 p. m. del mismo día, llevaba una velocidad de solas 10 u 11 millas por hora, y en el canal de Formosa, de 9 p. m. del 7 a 5 a. m. del 8 adquirió otra vez una velocidad extraordinaria de unas 17.5 millas por hora.

De entre los muchos datos que sobre este tifón hemos recibido de Mr. H. Kondo, director del observatorio de Taihoku, entresacamos lo siguiente para dar alguna idea de la intensidad con que desfogó el temporal en la isla de Formosa.

El tifón atravesó la isla la tarde del 7, solo una semana después del último tifón de 30 de Junio. Fué intenso, causando mucho daño. La siguiente tabla da la mínima barométrica, máxima fuerza del viento y lluvia observada en las estaciones de Meiacosima y Formosa:

Estaciones.	Mínima barométrica.	Día y hora.	Máxima fuerza del viento.	Dirección.	Día y hora.	Lluvia en 24 horas.
	<i>mm.</i>		<i>m. p. s.</i>			<i>mm.</i>
Ishigakihima	739.9	7, 8 a. m	47.0	ENE	7, 9 a. m	5.0
Keelung	42.4	7, 4 p. m	20.9	ENE	7, 3 p. m	10.0
Taihoku	40.1	7, 3 p. m	27.2	E	7, 10 p. m	36.0
Karenko	31.0	7, 2 p. m	37.8	NE	7, 10 p. m	55.0
Taichu	30.1	7, 4 p. m	20.0	NNE	7, 3 p. m	2.0
Taito	33.0	7, 3 p. m	21.3	S	7, 10 p. m	95.0
Tainan	32.5	7, 5 p. m	30.8	SSE	7, 11 p. m	42.0
Koshun	36.1	7, 4 p. m	21.3	W	7, 3 p. m	111.0
Hokoto	34.0	7, 12 m. n	39.8	N	7, 5 p. m	9.0

Las estadísticas oficiales de los efectos de este tifón son como siguen:

Casas totalmente destruidas.....	1,468
Casas parcialmente destruidas.....	1,231
Casas damnificadas	2,802

El otro tifón de Formosa del día 13 tuvo su origen al ESE de Guam en los alrededores de 150° longitud E y 13° latitud N. Al igual que el anterior, fué anunciado por el Observatorio de Manila unos siete días antes de que llegase a Formosa. Véanse a continuación los avisos dados los días 6 y 7:

Día 6, 11.50 a. m.: Otro tifón se ha estado formando durante los dos últimos días al ESE de Guam a más de 1,000 millas de Filipinas.

Día 7, 11.55 a. m.: El tifón de las islas Ladrones o Marianas está pasando al N de Guam moviéndose al WNW o NW $\frac{1}{4}$ W.

En el texto inglés verán nuestros lectores las observaciones hechas en Guam durante el paso de este baguio por el N de aquella estación. La mínima barométrica fué 746.62 mm. observada a 4 y 5 p. m. del día 7 con vientos del SW, fuerza 9.

Durante los días 7, 8 y 9 se movió el tifón casi enteramente al W, según se dijo en las notas del tiempo de aquellos días. Afortunadamente, sin embargo, para Filipinas, se inclinó notablemente al N el día 10, como puede verse por los siguientes avisos de tifón dados los días 10 y 11:

Día 10, 3 p. m.: El tifón se mueve muy despacio desde ayer: puede ser que tienda a inclinarse al N y en tal caso habrá desaparecido todo peligro de tiempo tormentoso para Luzón.

Día 11, 8.30 a. m.: La inclinación al N de la trayectoria del tifón se ha plenamente confirmado. Su centro se hallaba a las 6 de esta mañana a unas 400 millas al E o ENE de Aparri moviéndose al NW o NNW.

Efectivamente, conservó el tifón esta dirección al NNW o NW hasta el día 12 en que de nuevo se inclinó extraordinariamente al W, viniendo así a pasar por encima de la costa norte de Formosa la madrugada del día 13. Cuando llegó el tifón a Formosa, se movía lentamente, es decir, a razón de unas 10 millas por hora. Copiaremos aquí algunos de los datos interesantes que agradecemos a Mr. H. Kondo, director del observatorio de Taihoku:

El tifón se movía despacio y disminuía en intensidad al acercarse a la Isla, siendo así que había sido muy intenso en Ishigakihima. Fué acompañado de abundantísimas lluvias que causaron grande estrago en el sur de Formosa. Hubo alguna estación que dió 1,000 mm. de lluvia en solos los días 12 y 13. En la siguiente tabla va la mínima barométrica, y máxima fuerza del viento observada en nuestros estaciones y en Ishigakihima (Meiacosima).

Estaciones.	Mínima barométrica.	Día y hora.	Máxima fuerza del viento.	Dirección.	Día y hora.
	<i>mm.</i>		<i>m. p. s.</i>		
Ishigakihima.....	728.7	12, 4 p. m.	48.6	SE	13, 3 a. m.
Keelung.....	31.9	13, 5 a. m.	30.8	N	12, 10 p. m.
Taihoku.....	34.4	13, 6 a. m.	21.8	NNE	12, 9 p. m.
Taichu.....	39.9	13, 5 a. m.	21.0	NNW	12, 11 p. m.
Tainan.....	45.0	13, 12 m. d.	21.9	SSE	13, 1 p. m.
Taito.....	34.3	12, 10 p. m.	24.8	W	13, 7 a. m.
Koshun.....	42.6	12, 5 p. m.	30.5	SSW	12, 8 p. m.
Pescadores.....	43.6	13, 12 m. d.	31.1	SW	13, 9 p. m.

Las estadísticas oficiales de los efectos de este tifón en Formosa son como siguen :

Personas:		Casas:	
Muertas	27	Enteramente destruídas	2,209
Desaparecidas	10	Parcialmente destruídas	4,546
Heridas	26	Damnificadas	4,985
Ganado:		Barridas por las aguas.....	282
Muertos	2,935		
Desaparecidos	2,567		

Tifón de 13 a 17 de Julio, 1914.—Todavía se hallaba el tifón anterior en el N de Formosa, cuando anunciaba el Observatorio de Manila otro tifón en los alrededores de las Islas Ladrones o Marianas. Véase lo que sobre él se dijo en las notas ordinarias del tiempo de los días 14 y 15:

Día 14, 11.55 a. m.: Otro tifón apareció ayer tarde en los alrededores de la parte norte de las Islas Ladrones o Marianas, moviéndose al WNW.

Día 15, 11 a. m.: El nuevo tifón de las Islas Ladrones o Marianas se mueve al presente muy inclinado al W. Su centro se hallaba a las 6 de esta mañana cerca de 135° longitud E y entre 16° y 20° latitud N moviéndose al W o W $\frac{1}{4}$ NW.

La dirección de la trayectoria era sin duda peligrosa para las islas situadas entre Luzón y Formosa; pero al igual que los dos tifones anteriores se inclinó éste al N cuando se hallaba aún a bastante distancia de Luzón. Probablemente se deshizo al E del canal de Bashi durante la noche del 17 al 18. El Observatorio de Manila dijo lo siguiente los días 17 y 18:

Día 17, 6.30 p. m.: El tifón parece inclinarse al norte al E del canal de Balintang.

Día 18, 11.30 a. m.: El tifón se inclinó al norte ayer y se está deshaciendo hoy al NE de Luzón.

Tifón de 19 a 29 de Julio, 1914.—Este tifón se formó también muy lejos de Filipinas, pudiendo ser anunciado por el Observatorio cuando apareció en las Islas Ladrones o Marianas unos seis días antes de que llegase a las Islas Loochoo o Liukiu. En el texto inglés damos en una tabla las observaciones hechas en Guam del 19 al 22. Por ellas se ve que el vórtice pasó por el N de aquella estación la tarde del 20 cuando se observó la mínima barométrica 751.85 mm. con vientos del WSW, fuerza 7 y 8.

Desde la tarde del 20 hasta la tarde del 22 es movió el tifón al W; mas el 22 empezó a inclinarse al N de una manera tan notable que desde 6 a. m. del 23 a 6 a. m. del 24 llevó la dirección NNW amenazando atravesar las Islas Loochoo o Liukiu. En efecto, a 4 a. m. del 24 pasó el vórtice junto a Naha donde se registró en dicha hora la mínima barométrica 702 mm. Por fin, recurvió el tifón al NE cuando se hallaba cerca del Mar Amarillo el día 27, y atravesó la Korea el día 28.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[φ=14° 34' 41" N; λ=120° 58' 33" E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Table with columns: Day, Air temperature (Mean, Maximum, Minimum), Underground temperature (0.25 meter, 0.50 meter, 1.50 meters, 2.50 meters), Relative humidity (mean), Vapor pressure (mean), Radiation (Minimum on grass, Maximum in sun, Black bulb in vacuo), Evaporation (Free exposure, Shelter). Rows 1-31 and Mean Total.

Table with columns: Day, Wind (Prevailing direction, Total movement, Maximum hourly velocity, Direction at the time of the maximum velocity), Clouds (Form and direction: Upper, Lower), Sunshine (h, m), Rain, 24 hours beginning midnight (mm), Miscellaneous. Rows 1-31 and Mean Total.

^a All the mean values given in this table are deduced from hourly observations. ^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pressure ^b (mean)	Air temperature at Mirador (on the top of the mountain).					Air temperature in the valley (near the city hall).				Relative humidity (mean)	Vapor pressure (mean)	Radiation.		Evaporation.	
		Mean.	Maximum.	Hour.	Minimum.	Hour.	Maximum.	Hour.	Minimum.	Hour.			Minimum on grass.	Maximum in sun. Black bulb in vacuo. ^c	Free exposure (total)	Shelter (total)
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.	mm.	°C.	°C.	mm.	mm.	
1.	634.33	18.6	23.8	10.00a.	16	2.25a.	23.8	1.45p.	15.5	2.00a.	96	15.3	39.2	1	0.5	
2.	35.34	19.4	23.3	9.25a.	16.6	0.05a.	23.6	2.55p.	16.6	5.00a.	92.8	15.5	16	50.7	1.4	
3.	35.18	18.9	24.3	10.00a.	16.7	5.20a.	24.4	10.00a.	16.6	5.50a.	93	15.1	16	42	1.3	
4.	34.42	18	21.8	11.00a.	15.7	6.00a.	22.1	10.55a.	15.6	6.30a.	93.3	14.3	14.7	40.1	.6	
5.	33.26	17.4	22.3	11.10a.	15.5	5.30a.	22.1	11.00a.	14.7	6.25a.	97	14.3	14.1	44.8	.5	
6.	31.82	17.1	18.5	11.15a.	15.6	2.25a.	20.3	-----	15.6	6.00a.	99.2	14.4	13.9	-----	.6	
7.	30.56	17.2	18.3	11.55a.	16.2	4.20p.	18.9	0.55p.	16.5	8.00a.	99.7	14.6	14.5	-----	.2	
8.	32.98	17.2	17.8	11.30a.	16.1	7.30p.	18.8	11.00a.	16.3	5.00a.	98.5	14.4	16.47	0	0	
9.	35.04	17.9	20.3	10.50a.	16.4	1.15a.	20.3	11.00a.	16.7	6.00a.	96.3	14.7	16.2	0	0	
10.	35.20	17.8	19.2	0.20p.	16.8	4.00a.	19.6	1.00p.	16.7	8.00a.	99.5	15.1	16.2	0	0	
11.	34.59	18.2	18.7	11.00a.	16.8	3.00p.	19.2	8.00a.	17.2	4.00p.	99.2	15.4	17.1	0	0	
12.	34.47	17.8	18.7	11.00a.	16.4	7.20p.	18.2	4.00a.	16.5	10.00a.	99	15	16.77	0	0	
13.	35.02	17.4	18.3	1.35p.	16.4	4.55a.	20	0.20p.	16.5	6.40a.	99.7	14.7	16.5	0	0	
14.	36.15	18	21.7	1.05p.	16.4	6.00a.	21.4	1.00p.	16.6	4.55a.	95	14.6	16.5	0	0	
15.	36.38	18.3	22.7	11.05a.	15.3	7.05p.	23.2	11.05a.	15.5	4.50a.	92	14.4	14.7	0	0	
16.	35.10	17.8	23	10.25a.	15	5.50a.	23.1	10.35a.	15	6.15a.	94.8	14.4	14.2	0	0	
17.	34.14	18.6	23.6	0.25p.	15.6	5.00a.	24.4	0.20p.	15.4	3.20a.	92.5	14.6	14.9	0	0	
18.	34.45	19.3	24	11.35a.	15.4	5.35a.	23.6	0.05p.	15.5	5.30a.	86.8	14.3	15.2	0	0	
19.	35.06	19.1	24.3	0.50p.	16.6	4.55a.	24.4	11.30a.	16.7	5.10a.	95.3	15.7	16.1	0	0	
20.	35.33	18.9	25.6	11.10a.	16.4	5.00a.	25.7	0.10p.	16.5	5.30a.	91.2	14.7	16.2	0	0	
21.	35.56	18.4	23.5	9.30a.	16.5	5.00a.	22.8	9.45a.	16.5	12m. n.	93.8	14.8	16	0	0	
22.	34.45	19.4	24.8	10.50a.	16	6.00a.	24.7	11.30a.	15.9	6.05a.	86.3	14.2	15	0	0	
23.	33.36	18.1	23.2	11.05a.	15.5	5.35a.	23.6	10.40a.	15.9	6.00a.	96.3	14.9	15.1	0	0	
24.	32.99	17.7	23	0.50p.	16	5.00a.	23.1	Noon	15.7	1.35a.	96.5	14.6	14.7	0	0	
25.	32.78	17.6	22.8	1.00p.	16.3	1.50a.	23.3	0.40p.	16.7	12m. n.	93.8	14	15.4	0	0	
26.	33.20	16.5	17.8	1.50p.	15.3	6.00p.	18.2	2.00p.	15.9	11.00p.	98.8	13.8	15.4	0	0	
27.	35.36	15.9	16.7	11.00p.	14.4	1.00a.	17.6	11.45p.	14.5	1.30a.	94	12.7	14.4	0	0	
28.	36.74	17.6	23.6	3.25p.	15.3	6.20a.	23.1	3.15p.	15	6.25a.	92	13.8	13.7	0	0	
29.	37.12	18.6	22.7	2.15p.	15.4	5.55a.	22.5	2.10p.	14.7	1.15a.	92.2	14.7	14	0	0	
30.	36.95	18.3	22.6	2.55p.	15.8	5.00a.	22.5	0.55p.	15.7	6.00a.	88.7	13.8	14.3	0	0	
31.	36.85	19	23.9	2.00p.	16	10.10p.	23.7	2.00p.	14.7	5.40a.	82.7	13.2	13.5	0	0	
Mean	634.65	18.1	21.8		15.9		22		15.9		94.4	14.5	15.2	46	1.1	
Total															35	16.6

Day.	Prevailing direction. ^d	Wind.				Amount (mean).	Clouds.		Sunshine.	Rain, 24 hours beginning 6 a. m.	Miscellaneous.
		Total movement.	Maximum hourly velocity.	Direction at the time of maximum velocity.	Form and direction.						
		Km.	Km.		Upper.		Lower.				
1.	W	328.2	27.1	W	0-10.	Ci.-S.	Cu.-N.	h. m.	mm.	☉ d° a. p. ☉ ☐ ☐ p.	
2.	SE, W	317.3	23	E, SE	9	Ci.	Cu.-N.	8 00	5.4	☉ d a. p. ☉ ☐ d° p.	
3.	SE quad.	306.2	21.7	W, SE	8.3	A.-Cu., Ci.-S.	Cu.-N.	7 05	5.6	☉ d a. p. ☉ ☐ d° p.	
4.	W	353.9	30.8	SW	8.3	A.-Cu. SW	Cu.-N. SW	7 25	13.3	☉ a. p. ☉ ☐ p.	
5.	W, SW	423.8	36.4	W	8.6	Ci.	Cu.-N.	6 50	9.2	☉ a. p. ☉ ☐ p.	
6.	W	753.1	46.4	W	10	-----	N.	5 50	52.9	☉ a. p. ☉ ☐ p.	
7.	SW	1,078.4	63.8	W	10	-----	N.	1 00	108.4	☉ a. p. ☉ ☐ p.	
8.	SW	931.8	61.7	SW	10	-----	N.	0 00	156	☉ a. p. ☉ ☐ p.	
9.	SW	607.9	34.6	W, SW	10	Ci.	Fr.-N. SW	0 00	77.5	☉ a. p. ☉ ☐ p.	
10.	W	872.3	58.1	W	10	Ci.-S.	Cu.-N. SW	0 45	15.8	☉ a. p. ☉ ☐ p.	
11.	W	1,492.3	78.9	W	10	-----	N.	0 30	154.1	☉ a. p. ☉ ☐ p.	
12.	W	1,356.8	76.9	W	10	-----	N.	0 00	152.9	☉ a. p. ☉ ☐ p.	
13.	SW	876.9	55.2	SW	10	-----	N.	0 00	104	☉ a. p. ☉ ☐ p.	
14.	W, SW	404.1	27.7	SW	9.6	A.-Cu., Ci.-S.	Fr.-N. sw, wsw	0 00	19.7	☉ a. p. ☉ ☐ p.	
15.	W, SE	258.4	26.4	W	7.3	Ci.	Cu. SW	4 50	6.3	d a. p. ☉ ☐ p.	
16.	W	213.4	18.2	W	9	Ci.	Cu. SE	6 55	89.5	☉ d a. p. ☉ ☐ p.	
17.	E, SE	312.2	26.4	E	7.9	Ci.	Cu. E	6 50	12	☉ d p.	
18.	SE	354.6	27.4	E	6	Ci., A.-Cu.	Cu. E, SE	7 15	.8	☉ d ☐ p.	
19.	SE	300.9	18.7	SE	9.4	A.-Cu., Ci.	Cu. E	9 30	2.3	d p.	
20.	E, SE	322.9	20.3	E	6.4	Ci.	Cu. ESE	7 05	31.6	☉ a. p. ☉ ☐ p.	
21.	E, W	239.8	17.9	E	8.1	A.-Cu.	N.	5.8	5.8	☉ a. p. ☉ ☐ p.	
22.	E	359.9	24.1	NW	5.6	Ci.	Cu.-N.	7 00	16	☉ a. p. ☉ ☐ p.	
23.	W	275.4	20.9	W	7	Ci.	Cu.	8 30	.5	☉ a. p. ☉ ☐ p.	
24.	W	468.5	40.5	SW	9.1	Ci.	Cu.-N. W	7 20	8.4	☉ a. p. ☉ ☐ p.	
25.	SW	564.7	38.9	SW	9.4	Ci.-S.	Cu.-N. W	5 40	48	☉ a. p. ☉ ☐ p.	
26.	SW	1,452.9	74	W	10	-----	N.	4 10	82.6	d a. p. ☉ ☐ p.	
27.	SW	600.5	51.3	W	10	-----	N.	0 00	213.4	☉ a. p. ☉ ☐ p.	
28.	W	481.3	29.8	W	9	A.-Cu.	N. SWbyW	0 00	72.4	☉ a. p. ☉ ☐ p.	
29.	W	200.7	19	W	8.4	A.-Cu.	Cu.-N. W	7 00	.3	d° p.	
30.	E, SE	199.6	14.3	E	9.6	Ci.-S., A.-Cu.	Cu.-N. WSW	8 10	-----	☉ a. p. ☉ ☐ p.	
31.	SE	237.1	15.1	SE	6.4	Ci.-S.	S.-Cu. NW	6 50	-----	d° p.	
Mean		548.3	36.3		8.7		Cu. S	8 50	-----	☉ a. p. ☉ ☐ p.	
Total		16,995.8						4 51	-----		
								150 15	1,464.7		

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, JULY, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Jolo	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Isabela, Basilan	1.5			16.8	0.5											
Zamboanga			10.9	52.1	1											3.8
Davao				42.2	3.8											
Cotabato		47.8	27.2	4.6										7.4	8.9	20.1
Cagayan, Misamis	33.8		20.6	1	17.5						.3					
Butuan				14.2	4.4											2.5
Dumaguete				10.9		.5	1	.8	.5	.8	7.1	5.1	15.5	3.3	1.5	4.6
Yap, Western Carolines	5.4	10.4	16.5	8.6												2.5
Tagbilaran		2.8		2.5	1.4	3.6	(a)									7.1
Iwahig	.2	.7	4.5	1.5												36.6
Surigao		.8		19											9.6	19.6
Maasin	7.1			.8	.5	7.9										
Cebu		6.9	5.6	11.4	20.3	31.7	3.8			3	4.6	20.3	3.6			
Iloilo	94.1			19.8	33.8	12.9			.5	3.8	1.8	3.6	.8	3.6	18.5	89.2
San Jose Buenavista	58.4	61.2	28.7	46.5	19.8	33.8	12.9			14.5	7.6	9.9	9.9	3.6	2.3	54.1
Cuyo	3.3	29	12.4	49.6	26.6			.8							.8	16.4
Ormoc	2.8	4.8		1.8											.3	
Guiuan			3												.3	
Capiz		1.3		6.7	1.9	.5		1.8								
Borongon	14.2	.5		.5											.5	
Calbayog			20.5	13.3	3.5										21.1	5.3
Masbate	.3	.3	33.7	17.5	3.3		.8								.3	29.2
Romblon	5.1	1		13.5	22.4	25.4	.5				.5	.3				
Batag				3.3												
Gubat				8.4	17.1		2									12.4
Legaspi	4.1	2	29.4	2	11.3	8.7	5.2	.3						3.3		43.5
Sumay, Guam		67.3	15.2	1.3	5.1	38.1	61	64.7	38.1	6.4	7.6	21.6	12.7	8.9	5	5.1
Calapan	6.4	8.1		6.1	7.1	3.1	.5						.3			
Virac	31.7	1.8	.3	17.8	3	.3	.5									
Nueva Caceres	7.3			16.4	1.5	10.9										24.5
Batangas			1.5	16.2	24.7	29.5	6.1									1.8
Atimonan		7.1	19	.8	1	.8					.8					15.7
Ambulong, Tanauan			5.3	28.4	21.8	32.8	25.9	2.3		1	5.5	1				2
Silang	9.2		2.5	57.4	42.7	59.7	58.4		11.2	18.3	19.5	10.1				12.9
Paracale	6.6		5.6	.5		3.6	.3									7.6
Santa Cruz, Laguna	4.3			6.3	11.7	21.8	35	.3		.3						32.2
Manila	22.6	9.4	2.6	7.1	37.1	39.3	71.2	21.3	.9					15.6		11.1
Antipolo	22.6		2	10.6	126.7	118.6	68.1	33.5				.8		4.8		48
Iba	16.5	9.9	18.3	24.7	147.3	111.6	55.9	85.4	9.1	17	11.5	.8	9.6	8.7	65.3	29.9
San Isidro	21.7	1.1		7.9	6.1	24.7	29	17.6	43.5	8.9	1.8			6.3	.5	57.9
Tarlac	13	.5		14.7	6.1	15.8	31.5	20.9		3.1	3		3.3	6.3	24.4	19.2
Baler	2.5			1	7.1		2.3									34
Dagupan	13.5	14.5		2.3	10.4	51.3	85.9	62.2	3.3	6.5	1.3	5.3	1.5	1.1	70.4	5.3
Bolinao	17.8	1.5	2.5	4.1	19.4	53.5	46.8	89	8.9	2.4	3.4	19.1	39.2	6.1	5.6	119.1
Baguio	5.4	5.6	13.3	9.2	52.9	108.4	156	77.5	15.8	154.1	152.9	104	19.7	6.3	89.5	12
San Fernando, Union	9.4	4.1	9.9	9.1	19.9	51.6	136.9	133.6	6.4	19.5	27.4	53.9	29.7	5	2.5	62.2
Echague			6.6	2.5	5.3		4.1	1	41.1							124.2
Candon	13.7	16.3	1		5.8	87.9	191.8	73.6	3.8	35.1	10.9	70.1	33.5			1.3
Vigan	47.8	17.8	44.4	11.5	121.9	34.9	133.2	171.7	30.2	22.1	13.7	46.8	24.7			2.6
Tuguegarao					6.6	10.7		1.3						34.6		3.3
Laocag	5.3	33.5	52.1	106.4	25.4		141	155.4	30.7	24.6	83.8	68.3	29.2			14
Aparri							2.5	2.6	9.4							11.9
Santo Domingo, Batanes		9.1	1.3		34	2	31.6	.2	20.8	1.4	1.7	12.3	1			.1

(a) No observation.

Daily rainfall at the stations of the Weather Bureau, July, 1914—Continued.

Station.	Day of month.														Total.	
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.		31.
Jolo	mm.	10.4	3	1.5	---	0.3	mm.	2.5	5.1	mm.	---	---	---	16.7	7.9	64.7
Isabela, Basilan	---	12	9.6	18	27.9	---	---	---	---	---	5.1	---	---	2.3	9.4	165.1
Zamboanga	20.1	21.8	3.3	2.8	15.2	---	---	---	---	---	---	---	7.6	2	26.2	133.5
Davao	---	---	---	4.8	6.1	---	---	8.4	---	---	---	---	---	7.1	---	38.4
Cotabato	.8	16.6	10.9	10.6	5.6	.8	---	---	---	---	2	---	---	21.1	---	245.4
Cagayan, Misamis	6.4	1.8	8.6	4.1	41.4	---	.3	---	---	2.5	1.3	---	1	9.4	---	150
Butuan	---	---	2.5	3.3	7.6	---	---	6.6	1	---	---	---	---	3.8	.3	25.1
Dumaguete	1.5	---	---	---	1.1	4.1	---	---	---	---	---	---	---	2.5	26.7	60.3
Yap, Western Carolines	64.8	17.7	8.4	6.8	13.7	54.6	13.3	---	---	4.3	---	1.3	---	7.6	.3	277.2
Tagbilaran	1.1	---	---	.8	---	---	---	---	---	---	---	---	---	4.8	38.6	56.7
Iwahig	9.7	2.1	2.9	---	8.9	---	---	4.8	13.5	4.7	---	---	---	---	3	69.6
Surigao	---	---	10.7	16	16	4.5	---	---	---	---	---	---	---	---	1.3	97
Maasin	13.7	---	17.5	---	---	---	61.3	---	---	---	---	---	---	---	---	138.2
Cebu	.3	---	2	4.8	.3	---	3.8	---	---	---	---	---	1.5	---	---	34.4
Iloilo	66.7	7.4	---	7.9	1.5	5.1	19.5	66.1	18.3	---	---	---	---	4.6	---	389.9
San Jose Buenavista	25.1	16.8	35.3	75.9	3.6	1	36.8	78.7	6.9	---	---	---	---	12.4	---	675.6
Cuyo	1.3	---	20.8	9.9	29.2	7.6	20.8	15.7	15.3	17.1	---	---	---	13.5	1	377.8
Ormoc	.3	---	85.1	5.9	32.3	2.8	.5	---	---	---	---	---	---	.3	---	153.8
Gutuan	---	1	39.9	47	5.1	---	.8	---	---	---	---	---	---	1.8	---	98.9
Capiz	56.4	15.3	.3	.8	.3	---	---	1.3	10.2	---	20.6	---	---	2	---	119.4
Borongan	---	1.3	57.9	.3	35.3	.8	1.3	---	---	---	14.2	---	---	.3	---	127.1
Calbayog	---	---	20.3	.5	22.1	1.5	---	---	---	---	---	---	---	---	---	108.1
Masbate	5.6	---	6.9	5.1	.3	3.6	3.1	---	9.4	1.5	---	---	.8	---	1.8	123.5
Romblon	2	---	---	6.6	---	---	---	7.1	7.1	.5	---	---	---	---	---	115.6
Batag	---	---	10.2	18	4.3	---	5.3	---	---	---	---	---	---	---	23.6	41.1
Gubat	---	---	---	---	2.5	---	---	7.3	5.6	---	2.5	---	---	---	---	59.8
Legaspi	5.1	2	3.3	---	27.9	4.3	34.1	1.6	---	---	---	---	---	---	---	191.7
Sumay, Guam	16.5	3.8	25.4	45.7	35.5	24.1	96.5	---	---	---	1.3	2.5	1.3	33	---	643.7
Calapan	10.4	---	---	27.9	---	---	2.8	2.6	3.1	---	---	---	---	---	---	78.4
Virac	---	---	8	---	---	---	.5	.3	---	---	---	---	2.5	---	---	59.5
Nueva Caceres	.1	---	---	11.9	3.3	---	5.8	.4	3.8	---	---	---	---	---	---	87
Batangas	6.1	---	---	13.2	16	---	17	.5	7.4	.5	---	---	---	---	.3	140.8
Atimonan	---	---	5.6	3.3	2.5	---	1.3	---	.3	---	---	---	---	---	---	58.2
Ambulong, Tanauan	7.4	2.3	17	9.1	1.3	---	9.1	28.6	2.1	2	---	---	---	---	1.3	219.1
Silang	26.2	---	50.3	---	22.9	14.7	8.1	31.7	---	---	---	---	---	---	---	450.5
Paracale	28.2	---	8	---	.3	1.5	---	---	---	---	---	---	5	---	5.3	85.9
Santa Cruz, Laguna	2.5	3.8	.3	---	12	11.4	30.5	2.8	6.8	.3	2.3	---	---	---	---	211.5
Manila	1	2.8	19.6	11.6	---	4	10.4	22.6	11	35.6	16.3	---	---	---	---	399.3
Antipolo	55.4	22.9	3.8	---	10.6	---	32.2	.8	11.9	14.2	5.1	---	---	---	---	613.5
Iba	1.6	.5	.5	10.3	20.1	1	1.7	94.8	91.9	67.6	57.2	---	---	---	---	958
San Isidro	22.1	8.1	11.2	---	20.3	---	7.6	10.1	30.5	71.4	18.8	2.1	51.6	78.5	2.5	372.6
Tarlac	---	---	---	---	---	---	---	---	3	10.7	1.5	---	---	5.6	---	412.1
Baler	1.3	46.8	28.4	6.6	---	---	---	---	3	10.7	1.5	---	---	---	---	161.8
Dagupan	---	---	27.7	5.3	---	---	36.8	40.7	55.7	126.8	65.6	---	---	---	---	693.4
Bolinac	.8	8	9.9	4	4.4	---	---	6.2	101.1	131.5	102.1	---	---	---	1.5	799.9
Baguio	.8	2.3	31.6	5.8	16	5	8.4	48	82.6	213.4	72.4	.3	---	---	---	1,464.7
San Fernando, Union	17	44.7	16.6	4.6	4.8	43.7	7.1	13	40.2	127.5	60	---	---	---	10.2	966
Echague	---	---	---	---	.5	---	6.4	8.9	3	7.1	1.3	.3	20.6	---	---	230.2
Candon	---	10.7	23.1	---	22.1	5.1	---	29.2	24.1	282.7	47.7	---	9.9	---	4.3	1,003.7
Vigan	4.9	49.5	20.1	1.3	8.2	14.5	---	42.5	60	107	9.2	1.5	6.2	---	4.6	1,086.8
Tuguegarao	---	---	---	---	3.6	---	---	1	14.5	11.2	---	---	---	11.7	---	98.5
Laoag	---	---	---	---	36.6	10.4	20.8	---	104.1	89.4	5.6	8.4	53.8	---	---	1,098.8
Aparri	---	---	---	---	---	.8	5.8	---	---	.5	---	---	---	---	---	35
Santo Domingo, Batanes	---	---	---	.3	.2	---	---	---	.1	.3	---	---	2.8	---	---	119.2

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, JULY, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Dapitan.		Butuan.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32	24.3	30.2	22.1	29.5	23.5	31.7	21.4	31.7	23.3	32.6	23.5	33	23.2	31.4	23.5
2	34.8	22.8	33.6	22.4	30.1	23.5	31.2	23	32.1	23.2	32.4	23.2	31.5?	22.3	31.5	25
3	32.9	24.3	32.8	23.4	30.5	24.9	32.2	24.2	30.6	23.6	31.7	23.7	34.5	23.3	31.5	26.2
4	32.3	24.8	30.9	24.5	28.1	23.6?	32.2	23.4	29.2	22.6	30.1	23.6	32.9	23.5	31.6	25
5	29.5	22.8	29	21.6	28.3	22.1	29.2	23.6	27.5	21.2	29	23.3	-----	22.6	29.8	25.6
6	31.6	23.9	32.6	22.9	31	23.5	31.2	22.5	31.5	22.1	33.7	22.3	-----	21.6	32.3	24.4
7	32	23.8	33.1	21.6	31.4	23.3	31.2	23	32	22	34.5	22.5	32.4	23.1	33.1	24.6
8	32.1	23.2	34.8	21.5	30	24	31.7	22.5	32.3	21.7	34.2	21.7	34.4	22.5	33	24.3
9	33.5	23.8	32.1	22.3	29.4	23.1	30.2	23	31.5	22.1	33	22.8	36.3	22.4	31.7	24.2
10	34.4	24	36.4	21.4	31.9	23.5	32.2	22.7	33.3	22.1	34	23.2	33.2	23	33.2	24.2
11	32.4	23.6	34.6	23.1	31.5	24	30.7	23.5	33.2	22.1	34.3	23.5	34.5	23	32.6	24.9
12	33.8	23.1	34	23.1	30.6	23.9	30.7	23.6	33.7	21.8	33.2	23.2	34.1	23.6	32.8	25.2
13	34.6	24.3	33.6	22.8	31	23.7	31.8	22.3	32	21.4	33.9	23.4	34.2	23	32.5	23.8
14	33.4	23.7	35.8	21.6	30.4	24	30.5	23.2	32.6	21.7	33.4	23	34.4	22.4	32	24.2
15	33.5	26.8	35.4	22.6	31	23	31.7	22.4	33.3	23.3	34.4	24.1	34.1	23.3	32	24.6
16	34	23.7	32.8	21.8	31.5	23.5	30.3	23.3	31.3	23.4	34	23.9	-----	30.1	24.8	-----
17	32.5	24.4	31.6	22.7	29.7	22	29.2	22.7	29.3	21.6	31.2	23.4	-----	31	24.1	-----
18	32.6	24.8	30.4	23.1	28.1	23.9	31.7	22.3	30.7	21.9	31.2	23	-----	31.6	23.9	-----
19	32.5	21.8	30	21.9	28.1	22	28.7	23.6	30.6	22.1	31.3	22.9	-----	30.3	23.7	-----
20	31.9	21.3	31.6	23.1	28.4	22.8	30.7	21.6	29.5	22.8	29	23.2	-----	27.6	23.9	-----
21	32.6	21.7	31.6	22	29	24.4	30.7	21.5	30.3	21.8	30.7	23.7	-----	30.4	24.4	-----
22	32.8	22.3	32.8	22.1	30.2	22.9	31.7	22.3	29.9	22.5	31.4	22.3	-----	30.7	24	-----
23	32.6	22.3	33.4	22.1	30.1	23.4	31.7	22	31.1	22.3	32.2	22.9	-----	32.2	24.2	-----
24	32.1	24.3	33.1	22.6	30.1	23.5	30.2	22	32.7	22.2	33.5	24	-----	33.3	24.4	-----
25	33.9	23.5	36.2	22.8	29.6	24.6	31.7	23	34	22.4	31.7	23	-----	30.3	23.5	-----
26	32.4	23.3	36.2	22.1	30.1	25.8	32.2	23.8	35.1	22	33.7	22.5	-----	33	23.7	-----
27	31.8	22.9	36.2	21.1	30	23.1	31.7	21.9	34.4	21	32.3	22.9	-----	32.9	22.7	-----
28	34.2	23.1	35.1	23.1	29.7	22.9	32	21.3	34.9	21.2	32.1	21	-----	33.3	21.9	-----
29	32.8	22.9	33.8	22	30	24	30.8	21.5	33.7	21.7	32.7	22	-----	33.1	23.5	-----
30	30.7	22.3	31.6	22.8	29.4	22.6	31.2	22.3	32.8	21.8	31.6	23.1	-----	32.1	23.9	-----
31	30	22.3	31.5	21.8	30	22.2	31.7	21.4	32.9	20.7	31.5	22.2	-----	32.5	22.8	-----
Mean	32.7	23.3	33.1	22.4	30	23.5	31.1	22.6	31.9	22.1	32.4	23	-----	31.8	24.2	-----

Day.	Dumaguete.		Yap, Western Carolines.		Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.1	23.6	29.1	25.1	32.3	24.4	32.2	22.1	32.3	24.1	31.5	23.7	30.6	25.4	26.8	22.3
2	32.2	22.8	30.7	23.5	31.2	23.8	34.7	22.8	32.3	25.4	32.5	24.3	30.5	24.9	29.9	23.8
3	32.3	24.8	28.3	23.4	31.9	24.1	31.3	23.3	32	26.6	32	24.6	31	24.6	30	24.5
4	28.5	24.5	30.2	23.7	30	25.6	33.6	22.6	30.2	26.7	30	24.6	31	25.5	29.5	25
5	27.5	23.6	31.7	24.1	28	24	31.2	22.7	29.5	26	28.5	26	28	24.5	28.6	22.9
6	31.1	22.7	31.1	25.9	32	25.3	33.3	23.3	33.2	25.3	30.6	25.7	29.6	23.8	28.5	23.1
7	32	26	30.7	26	32.2	25.8	-----	-----	33.4	24.2	30	25.2	29.8	26.9	29.5	25.9
8	31.5	23.6	29.5	23.7	32.8	24	34.6	-----	32.5	23.3	33	25.6	29.8	26	30.4	26.9
9	33	22.3	30.6	23.1?	33.2	23.4	33.3	23	32.8	24.4	30.5	24.4	30	25.5	30.8	27
10	35.1	23	32.2	25	33.3	26.1	34.5	22.1	32.6	27	30.8	25.2	31.8	26.8	30.5	25.7
11	33.3	25	32.1	24.2	32.2	25.5	36	22.5	33.5	27	29.5	24.8	30	27	30.4	26.4
12	34	24.6	32.4	23.1	32.6	25.7	35.5	24.3	33.6	25	30	24.6	29.6	26	29.1	23.1
13	34.1	21.8	31.2	23.6	33	26.1	36.2	21.4	32.8	25.2	30.6	24.6	30.9	26.5	30.5	26.8
14	31.8	22.2	29.5	23.2	32.9	23.8	36.5	21.3	33.5	26.7	33.4	24.3	31	26.5	31	26.6
15	34	23.6	30.8	24.4	34.5	25.3	36.4	21.4	32.9	27.4	31.6	25.3	31.2	26.4	31.1	26.5
16	31.8	24.2	31.2	24.3	32.6	25.3	34.6	22.1	31.1	25	30	25.2	32	26.2	31.5	23.8
17	32	23.3	30.7	24.3	30.1	24.5	26.8	23.7	31.5	26.1	29.5	22	30	25.3	30.5	22.5
18	31.5	23.2	26.9	22.5	32.4	24.7	29.5	22.9	31.9	25.5	31.5	23.9	30	25.3	29.9	23.7
19	32.1	23.6	29.4	23.5	31.5	25.3	32.5	23.7	31.8	25.8	30.5	25	30	26.4	30	24.3
20	30.9	23.2	30.2	23.5	30.5	24.7	31.8	22.9	27.5	24.3	28.4	22.6	29.6	24.2	30.1	23.4
21	30.8	23.7	30.1	24	31.7	25.3	32.7	22.9	30.9	24.4	29	23	30	25.2	29.3	24
22	31.5	23.9	28.3	23.2	31.3	25.4	31.5	21.2	30.6	25	29.5	23.6	29.7	25.4	30.4	23.8
23	34	23.3	28.3	22.3	32.4	25.3	34.5	21.9	31.6	25.8	29	24	29.8	25.6	29.9	24.2
24	34	22.6	31.7	25.1	33.1	25.7	31.5	23.9	32.4	25.8	32.5	23.8	30.2	25.6	28	22.8
25	33	23.7	32.2	24.3	32.6	25.6	33.4	21.5	32.6	24.5	30.8	25.4	30	26.6	30	23
26	34.6	22.6	32.7	24.4	31.4	-----	31.1	21.7	33.3	23.9	30.5	25.5	31	26.5	30.4	25.5
27	31.7	23.2	32.6	23	31.7	26	31.5	21.2	32.9	23.6	30.5	24.8	30.9	25.5	29.6	25.7
28	30.9	23.1	33.2	24.4	31.8	24.2	32.5	22.4	32.3	23.3	31.7	24.8	31.9	25	30.5	25.1
29	31.8	23.5	31.7	24.3	32.1	23.5	33	21.9	32.2	22.8	32	24	33	24.5	31.1	23.4
30	29.8	23.7	33.2	23.4	32.4	23.6	32.9	21.1	31.5	24	30.7	24.5	32.1	23.8	31.8	24.5
31	29.9	22	33.1	23.4	32.1	22.8	32.2	22.9	32.4	22.9	29.6	24.2	31.5	25	30	23.5
Mean	32	23.4	30.8	23.9	32	24.8	33	22.4	32.1	25.1	30.7	24.5	30.5	25.6	30	24.5

Maximum and minimum temperatures at the stations of the Weather Bureau, July, 1914—Continued.

Day.	San José Buenavista.		Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	27.1	23.6	28.4	23.6	30.7	24.4	30.5	25.4	31.4	23.8	31.1	24.5	33.1	22.8	31.8	25
2	30.6	22.5	31.8	24.2	30.9	23.6	31.6	24.4	32.3	23.8	32.6	23.1	32.6	23.2	31.5	24.8
3	31.2	23.1	30.5	24.8	32.2	24.3	32	25.5	31.5	25.6	33.3	23.2	35	23.2	31.1	24.3
4	31.1	23	31.2	23.1	31.8	24.5	31.6	27.5	32	25.5	32.4	23.2	32.6	25.6	31.5	24.4
5	28.3	23.5	27.5	24.1	29.6	24.9	29.6	27.1	31.2	23.9	30.6	23.5	30.6	25	28.6	25.1
6	29.8	23.4	32.4	24.2	30.8	27.4	30.7	27.4	33.4	23.5	31.3	23.5	33.6	23.8	29.8	26.8?
7	29.8	24.9	31.4	24.3	31.1	27.9	30.6	28	34.5	24.1	33.5	25.2	34.1	22.8	30.8	27.6
8	29.8	26.5	31	24.3	30.4	24.1	30.5	27.4	34.5	22.7	33.6	25.5	35	22.3	29.7	25.5
9	30.7	26	32.3	26.6	30.9	22.5	31.8	27.1	33.3	23.2	34.2	24.7	35.6	22.6	30.9	26.9
10	32.7	27	33	26.5	31.6	24.4	32.2	27.6	34.4	24.1	35.2	24.3	35	25.8	30.7	27.3
11	31.2	27	33	25.6	31	27.5?	30.4	28.2	33.6	25	34.8	26	34.1	23.2	30.2	27.6
12	30.8	27	32.2	26.7	31.2	27.2	30.2	27.5	33.1	23.5	34.2	25.9	34.8	22.6	30.6	27.7
13	31.2	27.2	30.8	26.7	31.1	24.8	32.2	27.4	32.8	23.6	34.2	25.4	35	22.8	30.7	27.6
14	32.8	24.5	32.8	23?	31.2	24.4	31	27.4	33.9	24.6	34.9	24.7	35.6	23.2	30.8	26.3
15	32.6	26.5	32.7	26.5	31	24.4	30.3	27.8	31.1	24.6	35.2	24.8	34.8	23.1	33.1	23.9
16	29.8	22.5	31.3	26.4	30.6	23.2	31.4	27.1	31.3	24.2	35.2	23.9	33.9	24.6	31.6	23.7
17	28.8	22.6	29.1	23.4	30.3	22.6	31	26.1	32.9	22.2	32.8	23.2	36	24.5	31.5	26
18	29.5	24	30.1	24.6	30.2	23.2	30.9	27.1	32.5	23	32.3	23.8	36.3	22.5	31.4	25.9
19	29.8	24.1	31	24.4	30.5	23.4	32	25.1	32.6	23.8	32.4	23.5	33.6	22.7	31.7	24.9
20	31.7	23	30.4	24.6	30	22.7	29.1	25.3?	-----	-----	31.9	23.1	31.6	22.9	30.2	24.1
21	30.7	23	26.4	23.8	30.4	23.2	30.9	24.4	-----	-----	32.2	23.4	32.6	23.5	30.7	23
22	30.7	23.5	31.2	23.5	29.6	23.3	30.8	24.2	-----	-----	32.4	22.3?	34.8	22.8	31.3	24.1
23	31.7	23.5	32.5	24.7	30.6	22.5	30.4	24.9	-----	-----	32.7	23.5	34.9	22.6	32.1	25.4
24	27.4	24	27	24	30.4	24.7	31	26.5	-----	-----	32.4	24.2	34.1	24.9	30	26.7
25	29.5	23	28.2	23.6	30.6	24.2	31.2	28	-----	-----	33.9	23.7	35.4	24.9	32.2	26.9
26	29.7	25	31.6	25.8	30.6	25.1	31.3	27.4	-----	-----	32.9	23.9	35.3	22.4	31.5	25.3
27	29.4	25.6	29.2	24	30.8	23.4	31	27.5	-----	-----	31.4	23.2	35.6	23.5	32.7	24
28	32.7	23.4	31.8	25	31.3	22.6	31.8	25.4	-----	-----	32.7	23.3	33.6	22.5	31	23
29	32.8	23.4	32.2	23.7	31.9	21.9	31.6	23.7	-----	-----	33.3	22.2	33.6	22.4	31.1	22.7
30	33.2	23.6	31.4	24	31.6	21.3	31.8	23.5	-----	-----	32.8	23.2	32.7	22.5	32.6	22.3
31	30.6	22.5	30.8	22.4	31.2	21.9	31.6	24.2	-----	-----	32	23	33.5	22.8	31.9	22.4
Mean	30.6	24.3	30.8	24.6	30.8	24	31.1	26.3	32.8	23.9	33	23.9	34.2	23.3	31.1	25.2

Day.	Masbate.		Romblon.		Batag.		Gubat.		Legaspi.		Sumay. Guam.		Calapan.		Virac.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.4	26.4	30.6	23.8	32.5	22.9	32.8	24.9	33	24.4	29.6	26.2	32.7	23.5	32.8	24.3
2	33.6	25.5	35.1	24.2	31.9	23.2	31.7	24.5	32.9	24.1	30	26.2	33.2	22.5	29.6	22.3
3	34.6	26	34.3	24.7	32	24.7	33.3	25.4	32.1	24.7	30.6	23.8	33.1	23.5	33.4	22.5
4	33.5	25.8	33.2	25.7	31	24.5	32.5	24.9	33.2	24.7	30.6	24	32.5	23.2	31.5	23
5	33.4	24.6	30	25.5	30	23.5	27.9	24.9	27.4	24.5	30	25	30	23.5	28	23.4
6	32.4	26	32.7	23.7	32	23.5	30.8	24.7	31.2	25.4	30.2	23.8?	31.5	22.5	32.3	23.5
7	30.8	26	33.9	22.6	32.5	24.6	33	25	30.6	23.4	27.8	21.6?	31.7	23.1	31.2	23.2
8	33	25.4	32.6	21.7?	31.6	23.4	33.2	25	32	22.6	27.2	22.8	33.1	23.1	33.5	23.1
9	33.6	26.6	33.9	26.3	32.9	23.2	33.5	24.6	33.2	25.1	29.8	23.2?	34	23.5	34	23.3
10	33.2	26.8	33.2	26.3	30	25.5	29.7	-----	30.6	25.9	30	24.8	34	22.9	30.2	24.2
11	33.4	27.4	32.6	26.9	32	25.4	32.4	27.1	31.4	27	29.4	24	35.2	25	31.4	24.4
12	32.6	27.8	34.3	26.9	32.5	24.4	33.2	27.3	32.2	26.7	29.8	24.4	34.7	25.1	31.6	24.6
13	34.2	26	34.1	26.9	31.4	24	33.9	26.5	33.1	26.1	28	24.4	34.8	24.7	32.5	24.5
14	34	27.2	35.2	26.3	32.9	23.8	34.8	24.8	33.6	25.2	30	24	34.1	23.2	34.4	23
15	34.2	26.8	35.2	25.9	31.5	23.9	34.7	25.9	34	25.1	29.8	23.4	35.1	22.6	35	22.6
16	34.6	24.5	34.6	24.9	31.5	24.3	33.6	25.5	33.7	23.9	29.6	25.4	33.4	22	30.6	22.8
17	34.4	24.8	32.1	24.4	31.5	23.5	32.8	24.1	29.6	23	29.8	24	32.5	22.5	33.6	22.2
18	33.2	24.6	33.7	24.8	32.5	23	32.5	23.8	33	23.6	29.8	24.8	32	22.5	33.9	22.6
19	31.2	26	34.2	25.8	32.5	23.5	33	24.3	34.3	23.5	29.6	23.8	33.5	22.6	30	22.5
20	32.2	24	33.5	23.9	31	22.9	33.1	24.2	33.1	23.2	27.4	25	32.5	22.5	31.4	21.6
21	32.5	24.6	31.2	24.1	30.5	22	32.3	24.6	32.2	23.3	28.4	24.8	32.5	22.8	30.2	22.4
22	32.4	24.2	34.5	22.9	30.7	23	33	23.9	33.1	23.9	27.8	22	32.1	22.5	32.8	22.5
23	33.5	25.6	35	25.7	31.9	24	34	24.8	31	24.4	29.4	23.4	32.3	22.5	33.7	22.6
24	32.4	26.4	30.8	25	31.9	23	33.5	25.6	31.2	23.7	28.2	21.2	30.4	23.2	32.4	23
25	32.6	26	32.2	23.8	32.9	23.5	33.5	24.8	32.4	24.1	29.4	23	30.5	23.4	34.2	23.5
26	32.6	-----	33.7	23.8	32.8	23	33	24.8	32.8	24.4	30.6	24.6	32.3	23.5	33.3	22.9
27	30.8	25	31.7	24.9	32	23	32	24.5	31.1	25.2	30	25	33	24.1	32.6	24
28	32	26.4	34.1	25	32.8	22.4	33	22.5	34.2	24.9	30.4	24	33.2	22.6	35.2	23.4
29	34	25.2	35.8	-----	32.9	23.3	34.5	23.3	34.1	23.7	31	25.2	32.5	22.5	34	22.3
30	34	26	34.6	22.4	32	23.2	33	23.4	34.8	22.9	30.4	25.6	32.1	21.9	32.5	22.1
31	34.4	25.8	32.7	21.8	31.9	22.5	33	23.8	34.3	23.2	29.4	26	34.5	21.5	34.1	23.2
Mean	33.1	25.8	33.4	24.7	31.9	23.6	32.8	24.8	32.4	24.4	29.5	24.2	32.9	23.5	32.4	23.1

Maximum and minimum temperatures at the stations of the Weather Bureau, July, 1914—Continued.

Day.	Nueva Caceres.		Batangas.		Atimonan.		Ambulong, Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.8	23.5	31.7	24.2	32.9	24.7	33	24.4	30	19.4	33.2	25.8	32.1	23.7	32.5	24.9
2	33.6	22.5	33	24	33.1	23.7	32.9	24	29.6	19	31.8	24.5	32.9	23	32.9	23.2
3	33.9	22.4	32.7	24.1	30.5	24	33	24.2	29.2	19.6	32.8	24.6	32.5	23.8	32.4	24.7
4	34	23	30.4	24.4	32.8	23	31	24	30	19.2	31.8	24.7	30.7	23.3	29.1	24.2
5	31	23.7	28.3	23.4	28.7	24	28	24.3	28.3	18.3	31	24.9	28.1	23	30.5	24.3
6	31.6	23	31	24.6	31	24.5	29.2	24.5	27.8	18.5	33	25.1	29	23.6	28.1	24.5
7	31	24.1	29.8	22.3?	31.1	24.8	28.8	24.3	27.2	18	31.8	25.4	29.2	23.5	27.5	24.3
8	32.8	22.5	31.5	24.1	31.8	24.9	29.9	25.9	27	18.5	32.6	26	32	23	31	23.7
9	33.5	23.5	32.3	25.1	33.5	24.9	31	25.1	28.4	18.8	35.3	25	32.6	23.5	32.2	24.2
10	33	24.5	31.8	24	33.8	25.5	30.7	26.9	28.8	18.3	33.3	25.6	32.5	24.5	32	26.9
11	32.2	25	32.3	27	33.8	26.9	30.3	27.5	28.2	17.8	33.2	26.9	32.2	26	32	27.7
12	33.2	25.7	31.9	27.4	33.3	27.5	30.2	26	28.7	18.1	34.3	27.5	32.8	24	31.7	27.3
13	33.2	25.7	33	27.1	34	26.9	30.2	27.5	29	18.6	34.7	26.3	32.2	26.7	32.6	27.1
14	34.3	23.7	32.6	25.2	33.6	24.3	31	25.5	29.6	19.1	35	25.1	32.6	24.7	32.2	24.8
15	34.7	23.5	32.8	23.8	34.4	23.7	31.8	24.5	29.9	18.8	34.7	24.3	32.8	24.7	32.6	24.4
16	33.4	21.5	31.4	23.4	30.9	22.9	31	22.7	30.4	19.3	32	24.2	31.1	22.2	32	23.1
17	31.9	21.5	32.3	23.2	32.2	22.6	33.2	23	29.8	19	31	23.9	34.1	21.5	32.1	22.7
18	32.5	22.5	32.8	23.7	32.2	23.4	33.9	23.4	30.1	19.6	31.1	23.3	33.2	22.5	32.7	24
19	33.6	21.8?	33	24.1	32.7	23.8	34	24	29.5	19.2	31.8	24.2	32.4	24	32.9	24.5
20	33.5	22.3	32.9	23.4	31.1	23.8	32	23.5	29.1	19.4	32	24.2	32.8	24.2	32.1	23.7
21	33	21.6	30.9	23.4	29.9	24	33.2	23	30.3	19.7	32.1	24.4	32.1	24.3	33	23.8
22	33.4	21.5	30.5	23.6	31.8	23.3	33.2	23.9	30.7	19.2	31.8	24.3	31.2	23.7	32.5	24
23	33.1	22.2	31.3	22.8	32.5	23	31.3	23	30.1	19.8	33.9	24.2	33.1	22.5	31.6	24
24	31.4	23.5	28	23.1	32	24.5	27.2	24.4	30.8	19	33.2	25.4	28.2	23.7	28.7	23.9
25	30.7	23.7	32.8	24.4	31	24.1	29	24	29	19.3	32.8	25.2	30.6	24	30.9	23.8
26	33	23.6	30.3	23.5	31.6	24.7	29.8	25.4	29.4	19.6	32.2	25.8	30.5	25.2	31.5	23.5
27	31.3	24	32	26	32.6	24.7	31.5	25	29.7	19.7	33.3	25.9	32.2	23.9	29.5	23.9
28	33.8	23.1	32.4	23.1	33	25.1	33.7	23	30.1	19	34.6	26.2	32.4	24	32.3	23.7
29	33.8	22.2	32.8	22.5	33.6	23	33.6	22.5	30.6	19.3	33.3	25	32.4	22.5	32.5	23.7
30	34.6	21.5	31.9	24	33.3	23.6	32.8	23.9	31.1	19.1	33	23.4	32	23.6	32.2	25.3
31	34.4	21.5	32.6	23.6	33	23.5	33.8	23.6	31.7	19.2	32.7	23.6	32.8	22.9	33.5	23.7
Mean	32.9	23	31.7	24.1	32.3	24.3	31.4	24.4	29.5	19	32.9	25	31.8	23.7	31.6	24.4

Day.	Antipolo.		Iba.		San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	
1	30.5	23.3	30.4	24.1	31.6	24.7	33.7	24.8	35.5	25.2	34.7	24.5	31.1	24.2	23.8	
2	32.9	21.8	31.4	23	32.3	23.5	34.5	23.2	35.4	24.1	34.9	23.5	31.3	23.7	23.3	
3	30.9	23.2	31	23.8	32.4	24.9	34	24.8	31.4	23.8	33.7	24.9	30.9	25.1	24.3	
4	27.7	22.8	30	23.2	30.5	24.2	31	23.5	33.1	23.7	33.8	24.6	31.5	24.6	21.8	
5	27.9	22.4	30	23.2	31.1	23.6	32.4	23.2	33.2	24.4	31.8	24	30.5	24	22.3	
6	26.7	22.3	27	22.8	27.4	24	32.8	23.5	29.7	24.3	27.8	24	27.7	23.9	18.5	
7	26.1	22.1	28.7	24	28	23.9	28	23	29.8	24.8	28.5	24.1	27.5	24	15.6	
8	29	22.3	28.5	23.1	27.5	23.4	26.8	23.3	29.7	24.5	25.8	24	26.6	23.5	17.8	
9	30.3	23.2	30.5	24.8	30.6	24.5	31.5	23.8	32.5	24.1	31.4	24.4	26.6	24.4	16.1	
10	30.1	24.3	30.3	25.5	31.7	25.1	32.9	24.2	32.8	26	32.8	24.6	32.2	25.1	19.2	
11	29.5	25.3	30.6	24.5	30.1	24.9	30.6	24.4	32.8	25.7	31.4	26.1	30.6	26.1	18.7	
12	29.7	25.3	31.5	25.5	31.5	25.2	33.7	24.3	32.8	27.6	33.9	26.4	30.7	26.1	18.7	
13	30.7	24.7	29.4	26	31.5	24.4	31.4	24.2	33	27.1	31.8	25.6	29	23	18.3	
14	30.8	24.3	31	26	31.7	25.2	33.7	24	34.2	25.2	32.6	25.5	31.1	24.9	21.7	
15	31.3	22.6	30	23.5	32.2	23.1	34.2	24.5	34.4	25	34.3	23.5	31.5	23.9	22.7	
16	30.7	22.3	30	23.1	32.4	22.8	33.5	23	30.7	23.2	33.2	23.4	31.9	23.8	23	
17	31.8	21.4	29.6	22.8	32.4	23.6	33.6	23.5	31.2	23.5	34.8	24	30.9	23.9	23.6	
18	31.9	22.2	31	23.2	32.2	23.5	34.8	24.4	31.2	23.6	35.2	24.3	32.6	24.5	24	
19	31.6	22.9	31.4	23.8	32.9	24.4	35.2	24.3	30.7	24.3	35.8	24	33.1	24.6	24.3	
20	32.3	22.4	31.6	23.5	32.8	24.4	34.7	23.6	30.6	24.1	35.4	24.5	32	24.1	25.6	
21	31.6	22.8	31.5	22.9	32.2	24.4	36	23.5	30.3	23.9	33.8	23.9	31	23.9	23.5	
22	32.2	22.7	30.7	23.5	33.2	24	34.6	23.6	31.6	23	35.2	24.5	31.2	24.1	24.8	
23	30.5	22.4	30.8	23	32	24	31.8	23.2	33.2	23	34.3	24.5	31.8	24.1	23.2	
24	31.8	23	29.7	23.2	30	23.9	32.8	23.2	32.7	24.2	32.9	24.5	31.9	24.9	23	
25	28.9	22.3	29.6	22.5	28.8	23.4	31	23.4	33	23.7	33.3	23.8	29.5	23.5	22.8	
26	29.1	22.6	28.6	22.5	27.8	22.5	26.3	23.2	32.9	23.2	26.3	22.6	27.7	22.6	17.8	
27	28.5	21.8	25.7	22	27	22.4	24.9	22	32	23.1	24.3	21.8	23.9	22.2	16.7	
28	31	22.9	31.5	22.7	31.5	23.5	33	22.6	32.9	24	32.8	22.5	31.1	22.9	23.6	
29	31.7	23	31.5	22.1	32.5	22.1	34.9	22.5	32.1	25	33.3	25	32.5	24.3	22.7	
30	31.7	22.9	31	23	31.4	23.1	31.9	23.4	29.6	23.2	33.4	24	32	24.4	22.6	
31	32.1	22.8	30.9	22.5	32.6	23.4	33.5	22.2	31	22	34.8	24	32.5	24.1	23.9	
Mean	30.4	22.9	30.2	23.5	31	23.9	32.4	23.6	32.1	24.3	32.5	24.2	30.6	24.1	21.8	

Maximum and minimum temperatures at the stations of the Weather Bureau, July, 1914—Continued.

Day.	San Fernando, Union.		Echague.		Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.1	25	37.7	23.4	32.4	26	32.2	24.5	37.8	23.9	35.3	24.3	33	23.6	32.1	26.9
2	32.9	23.9	36	24.9	30.5	25	31.7	24.5	35.4	24.4	34.2	24.4	32.6	24.4	31.6	26.6
3	32.1	24.7	36.7	24	31	25	32	24.2	37.2	24.7	33.9	23.9	32.4	24.6	31.9	25.5
4	32.8	24	36.7	23.9	31.1	25	31.1	24.4	36.6	24	33.1	23.8	31.8	23.6	31	24.3
5	31.9	24	34.1	24	31.5	25	30.5	24.2	37.4	23	32.7	23.2	31.8	23.5	29	24.6
6	30.7	23.8	32.5	23.3	30.5	25.4	29.6	23.4	38	25.3	32.5	24.5	31.8	24.6	30.6	24.7
7	27	24.2	33.5	24.5	28.4	24.7	27.6	24.4	34.7	24.7	27	24.3	31.4	25	29.9	25
8	27.7	22.8	30.7	23.7	26.5	24.7	25.6	22.3	31.5	24.7	26.5	24.1	29.4	25	30.6	25.8
9	31.9	22.6	36.6	22.9	31	24.4	31	23.7	36.2	24.8	32.9	22.6	32.6	24.5	31.4	25.3
10	32.9	25.5	35.3	22.7	31.5	26	30.3	24.7	37.1	25	32.5	25.5	32.3	24.6	31.8	25.7
11	30.2	25.8	33.2	24.4	30.4	26.5	30.7	25	34.6	25.5	31.6	25.4	33.2	25.5	30	26.9
12	31.9	25.9	34.3	23.8	30.4	27.2	29.3	23.7	32.8	25.6	29	25.3	31.5	27.1	28.6	26.2
13	31.7	23.1	34.8	23	29.5	25	28.7	24.5	34.4	24.1	29.9	25.1	32.4	26	29.5	26.6
14	32.9	25	36.3	23.4	31	25.9	30.7	24.9	37.8	23.5	32	24.7	33.8	24.8	32.3	27
15	33.2	24.9	37.2	21.9	31.5	25.8	31	25.5	35.4	22.6	33	24.5	32.8	23.2	32.1	25.6
16	32.3	23.7	32.9	23.3	30.5	25	31.2	23.2	35.4	23.6	32.5	23.3	31.7	22.7	32	26.9
17	32.4	23.1	34.5	23	30.5	25	30.8	24	37	22.9	32.4	23.4	32	23.4	30.7	24.1
18	32.5	23.6	34.7	22	31.1	25.6	31.3	23.9	37.2	24.6	32.7	24	32.9	24.7	32.5	24.4
19	32.8	23.6	35.3	22.7	31.2	26	31.8	24	36.5	24.2	33.1	24.2	32.9	25.1	32.2	26
20	33.1	23.8	35.6	23.8	30.7	25.9	31.2	24.5	37.7	25	33.2	25	32.8	24.4	32.2	25.6
21	32.6	23.8	34.8	22.8	31	25	31.5	24.7	38.2	24	33.1	24.6	32.6	24	31.4	25.3
22	32.9	23.9	36.2	22.5	30.7	25	30.9	24.2	37.5	24	33.2	23.9	32.1	24.4	32.1	25.7
23	32.8	23.4	35.8	23.5	31	24.8	31.4	24	37.1	24	33.1	23.7	31.6	24.6	31.7	23.7
24	33.2	24.6	34.7	24.2	31.5	26	30.9	24.3	38.5	24.6	32.4	24.6	31.7	24.4	31.6	24.5
25	33.2	24.4	34.7	23.1	31.5	25.5	30.6	24.9	37.8	24	32.6	24.5	34.1	24.5	31.9	26.4
26	28.2	23.4	30	23	26.5	24	27.6	21.7	30.3	22.7	31.6	22.2	23.3	23.6	29.8	26.8
27	25.9	21.9	28.1	21.4	25.1	23	27	22.8	30.3	22.8	31.5	22.9	31.8	24.2	30	26.4
28	33.1	22.4	35.6	21.9	30.6	23.4	28.6	23.8	37.2	22.6	30.5	24.2	33	24.1	30.4	26.8
29	32.8	23.9	35.4	23.4	30.5	26	29.3	24.8	36.5	23.4	31.2	25	32.7	24.2	30.9	25.3
30	32.9	24.8	29.6	22.2	30	26	30	24.5	32.5	22.9	31.7	22.9	31.9	23.1	32	24.8
31	33	23.6	35.6	21.4	31	25.2	31	24.8	36.5	23.1	33.2	23.6	34.7	23.8	32.7	25.3
Mean	31.8	24	34.5	23.2	30.3	25.3	30.2	24.1	35.9	24	32.1	24.1	32.2	24.4	31.2	25.6

SEISMOLOGICAL BULLETIN FOR JULY, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

- 1, 4^h 00^m [1, 12^h 00^m]. Laoag (NW of Luzon). Earthquake of intensity III.
- 3, 7^h 44^m [3, 15^h 44^m]. Zamboanga (W of Mindanao). Earthquake of intensity II-III, very short duration.
- 4, 15^h 40^m [4, 23^h 40^m]. Iloilo (SE of Panay). Oscillatory earthquake, direction NW-SE, intensity III-IV, duration 7 seconds.
- 5, 16^h 11^m [6, 0^h 11^m]. SE of Samar. Oscillatory earthquake felt throughout the whole of the eastern and southern parts of the Island of Samar with intensity IV-V, duration 6 to 7 seconds. It no doubt originated in the submarine deep which borders the eastern coast of the island.
- 10, 1^h 18^m [10, 9^h 18^m]. Butuan (N of Mindanao). Oscillatory earthquake, direction N-S, intensity IV, duration 8 seconds.
- 10, 18^h 27^m [11, 2^h 27^m]. Aparri (NE of Luzon). Oscillatory earthquake, direction N-S, intensity III, duration 4 seconds.
- 11, 0^h 05^m [11, 8^h 05^m]. Ilocos Provinces (NW of Luzon). Earthquake of intensity III-IV, felt along the coasts of the mentioned provinces. Its origin must have been very superficial in the China Sea.
- 11, 23^h 00^m [12, 8^h 30^m]. Guam (Mariana Islands). Earthquake of intensity III.
- 13, 17^h 45^m [14, 1^h 45^m]. Butuan (N of Mindanao). Oscillatory earthquake, direction NNW-SSE, intensity V, duration 10 seconds.
- 15, 23^h 58^m [16, 9^h 28^m]. Guam (Mariana Islands). Earthquake of intensity IV.
- 19, 4^h 55^m [19, 12^h 55^m]. W of Mindanao. Earthquake felt in the Province of Cotabato and in Dapitan (eastern part of Zamboanga Province). In Cotabato vertical movements followed by slow horizontal oscillations of intensity V and apparent direction S-N, were observed. In Dapitan oscillatory motions were noted of intensity III-IV and direction SE-NW. Hence it is very probable that the seat of origin of the shock was in the northern part of Illana Bay.
- 19, 17^h 10^m [20, 1^h 10^m]. Dumaguete (SW of Negros). Earthquake of intensity IV-V. The same shock was also felt but with very little intensity in Butuan, some 250 kilometers further to the east, in the Island of Mindanao. It is also almost certain that it was felt in the northern part of Mindanao and that it had its origin to the W of the volcanic islet of Camiguin.
- 25, 20^h 21^m 05^{s*} [26, 4^h 21^m 05^s]. Aparri (NE of Luzon). Oscillatory earthquake, direction N-S, intensity IV, duration 7 seconds.
- 25, 21^h 00^m [26, 5^h 00^m]. Butuan (N of Mindanao). Earthquake of intensity III.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory, whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T₀=6.4, ε=4.4, $\frac{r}{T_0^2}$ =0.045; A_E: T₀=6.3, ε=3.5, $\frac{r}{T_0^2}$ =0.052. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.			Period.	Amplitude.		Remarks.
								A _N μ	A _E μ	
184	1	I	e F	h.	m.	s.				
				11	02	16				
185	1	Iv	eP F	13	55	06				
					58					
186	3	Iv	eP L M _N F	0	22	42				
					24	27				
					25	14	5	62	Southern Formosa.	
					57					
187	3	Iv	eP F	10	24	52				
					31					
188	3	I	e F	20	02					
					30					
189	4	IIr	eP iS eL M _E F	17	52	00				
					54	52				
					57	25				
				18	03	50	7	44		
				19	06					
190	4-5	IIr	eP iL M _N M _E F	23	43	27				
					47	08				
					47	14	6	143		
					47	14	5	380		
				0	23					
191	5	Ir	eP L M _E M _N F	21	56	06				
				22	00	29				
					01	15	7	82		
					03	31	7	48		
					54					
192	6	Iv	eP L F	6	17	40				
					18	20				
					22					
193	6	IIr	eP iS _E iS _N iL M _E M _N F	6	39	51				
					41	53				
					42	10				
					43	48				
					44	44	6	117		
					45	05	7	81		
				7	21					
194	6	Iv	eP L M _E F	11	08	09				
					08	31				
					09	49	4	35		
					15					
195	9	Iv	eP L F	14	58	11				
					58	23				
				15	01					
196	13	Iv	eP L F	22	15	22				
					15	44				
					19					
197	14	Ir	e eL M _N F	3	16	07				
					30	46				
					36	00	10	14		
				4	43					
198	14	Iv	eP L F	6	35	27				
					35	45				
					39					
199	15	Iv	eP iL F	16	53	31				
					53	44				
				17	05					
200	16	I	e F	11	41					
					59					
201	17	I	e F	7	17	22				
				8	15					
202	19	Iv	eP F	9	21	48				
					23					

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.			Period.	Amplitude.		Remarks.
								A _N μ	A _E μ	
203	20	I	e F	12	32 42	16				
204	20	I	e F	13	44 55					
205	25	I _v	eP L F	20	11 12 18	42 23				
206	25	I _v	eP L M _N F	20	21 22 31	05 23	3	9	Northern Luzon.	
207	29	I	e F	6	57 7	18				

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

1, 4^h 00^m [1, 12^h 00^m]. Laoag (NW de Luzón). Temblor de tierra de intensidad III.
 3, 7^h 44^m [3, 15^h 44^m]. Zamboanga (W de Mindanao). Temblor de tierra de intensidad II-III, duración muy corta.

4, 15^h 40^m [4, 23^h 40^m]. Iloilo (SE de Panay). Temblor oscilatorio, dirección NW-SE, intensidad III-IV, duración 7 segundos.

5, 16^h 11^m [6, 0^h 11^m]. SE de Sámar. Temblor oscilatorio sentido en toda la parte oriental y meridional de la isla de Sámar con intensidad IV-V, duración de 6 a 7 segundos. Su origen se hallaba sin duda en el abismo submarino que bordea las costas orientales de dicha isla.

10, 1^h 18^m [10, 9^h 18^m]. Butuán (N de Mindanao). Temblor oscilatorio, dirección N-S, intensidad IV, duración 8 segundos.

10, 18^h 27^m [11, 2^h 27^m]. Aparri (NE de Luzón). Temblor oscilatorio, dirección N-S, intensidad III, duración 4 segundos.

11, 0^h 05^m [11, 8^h 05^m]. Provincias de Ilocos (NW de Luzón). Temblor de tierra de intensidad III-IV, sentido a lo largo de las costas de las citadas provincias; su origen debió ser muy superficial dentro del Mar de la China.

11, 23^h 00^m [12, 8^h 30^m]. Guam (Islas Marianas). Temblor de tierra de intensidad III.

13, 17^h 45^m [14, 1^h 45^m]. Butuán (N de Mindanao). Temblor oscilatorio, dirección NNW-SSE, intensidad V, duración 10 segundos.

15, 23^h 58^m [16, 9^h 28^m]. Guam (Islas Marianas). Temblor de tierra de intensidad IV.

19, 4^h 55^m [19, 12^h 55^m]. W. de Mindanao. Temblor de tierra sentido en la Provincia de Cotabato y en Dapitan (parte oriental de la de Zamboanga). En Cotabato se notaron movimientos verticales seguidos de oscilaciones lentas de intensidad V, y dirección aparente S-N. En Dapitan se observaron movimientos oscilatorios de intensidad III-IV y de dirección SE-NW. Es pues muy probable que el origen se hallaba en la parte N de la Bahía Illana.

19, 17^h 10^m [20, 1^h 10^m]. Dumaguete (SW de Negros). Temblor de tierra de intensidad IV-V. El mismo temblor se sintió también, pero con muy poca intensidad en Butuán, que está unos 250 kilómetros al E en la isla de Mindanao: es casi seguro que se sintió también en la parte del N de Mindanao y que su origen se hallaba al W de la isla volcánica de Camiguin.

25, 20^h 21^m 05^{s*} [26, 4^h 21^m 05^s]. Aparri (NE de Luzón). Temblor oscilatorio, dirección N-S, intensidad IV, duración 7 segundos.

25, 21^h 00^m [26, 5^h 00^m]. Butuán (N de Mindanao). Temblor de tierra de intensidad III.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

BULLETIN FOR AUGUST, 1914.

METEOROLOGICAL BULLETIN FOR AUGUST, 1914.

By Rev. JOSÉ CORONAS, S. J.
Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month differed but little from that of the corresponding month of last year and from the August normal. The highest pressures were observed on the 1st and 24th, the lowest on the 11th and 12th, except in the north of Luzon where the lowest readings were taken on the 13th and 27th.

The mean monthly temperature was somewhat greater than last year. In Legaspi and Atimonan it was 0.8° C. and in Ambulong 1.1° C. greater than last August. In Manila the temperature was identical with the normal of the month and 0.7° C. greater than last year. The extreme temperatures in Manila were 34.1° C. on the 5th, and 22.1° C. on the 4th; and in Baguio 24.2° C. and 14.3° C. on the top of Mirador, and 24.6° C. and 13.3° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR AUGUST, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from August, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Aug., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	758.03	+0.23	759.26	24	756.01	12	27.5	+0.1	33.6	2, 25	22.4	4
Surigao	57.68	+ .30	58.94	24	55.30	11	28.1	+ .1	35.4	27	23	24
Cebu	57.81	+ .23	59.12	24	55.68	12	28	+ .3	32.5	1	23.5	7
Iloilo	57.80	+ .23	59.37	24	55.59	12	27.2	+ .7	31.6	2	22.1	11
Ormoc	58	+ .25	59.26	1	55.77	12	27.6	+ .5	32.3	27	21.8	2
Tacluban ^a	57.82		59.39?	24?	55.62	11	28.2					
Capiz	57.58	+ .19	59.14	1	55.20	12	26.7	+ .4	35	30	21.7	25
Calbayog	57.46	+ .25	59.27	1	54.93	12	27.6	+ .1	33.7	2	21.4	2
Legaspi	56.72	— .01	58.95	1	53.50	12	27.7	+ .8	34.9	2	22.5	6
Atimonan	56.44	+ .07	59.08	1	53.07	12	27.5	+ .8	33.5	29	22.8	16
Ambulong, Tanauan	56.52	+ .01	58.74	1	53.48	12	27.4	+1.1	35.6	6	22	4, 16, 18
Paracale	56.52	+ .07	59.26	1	52.73	12	27.6	+ .5	34.5	30	23.1	2
Manila	56.99	+ .06	59.27	1	53.89	12	27	+ .7	34.1	5	22.1	4
San Isidro	57	+ .18	59.31	1	53.71	12	26.5	+ .4	34.2	6	22.6	Various
Dagupan	55.93	+ .05	58.54	1	52.57	12	26.8	0	35.8	8	22.7	23
Bolinao	56.08	+ .13	58.96	1	52.01	27	26.8	+ .4	33.1	6	22.5	10
Baguio ^b	634.62	+ .12	637.24	1	630.67	27	17.5	— .1	24.2	4	14.3	27
Vigan	755.77		759.18	1	750.68	27	26.6		34	7	22.2	24
Tuguegarao	55.46	— .39	59.01	1	50.40	13	27.6	+ .4	38.7	7	22.4	3
Aparri	55.22	— .27	59.08	1	49.50	13	27.1	— .5	33.6	30	22.5	4

^a 21 days of observation.

^b The barometric readings of this station are not reduced to sea level.

Rainfall.—The amount of rain during the month was greater than during last August and greater also than the normal, in almost all the stations of central and northern Luzon, while in the stations in the southeast of Luzon and in Mindanao it was less. In the Visayas some stations had more and others less than last year. In Manila the rainfall was 492.3 mm. which is 143.2 mm. more than in August, 1913, and 130.6

mm. more than the normal. It rained every day in Baguio and on eleven days the total was more than 100 mm. each day. The sum total for the month was 2,511.4 mm.; the normal for August is 1,142 mm. and the rainfall for last year was 1,040.1 mm.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF AUGUST, 1914.

Station.	Total.	Departure from August, 1913.	Departure from normal.	Rainy days.	Departure from August, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from August, 1913.	Departure from normal.	Rainy days.	Departure from August, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.			mm.			mm.	mm.	mm.			mm.	
Jolo	57.5	-79.7	-95.4	6	-7	22.9	6	Calapan	144.3	-53.6		13	-6	36.4	13
Isabela, Basilan	53.5	-122.6	-139.6	7	-5	22.6	6	Virac	167.8	-23		12	0	35.5	6
Zamboanga	110.3	+26.5	+18.4	6	-4	55.6	6	Nueva Caceres	100.1	-144.1	-52.9	15	-4	18	19
Davao	172.1	-19.1	-26.8	9	-2	45.7	3	Batangas	205.6			18		65.3	22
Cotabato	195.1	-107.3	-59.9	9	-14	52.1	7	Atimonan	85	-116.3	-70.9	11	-5	15.8	13
Cagayan, Misamis	104.3	-213.6		11	-9	33.5	6	Ambulong, Tana-							
Butuan	132.9	-60.8	+31.1	9	-4	64.3	15	uan	296.3	+46.8		22	+1	56.2	31
Dumaguete	46.3	-94.4		8	-7	13.7	8	Silang	470.9	+283.2	+84.5	13	-2	82.5	23
Yap, W. Carolines	269.8	-172.3		20	-7	104.1	10	Paracale	192.7	-66.3		14	-2	34.3	10
Tagbilaran	192	+52.8	+64.2	7	-1	67.3	17	Santa Cruz, La-							
Iwahig	111.1			12		21.1	4	guna	320.1	-9.8		18	-9	95.5	31
Surigao	98.4	+24.8	+7.3	10	-1	46	2	Manila	492.3	+143.2	+130.6	25	-3	96.6	22
Maasin	170.3	-94.1	-35.9	9	-2	45.7	15	Antipolo	832.8	+259.1		26	-2	275.3	21
Cebu	64.8	-18.4	-77.7	11	-4	25.7	3	Iba	1,149.3	+123.4		29	-1	294.6	21
Iloilo	539.5	-17.3	+195.1	22	-1	97.8	10	San Isidro	382.5	+40.2	+91.3	25	-1	88.5	21
San Jose Buena-								Tarlac	626.5	+268.5	+265	24	0	112.7	21
vista	611.3	-142.8	+86.2	23	-7	146.3	6	Baler	93.2?	-37.6	-63.9	19	-2	18	3
Cuyo	512.5	+35.3	+118.2	21	-6	102.1	12	Dagupan	914.4	+446.8	+435.2	25	+1	144.3	22
Ormoc	248.7	-137.7	-36.3	16	-1	104.2	7	Bolinao	1,081.1	+379.8	+520.5	25	-2	200.7	20
Guiuan	82.2			8		22.1	6	Baguio	2,511.4	+1,471.3	+1,369.4	31	+3	328.2	27
Tacloban ^a	24.8							San Fernando,							
Capiz	274	+132.1	+12.8	20	+1	30.5	6	Union	1,148.6	+565.7	+446.4	25	-2	176	20
Borongan	146.5	-13	+24.9	12	-5	30.4	17	Echague	223.6	-57.1		13	-8	66.6	18
Calbayog	113.9	+12.9	-67.9	13	-3	44.6	6	Candon	1,716.9	+1,149.3	+1,062.3	26	+4	385.3	26
Masbate	236.3	+164.3	+99.1	14	-4	51.9	6	Vigan	1,396.1		+749.4	25		266.7	23
Romblon ^b	209.5	+60.5	+49.7	17	-5	46.7	3	Tuguegarao	97.5	-160	-88.8	14	+1	19.6	11
Batag	180.3	+53.4		6	-5	99.1	6	Laoag	1,330.8	+1,498.3		23	+6	184.4	26
Legaspi	83.9	-111.2	-85.7	14	-9	24.1	6	Aparri	222.9	+125.2	-8.4	20	+10	66.6	11
Sumay, Guam	672.9	+284		26	+2	170.2	2	Santo Domingo,							
								Batanes	635.8	+507.3	+228.7	18	+2	191.1	13

^a 21 days of observation.

^b 30 days of observation.

DEPRESSIONS AND TYPHOONS.

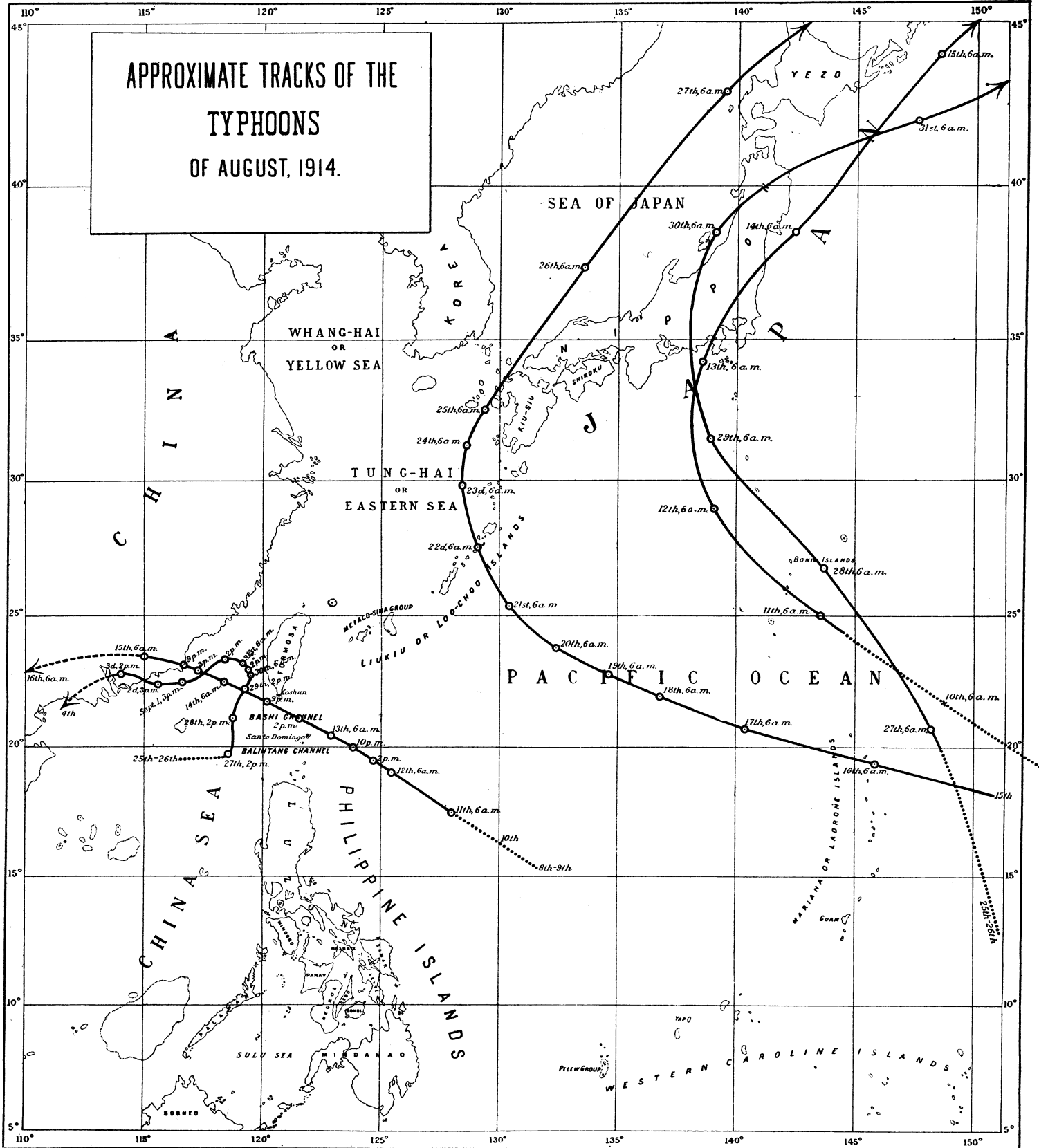
After about twelve days of calm there began on the 10th a new period of typhoons in the Far East, which lasted not only to the end of the month but to the middle of the following month of September. Five of these typhoons occurred during August, though only one of them crossed the Philippines; two influenced our weather, particularly in the N of Luzon, the other two having no influence at all on the Islands. The tracks are given in Plate V.

The typhoon of the Batanes and southern Formosa, August 8-16, 1914.—Although the notice of this typhoon was not given out till the 10th, it is clear from the observations received from Yap that the storm was already forming from the 8th to the 9th to the E of Luzon, some 600 miles from the Island, in about 132° long. E and 15° lat. N.

The ordinary weather note on the 10th stated that "there were indications of a distant depression or typhoon in the Pacific to the E of Luzon." On the 11th the position and direction of the storm could be given with more precision:

August 11, 9.30 a. m.: The typhoon was situated at 6 o'clock this morning about 300 miles to the E of northern Luzon, moving apparently to WNW.

The typhoon preserved this WNW or rather NW by W direction till it entered the continent. On the morning of the 13th it crossed the Batan Islands by the N of Santo Domingo and at nightfall of the same day it passed at about the same distance from the S of Koshun. Below we give the observations made in both stations:



METEOROLOGICAL OBSERVATIONS FOR AUGUST 12 to 14, 1914.

Date and hour.	Santo Domingo, Batanes Islands.				Date and hour.	Koshun, Formosa.				
	Pres- sure.	Wind.		Rain- fall.		Pres- sure.	Wind.		m. p. s.	0-12.
		Direc- tion.	Force.				Direc- tion.	Force.		
August 12:	<i>mm.</i>		0-12.	<i>mm.</i>	August 13:	<i>mm.</i>			0-12.	
6 a. m.	750.22	N	3	*4.8	9 a. m.	747.7	NNE	7.6	3	
10 a. m.	49.96	N	4	6.6	10 a. m.	47.5	NNE	12.7	6	
2 p. m.	48.70	NNW	5	12.4	11 a. m.	47	N	14.2	6	
6 p. m.	47.25	NNW	4	10.3	Noon	45.2	NNE	14.9	6	
10 p. m.	45.32	NNW	6	17.6	1 p. m.	44.2	NNE	20.2	8	
August 13:					2 p. m.	42.6	NNE	22	9	
2 a. m.	42.24	NNW	6	22.1	3 p. m.	41.1	N	22	9	
4 a. m.	40.54	NNW	6	15.5	4 p. m.	38.9	N	24.3	9	
6 a. m.	39.41	NW	7	20.3	5 p. m.	37	NNE	29.9	11	
8 a. m.	37.41	NW	7	18	6 p. m.	35.6	NE	33.9	12	
9 a. m.	36.71	WNW	8	12.7	7 p. m.	35	NE	34.7	12	
10 a. m.	35.64	W	8-9	22.9	8 p. m.	35.5	ENE	37.2	12	
11 a. m.	35.13	W	9	22.6	9 p. m.	36.1	ENE	35.4	12	
Noon	35.90	WSW	10	34.8	10 p. m.	38.7	ESE	36.8	12	
1 p. m.	36.64	SW	7	11.2	Midnight	43	ESE	36.6	12	
2 p. m.	38.83	SSW	6-7	6.9	August 14:					
August 14:					2 a. m.	45.8	SE	17.2	7	
6 a. m.	51.54	S	2	^b 62	4 a. m.	47.3	SSE	14.4	6	
2 p. m.	53.04	SE	2		6 a. m.	48.9	SSE	13.9	6	

^a Rainfall from 9.30 p. m.

^b Rainfall from 2 p. m. to 6 a. m.

In Santo Domingo, the winds were not very violent as can be seen from the observations and according to the testimony of the observer in a letter of August 15, and consequently but little damage was done. In Koshun, however, although the barometric minimum was but very slightly lower than in Santo Domingo, the violence of the winds was far greater as we learn from the following data placed at our disposal by Mr. H. Kondo, director of the Taihoku Observatory:

The typhoon was very violent and destructive in the extreme S of Formosa, 31 houses being entirely destroyed, 56 partly destroyed, and 133 damaged in the little district of Koshun. Fortunately there were no casualties. In the station of Koshun the velocity of 39.9 meters per second was registered by the wind during a period of twenty minutes, from 9.30 to 9.50 p. m. of the 13th.

The following are the typhoon warnings published by the Manila Observatory:

August 13, 11.40 a. m.: The typhoon was situated at 6 o'clock this morning near or over the Batanes Islands, moving apparently WNW.

August 14, 11.45 a. m.: The typhoon is situated this morning over the southern part of Formosa Channel moving WNW.

August 15, 11.15 a. m.: The typhoon entered China yesterday evening near Swatow moving WNW.

The position on the coast where the typhoon entered the continent may be obtained from the observations made in the Lamocks Islands (117° 17' long. E, 23° 16' lat. N), in Swatow (116° 40' long. E, 23° 23' lat. N), and in Breaker Point (116° 30' long. E, 22° 56' lat. N), and given below.

METEOROLOGICAL OBSERVATIONS TAKEN IN THE SOUTHERN CHINA COAST, AUGUST 14 AND 15, 1914.

Date and hour.	Lamocks Islands.				Swatow.				Breaker Point.			
	Pres- sure.	Wind.		Weather.	Pres- sure.	Wind.		Weather.	Pres- sure.	Wind.		Weather.
		Direc- tion.	Force.			Direc- tion.	Force.			Direc- tion.	Force.	
August 14:	<i>mm.</i>		0-12.		<i>mm.</i>		0-12.		<i>mm.</i>		0-12.	
6 a. m.	748.7	NNE	4	o	748.1	NW	1	o	747.8	NW	2	o, m
9 a. m.	45.3	NE	6-7	o, m, r	48.1	NW	2	o	47.7	NW	2	o
Noon	44.8	NE	7	o, m, q, r	48.1	N	4	r	47.3	NW	2	o, m, d
3 p. m.	36.2	NE	10-11	o, m, q, r	44.2	N	6	r	43.3	NW	4	o, m, r
6 p. m.	29.2	ESE	10-11	o, m, q, r	39.3	NNE	9	r	33.8	NW	8	o, m, q, r
9 p. m.	43	SE	9	g, m, r	34.3	NE	11	r	26.1	W	11	o, m, q, r
Midnight	46.8	S	7-8	g, m, r	42.6	SE	10	r	42.3	S	8	o, m, q, r
August 15:												
3 a. m.	48.4	S	7-8	g, m, r	46.1	S	7	r	45.4	SSE	7	o, m, r
6 a. m.	50.4	S	7-8	g, m, r	48	S	6	r	47.4	S	5	o, m, r

Typhoon of August 9-15, 1914.—Simultaneous with the typhoon mentioned above was another one, very distant from the Philippines, and which appeared on the 9th to the E of the northern part of the Ladrone or Mariana Islands, moved to the NW till the 12th, then recurved to the NE and crossed the southeastern part of Japan on the 13th, passing not far to the N of Tokio in the afternoon.

Typhoon of August 15-27, 1914.—This typhoon first appeared on the 15th to the E of the northern part of the Ladrone or Mariana Islands and was moving in a WNW direction. Thanks to the observations made on board the steamship *Resau* we have been able to fix with sufficient accuracy the position of the vortex at 2 p. m. of the 16th. These observations, which were obtained for us by the observer in Yap, Mr. Prudencio Urbiztondo, are given below:

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE STEAMER "RESAU," AUGUST 15 TO 18, 1914.

Date and hour.	Position.		Pres- sure.	Wind.		Weath- er.	Date and hour.	Position.		Pres- sure.	Wind.		Weath- er.					
	Lat- itude north.	Longi- tude. east.		Direc- tion.	Force.			Lat- itude north.	Longi- tude. east.		Direc- tion.	Force.						
August 15: Noon	20	58	139	25	757.7	ENE	0-12.	5	c	August 17: 4 a. m.	17	48	148	47	53.2	SW	3-5	o, q, r
August 16: 4 a. m.					53.8	NNE	7	c	August 17: 8 a. m.					46.9	S	8-10	c, d	
8 a. m.					52	N	7	o, r	Noon					47.9	S	9	c, d	
Noon	19	58	142	57	44.8	NWbyW	9-11	o, q, r	4 p. m.					48.7	S	5-7	c	
4 p. m.					35.8	NWbyW	10-12	o, q, r	8 p. m.					49.9	SSW	5-7	o	
8 p. m.					40.2	SW	12	o, q, r	12 midnight					50.2	S	7	c	
12 midnight					41.7	SW	12	o, q, r	August 18: Noon									

One notable feature of this typhoon was the small velocity of translation which it showed for seven days, i. e., from the 18th to the 25th, while it was making a curve to the NE. From 6 a. m. of the 23d to 6 a. m. of the 25th, it only traveled 169 miles, or 3.5 miles an hour. More remarkable still was the fact that after these two days of so slow travel, when the recurve was completed it went 355 miles in twenty-four hours, or at the rate of 15 miles per hour.

The storm was very destructive in the Island of Kiusiu, causing great damage to property, railways, etc. In the station of Oshima in the northern part of the Loochoo Islands the barometer fell to 728 mm. at 1 p. m. of the 22d.

Typhoon of August 25-31, 1914.—The observations from Guam seem to indicate with some probability that this typhoon was in process of formation to the E of the Ladrone or Mariana Islands from the 25th to the 26th. At 6 a. m., August 27, the position of the vortex could be determined with a fair amount of accuracy in the neighborhood of 148° long. E and between 20° and 21° lat. N, moving NNW or NW by N; on the 28th it passed close to the Bonins by the E and N; on the 29th and 30th it crossed the central part of Japan making at the same time a complete recurve to the NE.

Typhoon of August 25-September 4, 1914.—For several days before the 25th there had existed an area of low pressure in the northern part of the China Sea, between the Gulf of Tongking and the Balintang Channel; but on the 25th itself there could be no longer any doubt of the presence of a true depression or typhoon to the W of the Bashi or Balintang Channels, as was announced by the Observatory in the ordinary weather note of that day. Observations made on board the steamship *Taming*, compared with those of Santo Domingo, Batan Islands, Formosa, Luzon, and the coast of China prove that the typhoon was to the W of the Balintang Channel, near 20° lat. N and between 118° and 119° long. E on the 27th. Below we give the observations of the *Taming* and Santo Domingo:

METEOROLOGICAL OBSERVATIONS FOR AUGUST 27 TO 29, 1914.

Date and hour.	Steamer "Taming" (Capt. G. H. Pennefather).						Santo Domingo, Batanes Islands.			
	Position.		Pres- sure.	Wind.		State of sea.	Pres- sure.	Wind.		Rain, 24 hours be- ginning 6 a. m.
	Latitude north.	Longi- tude east.		Direc- tion.	Force.			Direc- tion.	Force.	
August 27:	° /	° /	mm.		0-12.				mm.	
2 a. m.	20 39	115 09	750.82	NW	3	Confused swell				
6 a. m.	20 07	115 34	50.06	NNW	5-6	Heavy swell	750.66	SE	1	
10 a. m.	19 36	115 40	50.31	NNW	6	do				
2 p. m.	18 59	115 54	49.30	NW	6	Heavy confused sea	50.25	ESE	2	
6 p. m.	18 28	116 20	49.04	WSW	6	do			20.3	
10 p. m.	17 57	116 42	51.33	WSW	5-7	do				
August 28:										
2 a. m.	17 26	117 04	51.33	WSW	6-7	Heavy sea				
6 a. m.	16 55	117 26	51.84	SW	6-7	do	50.47	SSE	2	
10 a. m.	16 28	118 03	54.12	SW	6-7	High sea				
2 p. m.	16 02	118 33	54.89	swbyw	6-7	do	51.37	S	3	
6 p. m.	15 37	118 59	55.39	swbyw	5-7				6.1	
10 p. m.	15 08	119 25	57.68	swbyw	5-6	Sea moderating				
August 29:										
6 a. m.							53.04	S	4	
2 p. m.							53.16	SSW	4	

The track followed by the storm was a very abnormal one both on account of the great number of changes of direction it underwent and the extraordinary slowness with which the vortex advanced for nine or ten days till it filled up on the southern coast of China on September 4. From the 25th to the 27th it moved to the E; from the afternoon of the 27th till the night of the 29th it went to the N; on the 29th to the NNE; the 30th and morning of the 31st to the NW and WNW; to the SW during the afternoon and night of the 31st; and to the W on the 1st and 2d of September. The rate of progress in one of those days, from 6 a. m. of the 30th to 6 a. m. of the 31st, it was scarcely more than 1 mile per hour. In the tracing of this track as given in Plate V, we have had before us not only the observations from Formosa, but also many from stations situated on or near the China coast along the southern part of the Formosa Channel.

The director of the Taihoku Observatory has the following to say concerning the effects of the typhoon in the southern part of Formosa:

The wind was not very violent, but was accompanied by abundant rains in the extreme S of the island, causing the following losses:

Houses:		Persons:	
Totally destroyed	549	Killed	2
Partly destroyed	644	Missing	15
Damaged	1,310	Injured	4
The barometric minima were:	mm.	Rainfall during eight days, 24th to 31st:	mm.
Koshun	747.2	Koshun	752.2
Tainan	746.9	Tainan	170.8
Taito	751.4	Taito	409.6
Hokoto	747.5	Hokoto	67.8

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes se diferencia muy poco así de la del año pasado como de la normal de Agosto. Las presiones más altas se observaron los días 1 y 24; las más bajas ocurrieron los días 11 y 12, a excepción del norte de Luzón donde tuvieron lugar el 13 y el 27.

La temperatura media mensual es generalmente algo mayor que la del año pasado. Las diferencias mayores son $+0.8^{\circ}$ C. para Legaspi y Atimonan, y $+1.1^{\circ}$ C. para Ambulong, Tanauan. La de Manila es idéntica a la normal de este mes, y mayor que la del año pasado en 0.7° C. Las temperaturas extremas en Manila fueron 34.1° C. y 22.1° C. registradas respectivamente los días 5 y 4. Las de Baguio fueron 24.2° C., 14.3° C. en la cumbre del Mirador, y 24.6° C., 13.3° C. en el valle.

Precipitación acuosa.—La cantidad de agua recogida durante este mes es mayor que la del año pasado y mayor también que la normal de Agosto en casi todas las estaciones del centro y norte de Luzón, al paso que resulta generalmente menor para las estaciones del sudeste de Luzón y de Mindanao. De las estaciones de las Islas Visayas unas dan más y otras menos lluvia que la normal y que el año pasado. En Manila cayeron en todo el mes 492.3 mm. de agua, cantidad que difiere en $+143.2$ mm. de la de Agosto, 1913, y en $+130.6$ mm. de la normal. En Baguio llovió todos los días, y la lluvia diaria llegó a ser once veces mayor de 100 mm. La suma total del mes fué allí 2,511.4 mm., siendo así que la normal de Agosto es 1,142.0 mm. El año pasado se habían recogido solamente 1,040.1 mm.

DEPRESIONES Y TIFONES.

Después de unos doce días de calma inicióse el día 10 un nuevo período de tifones en el Extremo Oriente que se prolongó no sólo hasta fin de mes, pero hasta mediados del mes siguiente. Cinco de estos tifones ocurrieron en Agosto, si bien sólo uno de ellos atravesó nuestro Archipiélago. Otros dos influyeron bastante, sobre todo en el norte de Luzón. Los dos restantes no ejercieron influencia alguna en Filipinas. Véanse sus trayectorias en la lámina V.

Tifón de las Islas Batanes y sur de Formosa, 8 a 16 de Agosto, 1914.—El Observatorio de Manila no anunció este tifón hasta el día 10; sin embargo, las observaciones de Yap que se recibieron posteriormente, comparadas con las de Filipinas, indican con bastante claridad que ya del 8 al 9 se estaba formando este tifón a unas 600 millas al E de Luzón en los alrededores de 132° long. E y 15° lat. N.

En la nota ordinaria del tiempo del día 10 se dijo que “había indicios de una depresión o tifón lejano en el Pacífico al E de Luzón.” Y el día 11 por la mañana se precisó más su posición y dirección en estos términos:

Día 11, 9.30 a. m.: El tifón se hallaba a las 6 de esta mañana a unas 300 millas al E del norte de Luzón, moviéndose aparentemente al WNW.

Esta dirección al WNW o más bien $NW\frac{1}{4}W$ conservó el tifón hasta que penetró en el continente. El día 13 por la mañana atravesó las Islas Batanes por el N de Santo Domingo, y al anochecer del mismo día pasaba casi a la misma distancia por el S de Koshun. En el texto inglés reunimos en una tabla algunas de las observaciones hechas en ambas estaciones.

En Santo Domingo, según se ve por estas observaciones y según testimonio del mismo observador en carta de 15 de Agosto, los vientos no llegaron a ser muy violentos y por lo tanto no hubo allí daños ni pérdidas de mucha consideración. En cambio, en Koshun, a pesar de que la mínima barométrica fué casi igual que la de Santo Domingo, la violencia de los vientos fué incomparablemente mayor, según los siguientes datos que agradecemos a Mr. H. Kondo, director del Observatorio de Taihoku:

El tifón fué muy violento y destructor en el extremo S de Formosa, siendo 31 las casas totalmente destruidas, 56 las destruidas parcialmente y 133 las perjudicadas, en el pequeño distrito de Koshun. Afortunadamente no hubo desgracias personales. En la estación de Koshun el viento registró la grande velocidad de 39.9 metros por segundo durante un intervalo de veinte minutos, de 9.30 a 9.50 p. m. del día 13.

Véanse a continuación los avisos de tifón dados por el Observatorio los días 13, 14 y 15:

Día 13, 11.40 a. m.: El tifón se hallaba a las 6 de esta mañana en, o cerca de, las Islas Batanes, moviéndose aparentemente al WNW.

Día 14, 11.45 a. m.: El tifón se hallaba esta mañana en la parte sur del canal de Formosa, moviéndose al WNW.

Día 15, 11.15 a. m.: El tifón entró la noche pasada en China cerca de Swatow, moviéndose al WNW.

La parte de la costa por donde penetró el tifón en el continente lo verán nuestros lectores por medio de las observaciones hechas en las Islas Lamocks ($117^{\circ} 17'$ long. E, $23^{\circ} 16'$ lat. N), en Swatow ($116^{\circ} 40'$ long. E, $23^{\circ} 23'$ lat. N) y en Breaker Point ($116^{\circ} 30'$ long. E, $22^{\circ} 56'$ lat. N). Damos estas observaciones en una tabla en el texto inglés.

Tifón de 9 a 15 de Agosto, 1914.—Simultáneo con el tifón anterior, hubo otro muy lejos de Filipinas, el cual apareció el día 9 al E de la parte norte de las Islas Ladrones o Marianas, se movió al NW hasta el día 12, recurvó luego al NE, y el día 13 atravesó la parte sudeste de Japón pasando cerca por el N de Tokio la tarde de dicho día.

Tifón de 15 a 27 de Agosto, 1914.—Este tifón se presentó el día 15 al E de la parte norte de las Islas Ladrones o Marianas moviéndose al WNW. La posición bastante exacta del vórtice a 2 p. m. del 16 la hemos podido precisar merced a las observaciones hechas a bordo del vapor *Resau* las cuales nos fueron remitidas por medio de nuestro diligente observador de Yap, Sr. Prudencio Urbiztondo. Las publicamos en una tabla en el texto inglés.

Fué muy notable la poca velocidad de traslación que llevó este baguio por espacio de siete días, o sea del 18 al 25, mientras verificaba una completa recurva al NE. De 6 a. m. del 23 a 6 a. m. del 25, que fueron los dos días en que se movió más despacio, sólo anduvo 169 millas, o sea a razón de 3.5 millas por hora. Más notable parece todavía que después de dos días de movimiento tan lento, anduviese el día siguiente, terminada ya la recurva, 355 millas en veinticuatro horas, es decir, 15 millas por hora.

El tifón fué muy destructor en la Isla Kiusiu causando grandes pérdidas en edificios, vías férreas, etc. En la estación de Oshima, en la parte norte de las Islas Liukiu o Loochoo, bajó el barómetro hasta 728 mm. a 1 p. m. del 22.

Tifón de 25 a 31 de Agosto, 1914.—Las observaciones de Guam parecen indicar con alguna probabilidad que este tifón se estuvo formando del 25 al 26 al E de las Islas Ladrones o Marianas. A 6 a. m. del 27 se puede situar el vórtice con bastante aproximación en los alrededores de 148° long. E y entre 20° y 21° lat. N, moviéndose al NNW o $NW\frac{1}{4}N$; el 28 pasó junto a las Islas Bonins por el E y N; y el 29 y 30 atravesó la parte central de Japón al propio tiempo que verificaba una completa recurva al NE.

Tifón de 25 de Agosto a 4 de Septiembre, 1914.—Por espacio de varios días antes del 25 existía un área de baja presión en la parte norte del Mar de China entre el Golfo de Tongking y el canal de Balintang; mas el día 25 ya no podía dudarse que existía una verdadera depresión o tifón al W de los canales Bashi o Balintang, según anunció el Observatorio en la nota ordinaria de dicho día. Observaciones hechas a bordo del vapor *Taming* comparadas con las de Santo Domingo, Islas Batanes, y con las de Formosa, Luzón y costa de China prueban que el tifón se hallaba el día 27 al W del canal de Balintang, en los alrededores de 20° lat. N y entre 118° y 119° long. E. En una tabla que acompaña el texto inglés damos las observaciones del *Taming* y de Santo Domingo.

La trayectoria seguida por este tifón es sumamente anormal así por los muchos cambios de dirección que sufrió como por la extraordinaria lentitud con que avanzó el vórtice durante nueve o diez días hasta que se deshizo sobre la costa sur de China el día 4. La velocidad de traslación en uno de estos días, desde 6 a. m. del 30 hasta 6 a. m. del 31, apenas fué mayor de 1 milla por hora. Del 25 al 27 se movió el tifón al E; desde la tarde del 27 hasta la noche del 29, al N; el 29, al NNE; el 30 y mañana del 31, al NW y WNW; al SW la tarde y noche del 31; y al W, el 1 y 2 de Septiembre. Hemos trazado esta trayectoria, tal como la damos en la lámina V, teniendo a la vista no sólo las observaciones de Formosa, sino de un buen número de estaciones situadas en o cerca de la costa de China a lo largo de la parte sur del canal de Formosa.

El director del Observatorio de Taihoku nos dice lo siguiente sobre los efectos de este tifón en la parte sur de Formosa:

El viento no fué muy violento pero iba acompañado de abundantes lluvias en la extremidad S de la isla causando bastantes pérdidas como puede verse por las siguientes estadísticas:

Casas:		Personas:	
Totalmente destruídas	549	Muertas	2
Parcialmente destruídas	644	Desaparecidas	15
Perjudicadas	1,310	Heridas	4
Las mínimas barométricas, fueron:	mm.	La lluvia durante ocho días, del 24 al 31, fué:	mm.
Koshun	747.2	Koshun	752.2
Tainan	746.9	Tainan	170.8
Taito	751.4	Taito	409.6
Hokoto	747.5	Hokoto	67.8

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.			Evaporation. ^b		
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.	8 a.m.				
1	759.27	27.4	33.6	24	29.8	30.5	30	30.3	29.3	29.2	21.7	22.2	54.7	3.5	2.6	
2	58.97	27.1	33.8	23.9	29.8	30.3	30.2	30.6	29.3	29.1	21.7	22.2	55.5	3.7	2.8	
3	58.17	26.8	32.5	23.5	30.2	31.1	30.4	30.6	29.4	29.3	21.1	22.7	53.9	2.6	2	
4	57.91	27.2	33.1	22.1	29.8	31	30.5	30.6	29.4	29.3	19.6	20.3	51.3	4.6	3.5	
5	58.08	27.4	34.1	23.3	30.4	31.6	30.6	30.9	29.4	29.3	20.6	21.8	55	4.1	3.2	
6	58.11	26.8	33	22.8	30.6	31.4	30.8	30.8	29.5	29.3	21.8	21.4	52.4	2.1	1.9	
7	58.04	26.7	32.3	23.6	30.3	30.9	30.7	30.8	29.4	29.2	22.3	22.7	45.6	1.8	1.6	
8	57.65	26	30.9	23.3	29.9	30.5	30.5	30.5	29.4	29.2	21.2	21.8	53.1	1.6	1.5	
9	57.35	26.8	33	23.5	29.8	31	30.3	30.6	29.4	29.3	22.1	21.8	54.5	2.5	1.9	
10	56.38	26.6	31.7	23.4	29.9	30.5	30.3	30.4	29.5	29.2	22.3	23	52.6	2.5	1.9	
11	54.60	26.5	30.8	24.3	29.8	30.3	30.2	30.4	29.3	29.1	22.4	23.4	52.3	3.7	2.6	
12	53.89	26.4	29.7	23.7	29.6	29.8	30.2	30.1	29.4	29.3	22.1	23.2	44.7	2.4	2.4	
13	54.28	27.2	31.2	24.2	29.3	29.5	30	29.8	29.7	29.3	22.6	23.2	48.2	4.4	4.2	
14	56.24	27	31.3	24.4	29	29.7	29.9	29.9	29.4	29.2	22.2	23.1	48.5	2.5	2.1	
15	57.62	27.4	32.1	24.3	29.5	29.9	29.7	29.9	29.4	29.3	21.4	22.7	52.7	3.9	2.8	
16	57.77	27.6	32.5	23.2	29.5	30.5	29.8	30	29.6	29.2	21.4	21.6	51.7	4.2	2.9	
17	58.47	27.4	32.6	23.4	30.3	31	30.2	30.3	29.5	29.4	21.9	22	54.4	2.6	2	
18	58.06	27.6	32.6	22.9	30	31	30.3	30.4	29.5	29.3	21.3	21.2	53.2	4.4	2.9	
19	57.51	27.8	32.5	24.1	30.4	31.4	30.5	30.8	29.4	29.3	22.2	23.3	54.7	3.8	2.7	
20	56.38	26	29	23.6	30.2	29.8	30.5	30.5	29.3	29.1	22	23.2	39	.9	1.8	
21	55.21	26.8	31.2	23.5	28.2	29.3	30.1	30	29.4	29.2	22.5	23.3	54.9	.5	1	
22	56.58	24.6	26.8	23.2	27.9	28	29.4	29.3	29	29	21.5	22.1	35	.1	.6	
23	57.61	27.4	32	23.1	27.7	28.5	28.7	28.8	29.6	29.2	23	22.3	55.5	3.6	2.1	
24	58.26	27.3	30.9	23.9	28.5	28.9	29	29	29.5	29.3	22.6	23.7	47	2.4	2.5	
25	57.21	27.6	31.8	23.5	28.5	28.9	28.9	29.1	29.4	29.2	22.5	22.2	55.7	3.4	3.5	
26	55.27	28.1	30	26.2	28.7	28.9	29.1	29.1	29.3	29.1	21.9	24.2	43.8	4.3	4.3	
27	54.28	27.8	30.8	22.9	28.4	28.7	29.1	29	29.3	29.1	21.1	22	44.5	3.8	3.8	
28	56.24	27	30.9	23.2	27.9	28.3	28.6	28.7	29.2	29.1	21.9	22.3	52.1	2.5	2.7	
29	57.61	28	31.4	23.9	28	28.5	28.7	28.8	29.3	29.1	22.8	22.7	53	4	3.1	
30	57.49	26.6	30.7	24.3	28.5	28.4	28.8	28.8	29.3	29.2	22.6	22.8	47.9	.7	1.7	
31	56.21	25.9	29.5	23.9	27.8	27.9	28.7	28.6	29.2	29.2	22.5	23.3	38.7	.1	.5	
Mean Total	756.99	27	31.6	23.6	29.3	29.9	29.8	29.9	29.4	29.2	83	21.9	22.5	50.2	2.8	2.4
Departure from normal	-0.32	0	+0.9	-0.1							-2	-0.5			87.2	75.1

Day.	Wind.				Clouds.			Sunshine.	Rain, 24 hours beginning mid-night.	Miscellaneous.	
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.	Amount (mean).	Form and direction.					
						Upper.	Lower.				
1	SW	117	15	SW	0-10	Ci.	Cu.	E	h. m.	mm.	☁ p.
2	W	155	16	W	4.4	Ci.	Cu., Cu.-N.	E	9 35	2.5	☁ d p.
3	W, WNW	105	18	W	3.8	Ci.-S.	Cu.	E	8 55	.5	☁ p.
4	W quad.	116	14	W	6.3	Ci.	Cu.	E	6 00		☁ p.
5	SW	96	17	SW by W	4.1	Ci.	Cu.	E	10 15		☁ p.
6	W quad.	96	17	SW by W	5.5	Ci.	Cu.-N.	E	7 35		☁ p.
7	W quad.	74.5	12	W	5.5	Ci.	Cu.	E	6 15	.8	☁ d p.
8	NE, SW	44.5	5	W	9	Ci.-S.	Cu.	NE	1 00		☁ p.
9	W	64	8	W	9.3	Ci.-S.	Cu., Cu.-N.	E	1 10	1.8	☁ p.
10	SW	105	17	SW	7.6	A.-Cu.	Cu.	E	4 10	2.4	☁ p.
11	WSW	109	11	NW by W	8.8	Ci.-S.	Cu.-N.	SW	2 25	15.3	☁ p.
12	SW	400	38	SW	9.6	Ci.-S.	Cu.-N.	WSW	3 10	5.2	☁ p.
13	WSW	654	44	WSW	10	Ci.-S.	N.-cf.	WSW	0 00	22.1	☁ p.
14	SW	667	40	SW	9.8	Ci.-S.	Cu.-N.	WSW	0 35	21.1	☁ p.
15	SSW	298	26.5	SSW	9.6	Ci.-S.	Cu.	SSW	1 30	3.3	☁ p.
16	WSW	224	23	W	6.2	A.-Cu.	Cu.	EbyS	7 05	.3	☁ p.
17	SW	175	20	SW by W	5.8	Ci.	Cu.	E	9 55		☁ p.
18	W quad.	193	18	WSW, NW	6.4	A.-Cu.	Cu.-N.	NE	7 05	6.6	☁ p.
19	SW	216	23	SW	3.7	Ci., A.-Cu.	Cu.	E	10 40		☁ p.
20	W quad.	301	29	SW, WSW	5.7	A.-Cu.	Cu.	WSW	7 20	6.6	☁ p.
21	SSW	338	32	SW by W	9.9	Ci.-S.	Fr.-N.	SW	0 00	40	☁ p.
22	SW	691	45	SW	10	Ci.-S.	Cu.-N.	WSW	1 05	77	☁ p.
23	SW quad.	251	36	NNW	10		Fr.-N.	SW	0 00	96.6	☁ p.
24	SW	260	25	SW	9.7	Ci.-S.	Cu.	WSW	1 40	9.9	☁ p.
25	SW	396.5	31.5	SW	9.8	Ci.-S.	Cu.	SW	0 00	8.9	☁ p.
26	SW	636.5	37.5	SW by W	9.1	A.-Cu.	Cu.	W	2 45	11.6	☁ p.
27	SW	853	53	SW	10	Ci.-S.	Cu.	WSW	0 00	4.8	☁ p.
28	SW	809.5	44.5	SW	10	Ci.-S.	Cu.-N.	SW	0 00	14	☁ p.
29	SW	822.5	47	SW	10	Ci.-S.	N.-cf.	WSW	1 00	31.1	☁ p.
30	SW	680.5	38.5	WSW	8.1	Ci.-S.	Cu.	WSW	5 30	8.7	☁ p.
31	SW	643.5	35.5	SW	9.2	A.-Cu.	N.-cf.	WSW	2 00	43.3	☁ p.
	SW	675.5	42	WSW, SW	10		Cu.-N.	WSW	0 00	57.9	☁ p.
Mean Total		360.4	27.8		8				3 50		
Departure from normal		+2,090.5			+0.1				-22 18	+130.6	

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[φ=16° 25' N; λ=120° 36' E; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Table with columns: Day, Pressure (mean), Air temperature at Mirador (Mean, Maximum, Hour, Minimum), Air temperature in the valley (Maximum, Hour, Minimum), Relative humidity (mean), Vapour pressure (mean), Radiation (Minimum on grass, Maximum in sun, Black bulb in vacuo), Evaporation (Free exposure, Shelter total). Rows include daily data from 1 to 31 and Mean/Total values.

Table with columns: Day, Wind (Prevailing direction, Total movement, Maximum hourly velocity, Direction at the time of the maximum velocity), Clouds (Amount, Form and direction: Upper/Lower), Sunshine (h. m.), Rain (24 hours beginning 6 a. m.), Miscellaneous. Rows include daily data from 1 to 31 and Mean/Total values.

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d The anemometer of the quadruple register was partly destroyed during the typhoon of August 21.
^e This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, AUGUST, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Jolo	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Isabela, Basilan			0.3	2.3	7.1	22.9	12.2		10.2							
Zamboanga			8.6	3		22.6	4.6									
Davao		35.6	7.4	6.4	4.1	55.6	9.6	5.1								
Cotabato			45.7	7.6	11.4	28.7									19.3	4.8
Cagayan, Misamis		10.9	4.6	42.2	14	32.8		52.1	15		7.2					23.1
Butuan			3.3	14.7	3	33.5	3									19.8
Dumaguete			20.1		33.5	3.3			3							64.3
Yap, Western Carolines		4.9	1			3	8.7	13.7	1.3	3.7						3
Tagbilaran			55.9	58.9		11.9	2.8		5.3	104.1	5.6	27.7	2.6	5.4	1.5	5.4
Iwahig			21.1	6.1	7.4	4	2.6			18.6	4.8	2.8		11.2	5.6	
Surigao		46	2.3		19.3	1	6.4	1.8		9.1						1.3
Maasin	11.2		30.5		26.2	18.3		11.7	16.3							45.7
Cebu		6.4	25.7	2.3	7.1	3.3	2.5	1.8			6.8					1.8
Iloilo		4.8	14	1.8	14.2	44.4	31.5	2.5	61.4	97.8	81.3	7.9	52.6			
San Jose Buenavista		1		9.9	15.5	146.3	63.5	16.5	58.4	30.4	81.8	51.1	62.3	19		6.9
Ormoc	.5	16.8		8	8	17.5	58	76.4	17.2	20.3	7.1	29.3	102.1	68.5	15.5	3.6
Guiuan		3.6	10.9	1.8	4.8	48.9	104.2	8.3	11.7	8	.3					6.7
Tacloban	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Capiz		3.6	29	1	30.5	2.8	2.1	15.5	24.9	18	16.3	7.8	18.5		1.8	7.9
Borongan		5.3	22.6	1.5	24.4	23.4	8.4	1.3	.5							19.3
Calbayog		3	9.9		3.5	44.6	4.8	2	4.5	6.8	21.9	1	1.5			2.5
Masbate		8	50.8		23.4	51.9	6.9	12.2	43.9	6.3	8.1	1.3	5	20.8	2.3	7.1
Romblon		15.7	46.7		19.3	.3	22.9	.5	10.4	7.4	16	8.1	40.1	.8		
Batag		12.2		25.7	31.2	99.1			4.8				1.5		3.3	2.5
Gubat				2	27.9	10.7			10.9	15.2	8.8		3			(a)
Legaspi		.3		8	6.1	24.1	2	.3	7.6	8.4	.3	13.9	6.6			
Sumay, Guam	17.8	170.2		7.6		6.3	22.8	8.9	21.6	5	30.5	10.1	12.7	6.3	2.5	
Calapan					30.5	12.2			7.4	12.4	3.1	19.8	36.4	8.1		
Virac		2.3	27.5		13.9	35.5	8.4		14.5	11			12.4			
Nueva Caceres		2.3	4.1	4		2.6	12.8	4.3	13.1	4.3	2	12.6	2.8			
Batangas		1.5	6.6	4.1	4.1	8.6	23.3	27.4	.5	1.3	3.1	15.5	5.3			2.3
Atimonan			15.2	15.2		5.1	2.8	1.3				15.8	11.2			2.3
Ambulong, Tanauan	1	6.8	13.5	2.5	33.5		1	11.2		4	7.1	11.7	7.9	.8		
Silang		2			37.1		33			13.8	28.2					
Paracale	1.3	.5	31.9		5.6	19	8.6	1.6	4.6	34.3	3.8		5.1		33.3	1.5
Santa Cruz, Laguna			5.1		41.1	1.5	.9	9.4	23.1	3.6	21.5	2	3.8			
Manila	2.5	.5				.8		1.8	2.4	15.3	5.2	22.1	21.1	3.3	.3	
Antipolo		1	11.2	1.3		8.7	2.3	4.8	2.3	9.2	9.6	30.5	8.9	1.5	1.6	4.3
Iba		.1	1	.3		1	37.6	18.6	18.3	1	19.6	25.1	11.3	113.3	17.5	3.6
San Isidro		10.9			2	2.8		8	12.2	1.3	12.5	4.3	1.8	29.1	1.6	
Tarlac	58.4	.5							12.4	11.9	1.8	12.2	1.8	7.1		1
Baler		3	18			.3	5.1		(?)			.3	1			7.4
Dagupan		4.5					4.6	11.9	18.5	7.9	13.5	3.8	6.2	2.9	2	.8
Bolinao		3	5.6	2.8		1.3	8.6	11.2	69.6	1	61.2	18.1	5.1	25.6	26.3	
Baguio		17.6	1.8	4.8	2	1.5	8.1	2.6	17	21.1	26.5	14	108.7	155.1	10.3	27
San Fernando, Union		1.3			28.4				7.6	1	6.1	8.7	16.8	57.2	2.8	28.2
Echagüe			32.3		2.3				9.1	1	27.7					46.2
Candon		1		4.8	3.6	3.8	10.4	2.5	6.1	6.9	19	5.8	35.1	71.7		2.5
Vigan		2							17	4.6		14	32.8	26.3	1	28.4
Tuguegarao					33.5	1		7.1	8.9	4.1	14	19.6	8.2	2.5		
Laoag	6.6								1	1.8		59.1	91.4	128.5	15.8	
Aparri				5.1							7.9	66.6	24.1	12.7		
Santo Domingo, Batanes										17.1	5.1	104.9	191.1		5.8	

^a No observation.

Daily rainfall at the stations of the Weather Bureau, August, 1914—Continued.

Station.	Day of month.															Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	
Jolo	mm. 2.5															mm. 57.5
Isabela, Basilan	2.8	11.9														53.5
Zamboanga	22.1															110.3
Davao	11.4							7.6								172.1
Cotabato	4.1															195.1
Cagayan, Misamis	1.5		7.9						1.3	8.1						104.3
Butuan	5.6		.3													132.9
Dumaguete	9.9		2													46.3
Yap, Western Carolines	3	2.8						6.9	.3		1.3		2.8			269.8
Tagbilaran	67.3	3														192
Iwahig			18.1	14												111.1
Surigao	9.1															98.4
Maasin																170.3
Cebu	1.3															64.8
Iloilo	9.1		1.3	7.1	61.5				2.3	4.8		10.7	10.2	3.8	14.5	539.5
San Jose Buenavista	.5		10.2	7.1	5.6	.6	3.3				2.5	10.2	6.9	.8	1	611.3
Cuyo	1.8			1.8	1.3	74.4	6.6						3.6	4.8	1.1	512.5
Ormoc	10.9		1.3												2.5	248.7
Guiuan	15.8		2.3													82.2
Tacloban			9.7													24.8
Capiz	23.9		7.4	27		19.8	15.8	4.8							5.3	274
Borongan	30.4	5.8	3.6													146.5
Calbayog	7.9															113.9
Masbate																236.3
Romblon								2				12.7		(a)	6.6	209.5
Batag																180.3
Gubat	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	5.3
Legaspi			7.1		.8	.3										83.9
Sumay, Guam	2.5	2.5			63.5	5	3.8	53.4	1.3	6.4	106.7	39.4	5.1	24.2	36.8	672.9
Calapan	.3				1.3	5.6								5	6.7	144.3
Virac	14.8	27.2	.3													167.8
Nueva Caceres	2		18			16.8	1.7								.3	100.1
Batangas		1.8			9.7	65.8									8	205.6
Atimonan		2.3				2.8						2.3				85
Ambulong, Tanauan	3.3	1.8		5	56.1	39.3				1.5	1.3	9.9	3.1	17.8	56.2	296.3
Silang			7.6	30	55.9	57.9				1.8	19.3	82.5	14	38.3	49.5	470.9
Paracale	.5		23.7			12.4										192.7
Santa Cruz, Laguna	31.2		10.2	.3	8.9	35.8							8.1	3.6	14.5	95.5
Manila	6.6		6.6	40	77	96.6	9.9	8.9	11.6	4.8	14	31.1	8.7	43.3	57.9	492.3
Antipolo	28	5.1	7.3	95.3	275.3	20.5		50	4.1	4.8	22.9	12.2	8.6	77.7	114.8	832.8
Iba	.9	27.4	65.8	94.8	294.6	83.4	38	64.2	7.3	16.2	59.7	19.5	23.5	53.1	32.6	1,149.3
San Isidro	8.9	2.5	29	41.9	88.5	40.7	4.8	25.4	.8	33.3	.5	2.4	5.7	17		382.5
Tarlac	95		17.2	38.1	112.7	93.7	17.8	4.5	43.2	11.7	38.6	4.1	13.2	12.2	16.6	626.5
Baler	4.6		3.8	2.3	5.3	.8	.5			1	17		5.3	1	16.5	93.22
Dagupan	5.8	19.8	20.8	122.6	59.4	144.3	64.2	8.1	4.3	123.1	102.6	39.9	12	21.8	89.1	914.4
Bolinao	42.1	31.4	200.7	65.6	107.9	51.9	65	8.2	105.8	72.3	24.2	34.4	15.1	17.1	17.1	1,081.1
Baguio	11.9	37	57.6	206.5	184.2	107.7	91.7	92.7	47	231.5	328.2	223.8	124.9	120.3	190.6	2,511.4
San Fernando, Union		20.8	14.2	176	126	100.1	45	38.1	37.3	143.5	120.6	50.6	44.5	36	30.7	1,148.6
Echague	13	66.6	15.7	2.8	.8	3.3	2.8									223.6
Candon		3.8	38.1	158.2	143.3	207	27.7	79.5	55.9	385.3	91.4	114.8	84.4	50.6	77.3	1,716.9
Vigan	1.5	.8	20.8	45.3	156.7	136.9	266.7	127.5	107.1	140.2	145.1	31.4	42.8	40.4	20.3	1,396.1
Tuguegarao	1		13.2	15.2	5.3	3.8			1.3	1.5					4.3	97.5
Laosag			109.7	131.3	173.2	155.4	102.6	98.8	104.9	184.4	134.1	160.5	56.4	11	56.6	1,830.8
Aparri			16.8	5.1	36.9	1	.5	.5	4.3	17.1	4.2	.8			13.2	222.9
Santo Domingo, Batanes		7.6		33.8	60.3	.1	29.5	20.6	8.2	41.7	20.3	6.1	9.4	12.4	61.8	635.8

^a No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, AUGUST, 1914.

Day.	Jelo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Butuan.		Dumaguete.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.9	20.7	31.6	21.1	30	22.5	33.2	20.9	31.3	21.9	32	22.5	31.8	23.6	32.1	23
2	32.8	21.3	31.1	22.1	29.5	23	33.2	20.7	32.9	21.7	32.9	22.7	32.5	23.5	31.8	23.5
3	31.9	22.1	30.4	23.6	29.6	24.9	31.2	22	32.4	22.6	31	22.7	29.8	23.9	31.8	23.1
4	32.9	22.9	32.1	22.6	30.1	23.8	29.7	21.8	29.4	22.3	30.7	22.9	29.5	23.5	31.9	22.9
5	29.9	23.2	31.3	22.6	29.8	24.1	30.2	23	34.2	22.1	31.3	22.5	30	23.7	32.5	23
6	27.4	22.7	27.6	23.6	28	24.3	29.2	22.5	30	22	30.7	23	27.5	23.1	32	23.7
7	30.6	21.3	29.8	22.9	29	23.2	29.2	21.8	28.9	21.4	30.6	22.2	29.2	22.6	28.6	23.1
8	31.7	21	30.2	23.1	29.5	23	29.7	22.8	29.1	21.9	32.3	22.4	31.2	23.6	27.8	22.2
9	32.8	23.8	30.4	22.7	30	25.5	30.8	22	31	21.8	32	22.5	31	24.1	31.3	23.4
10	31.5	23.4	30.6	21.47	28.6	25	29.7	22.5	26.4	22.6	31.8	23.4	31.7	24	29.5	24
11	32.4	23.8	31.6	21.6	29.5	24.6	31.2	21.6	30.7	21.7	33.4	23.4	31.8	23.7	30.8	22.77
12	31.4	23.9	32.1	22.1	31.4	23.5	29.2	22.3	32.1	22.5	33.6	23.4	30.6	24	31.5	25.3
13	32.6	24.4	33.1	22.1	29.9	23.6	30.7	23.6	33	21.8	35.3	22.8	33.5	23.8	33.3	26.3
14	34	23.5	33.6	21.7	30	24	30.7	23.9	34.4	21.9	34.2	22.6	32.7	24.7	32.8	24.2
15	32.1	23.5	32.1	22.4	29.1	24	30.2	23.4	33.6	22.8	33	24	31.8	23.6	32.6	22
16	32.4	23.8	31.6	23.1	30.3	23.9	31.2	21.5	32.8	23	32.5	23.5	29.6	22.9	31.8	24.2
17	33.4	22.1	29.6	24.1	29	23	30.8	22.4	31.4	22.9	32	23.2	30	22.9	31.2	23.3
18	33.8	22.3	31.2	21.6	29.6	22.5	31.2	22	31.8	22	31.6	23	31.1	23.6	31.1	23.2
19	34.6	23.3	32.6	22.1	30.2	24.4	31.2	22.9	32.3	22.7	32.3	24.5	31	24.6	30.9	23.2
20	33.8	23.8	32.8	22.1	30.8	22.5	31.9	22.4	31.8	21.8	32.2	21.7	31	24.4	32.6	22.2
21	33.5	23.4	32.6	22	31	23.4	32	21.9	34	21.2	33.8	21.8	32.5	24.4	33.6	24.3
22	33.3	23.3	33.2	21.1	30.7	23	31.5	22	32.8	21.2	33.7	21.8	32.7	24.4	33.8	24.8
23	34.9	23.4	33.4	20.7	30.5	23.4	31.2	22	35.2	19	33	20.7	32.8	23.8	33.4	23.57
24	34.7	22.8	33.2	20.6	30.5	23.2	32.7	23	34.4	20.1	33.4	21.5	33	23.6	34.7	21.7
25	34	22	32.1	21.6	30.6	22.9	31.5	21	32.8	21.7	33.2	23.2	31.5	22.6	36.4	21.4
26	32.3	22.9	32.6	21.1	31	22.9	30.7	21.8	32.5	20.2	33.2	22	32.3	22.4	34.2	22.2
27	33.9	23.4	33.8	21.7	30.2	22.5	30.7	21.8	33.6	20.4	34.2	21.7	33.3	23.8	34.5	25.7
28	34	22.2	33.8	21.6	29.3	22.8	31.2	21.9	33.1	20.6	33.1	21.5	32.1	24.4	34.3	22.8
29	34.4	22.2	33.9	22.1	31	23.5	31.7	22.5	33.1	21.7	34	22.3	32.8	23.9	34.7	24.2
30	33.8	23.9	34.4	22.1	30.4	23	31.8	22.7	32.8	20.3	34.7	22.7	32.3	23.1	35.3	24
31	34.5	24.4	33	22.3	31.4	22.6	32.2	22.1	32.5	21.1	34.7	22.3	32.4	23.9	34.6	23.8
Mean	32.8	22.9	32	22.1	30	23.5	31	22.2	32.1	21.7	32.8	22.6	31.5	23.7	32.5	23.4

Day.	Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San Jose Buenavista.		Cuyo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.3	22.9	32.7	21.1	32.7	23.6	32	23.5	32.5	24.4	30.5	22.4	32.2	21.5	31.4	22.7
2	33.6	22.8	33	21.3	32	23.2	30.5	22.8	31	24	31.6	23.5	32.7	22.5	32.2	22.9
3	31	23.3	34.3	21.4	31.3	23.6	30.4	22	31	24.4	31.5	23	32.3	23.5	31.9	25.5
4	29.2	22.4	32.5	21.4	31.3	23.5	30	22.8	29.1	24.2	30.6	23	32.4	23	32	23.6
5	30.3	24.6	32.6	21.7	31.7	23.8	31.5	23.5	30.1	23.9	29.9	24.1	30.2	23.4	31.7	24
6	29.8	24.7	27.1	21.4	27.6	23.7	28.4	23.4	29.5	24.5	29.1	22.7	29.2	23.6	29.9	23.1
7	28.3	24.3			27.9	24	28.8	23.7	29.2	23.5	28.1	23	28.3	23	26.4	23.5
8	29.2	23.9	32	22.8	31	25.1	28.2	24	29.2	24.5	28.6	23.3	28.3	22.7	27.3	23.2
9	30.6	23.8	31.1	22.9	31.4	24.7	29	24	29.2	25	27.9	22.9	28.6	23.1	30.7	23.3
10	30.7	24.7	29.4	23	29.6	24.2	30.6	24.5	30.9	26	27.5	22.3	27.6	23.6	28	24.2
11	30.5	25.4	29.3	21.8	31.6	26	29	24.5	29.3	23.8	28.5	22.1	28.4	23.7	29.2	24.5
12	32	26.6	32.4	22.9	32.6	25	29.4	26.4	30	23.8	28.1	23.4	28.8	23	30.6	24.4
13	32.1	26.2	32.3	22.8	34.3	23.3	31.2	27	29.5	27	29	23.4	28.3	24.1	28.2	24.2
14	30.5	24.5	31.8	23.1	34.1	24	30	24.9	31	26	29.9	22.4	29.4	22.5	28.7	23.4
15	31.6	23.5	31.1	23.2	32.8	24	30.4	24.5	30.9	24.5	30	25.4	30.2	23.5	28.7	23.6
16	31.8	24.4	31.5	21.2	31.7	24.2	30.1	22.6	30.9	24	31.2	23.9	32.7	23	31.5	23.4
17	31.1	23	33.3	22.3	32.6	24	31	22.6	29.6	24.5	31.5	23.7	31.7	23.6	31.5	23.8
18	30.5	22.7	32.3	21.9	32.2	23.3	30	23.2	30.3	24	31.5	23.4	32.7	23.1	31.5	24.3
19	32	23.7	31.8	22.4	33	24	30.1	24.5	30.5	24.5	30.5	24.3	32.8	23.5	31.9	23.8
20	31.2	24.7	31.1	21.5	32.5	26.1	30.4	25	30.2	26.5	30	25.1	31.1	24	31.8	25.5
21	31.7	25.6	32.2	20.7	34	24.3	30	25	30.5	26.3	29.5	23.8	29.8	25.5	30.8	25.6
22	32.2	24.8	33.1	20.7	34.2	25.7	29.6	24.8	30.2	26.8	29.7	23.8	29.6	26.1	30.8	25.5
23	31.5	24.3	31	22.7	34.9	23.9	30.5	25.8	30.7	25.6	29.6	25.5	29.7	23.57	28.6	23.8
24	31.5	23.7	32.3	21.7	33.1	23	30	24.7	31	24.9	30.1	25	31.2	23.5	31.3	25.6
25	33.6	24.2	33	20.7	33.8	23.3	30	24	30.5	26	30.6	26.1	31.8	27	31.2	25.9
26	32.9	25.6	34.2	21.8	33.6	24.5	30.1	24.2	30.5	26.8	30.5	25.6	30.9	27	32.3	26.5
27	32.7	26.2	34.5	20.2	35.4	26.7	29.8	26.4	31	26.2	30.4	25.4	30.8	27.5	32.5	26.7
28	33	24.7	34.3	20.2	34.2	25.6	30.5	25.6	30.4	25.4	30.5	24.5	31.2	27	32.1	26.7
29	33.4	24.8	35.1	19.8	34.6	25.9	30.1	24.8	30.5	26.7	30.1	23.9	32.2	24.17	31.7	25.5
30	32.2	24.8	34.6	20.2	33.4	27.3	31.1	24.4	32	26.5	30.1	25.9	32.2	24	32.6	24.6
31	32.4	26.3		19.6	33.4	27.3	30.5	25.2	31.4	26.5	30.1	24.1	32.8	26.7	33.3	26.8
Mean	31.5	24.4	32.3	21.6	32.5	24.5	30.1	24.3	30.4	25.2	29.9	23.9	30.6	24.1	30.7	24.5

Maximum and minimum temperatures at the stations of the Weather Bureau, August, 1914—Contd.

Day.	Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.		Romblon.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.2	22	32.3	22.6			32.7	22.5	33	22.2	32.6	22.7	34.4			
2	31.6	21.8	32.2	22.7			32.4	23.3	34.4	21.5	33.7	21.4	34.4			
3	31.2	22.8	31.4	23.6			32.3	22	33.9	22.6	30.7	22.9	34	25.8		
4	30	23.2	32.3	23.5			31.9	23	29.6	22.2	32.4	22.4	33.6	24.8	33	22.4
5	30	22.6	31.5	23.7			32.4	22.2	29.2	21.3	32.1	23.2	33	24.8	32.5	22.8
6	29.4	22.9	30.3	24.2			31.9	23.2	29.8	20.3	31.6	23.4	32.8	24.2	32.9	23.1
7	28.4	22.4	28.9	24.6			31.3	22.5	33.4	21.4	29.7	23.2	31	24.2	31	23.3
8	29.3	23.9	30.2	24.8			31.3	22.5	34.2	22.9	29.7	23.8	30.4	25	32.2	23.3
9	30.3	24.3	30.7	26.1			32.2	23.1	35	23.7	28.7	24	27.8	25.8	31.5	24.5
10	30.3	24.3	31.1	26.6			28.4	22.9	35.6	24.5	27.7	24.9	30	24.2	31	23.8
11	29.8	25.3	29.8	27.1	32.6	24.1	29.7	22.2	34.5	24.8	28.8	23.6	30.6	25.6	31.1	24.2
12	30.3	24.8	30	27.5	32.3	23.7	30.3	23	33.6	24.6	29	24	31.2	25.8	30.7	23.7
13	30.3	25.8	30.4	27.5	33.5	25.2	30.2	22.9	35.6	23.6	29.8	25.8	30.5	25.5	33	23.8
14	30.4	25.3	31.3	27.4	32.5	24.1	32	22.9	35.2	23.7	32.1	25.1	32.5	26	30.8	22.7
15	32.1	23.7	32.4	24.3	32.5	24.2	32	23.2	31.2	23.8	32.6	25	31.5	25.2	31.7	24.4
16	31.3	22.5	32.4	23.5	32	23.4	32.3	22.6	34.6	23.2	32.4	24	32.6	26.2	32.6	23.2
17	30.8	23.2	32.2	24.4	32.5	23.2	32.7	22.6	35.6	22.5	31.8	23.6	33.8	26	32.5	23.6
18	30.6	23.5	30.8	23.5	33.4	22.7	32.3	23.5	34.1	21.5	31.9	22.3	33.2	25.5	33.5	23.8
19	30.8	23.2	31.2	23.9	31.7	22.9	32.9	23	35.3	22	33.1	23.3	31.6	26.4	33.1	23.1
20	31.2	24	31.8	26.6	32.7	23.4	33.2	23.5	34.6	22.5	30.9	25.7	33.6	26.6	34.2	25.9
21	31.8	27.8	30.4	27.6	34.1	24.1	32.3	23.2	35	24.2	29.9	27.7	31.5	26.5	32.4	25.5
22	31.5	27.5	31.2	27.4	34.1	24.7	31.4	23.2	35	22.5	29.9	27.8	33.5	27	34	26.5
23	31.3	25	31.4	27.5	33.2	22.4	32.2	24.6	36.2	22.5	30.8	26.8	33.2		34.2	25.5
24	30.6	23.5	30.8	27.2	33.2	23.9	33.8	21.8	36.6	22.3	31.4	26	32.2	26.6	34.2	26.3
25	31.4	22.6	32.2	27.4	34.9	22.3	33.6	21.7	35.8	21.9	30.6	25.9	31.2	26.6	34.3	23.9
26	31.5	24.6	31.3	27.3	35.8	23.5	34.3	23.8	36	23.2	31	27.6	33.5	26.8	35.2	26.3
27	32.3	26.7	30.8	27.5	35.2	26.2	34.6	24	36.7	22.5	31.8	27.6	33.8	27.4	34.7	26.9
28	31.4	25.5	31	27.9	36.1	24.6	34.6	23.7	36.8	21.5	31.9	27.8	33.6	27.2	33.7	26.2
29	32	24.9	31.2	27.9	36	25.5	34.8	24.2	37.2	22	31.6	27.5	34	26.4		24
30	32.2	24.5	33.3	28	35.7	23.1	35	24.4	38.4	22.7	31.4	27.8	33.6	26.6		
31	31.8	25.4	31.3	28	35.1	24	33.8	23.9	35.5	22.2	31.6	27	31.4	26.6	34.3	27
Mean	30.9	24.2	31.2	25.9	33.8	23.9	32.4	23.1	34.6	22.7	31.1	25	32.4	25.9	32.9	24.2

Day.	Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.5	23.3	33	24.1	34.4	23.6	30.4	24.6	37.6?	23.5	32.7	22	35.5	21.7	32	23
2	32.9	24.5	33.9	23.1	34.9	22.7	28	23.6	34	22.3	32.3	21.5	33.5	20	32.9	23
3	32	22.3	34	23.7	34.7	23.3	29.2	23	32.5	22.5	28.5	21.9	32.2	21.8	31.8	22.6
4	31.5	22.4	33.4	23.3	34.3	22.6	29	23.8	33.5	21.6	31.2	22	34.6	20.7	32.5	21.8
5	31	22.7	33	23.4	33.4	23.2	29.6	24.2	33.1	22	28.1	22.1	33	20.5	32.3	22.2
6	30	21.4	31	22.8	31.2	22.5	30	24.2	33.1	21.9	30	22.7	33.2	21.2	32.8	22.5
7	30	21.9	31.2	23.5	33.6	23.8	29	24.2	33.6	22.8	31.6	22.6	32	21.5	30.8	23.5
8	27	22.6	30.2	23.4	31.5	23.5	29.4	24.2	32.5	23	30.3	22.5	33	21.9	32	23.2
9	29.9	22.8	32.9	24.5	31.5	23.7	29.8	24.8	30	22.9	33.5	22.8	32.9	22.2	30.4	23.7
10	27.9	23	29.5	24.3	29	23.6	29.4	24	31	22.3	30.1	23.4	30	22.7	30.9	23.7
11	29.5	23.2	30.4	24.1	30.7	23.9	29.4	24.4	30	23.1	30.8	23.5	31.3	22.8	28.3	24.3
12	29.9	22.5	29.2	24.3	30.2	25.1	29.6	24	28.5	23.6	30.4	23.3?	30.6	24.8	29.9	24.8
13	30.9	23.2	30	25.8	29.5	24.6	30	24.8	29	22.8	30.6	24	31.4	24.1	28.9	24.3
14	31	22.4	32	24.9	30.6	24.3	30.2	24.2	30.6	22.8	32.8	23.6	31.2	22.2	30.1	23.8
15	32	22.8	34	24	33.3	24.1	30	23.8	32.6	23.5	33.7	23.2	32.8	23	32.4	23.2
16	32	23			34.4	24.7	30	26	31.6	22.2	33.1	22.6	34.1	22.2	32.2	22.1
17	31	22.9			33.8	23.7	30.4	26.2	30.7	22.1	28	22	33.2	22.2	31.5	23.8
18	31.5	22.3			34.1	22.8	29.8	26.4	31.9	22.6	27.4	22.3	33.8	21.7	32.6	22.5
19	31	22.8			34	24.2	30.2	26	31.7	21.6	33.5	22	33.9	21.6	32.1	23.8
20	32	22.5			32.4	25.2	30.2	26.4	32	22.6	33.4	23	32.4	22.4	30.5	23.3?
21	30.5	23.7			31.1	25.5	29.4	26.8	32.5	23	32	24.1	32	25.2	31.8	25.7
22	30.6	24.4			31.3	26.2	28.8	24	29.7	23.1	31.7	24.2	31	22.8?	27.6	23.7
23	32	23			32.7	25.6	29	24.8	33.6	23.2	32.9	23.9	31.9	24.1	33.3	24
24	32.4	23			32.6	25.2	29.6	23.8	33.6	22	34	24	32.7	24.4	31.8	26.5
25	30.7	22.9			31.1	24.7	29.4	24.2	34.3	23	31.5	23.2	31.5	24.8	31.7	26
26	32.2	23.6			32.6	26.2	30	23.6	34.5	24.1	33.2	23.7	32.6	24.9	30.8	26.6
27	33	23.7			33.4	25.9	28	23.9	34.1	24.6	33.6	23.3	32.5	24.1?	31.5	24.2?
28	33.2	24.4			32.8	26.3	26	23.8	34.1	24.8?	34.3	23.8?	32.7	25.3	31.6	26.2
29	33.3	24.2			32.2	25.3	29.2	23.7	35	23.6	34.4	23.6	33.3	24.6	32.4	24.4
30	32.9	23.9			32.5	25.1	29	22.8	34.5	23	33.9	23.4?	33.1	24	32.3	26.6
31	33.9	23.8			32.6	26.2	28.2	22.2	32.8	24.1	34.1	23.5?	31.9	24.2	30.9	25.8
Mean	31.3	23.1			32.5	24.4	29.4	24.4	32.5	22.9	31.9	23	32.6	22.9	31.4	24

Maximum and minimum temperatures at the stations of the Weather Bureau, August, 1914—Contd.

Day.	Atimonan.		Ambulong-Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.		Iba.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.2	23.1	33.8	23	31.9	19.8	32.5	24.2	33.1	23.3	33.6	24	33.5	22.8	31.5	22.4
2	32.8	23.8	34.7	23	31.2	19.6	32.4	23.1	32.9	23.2	33.8	23.9	32.2	22.8	32.1	22.9
3	30.4	24.1	33	23.4	32	19.4	29.2	23.8	32.1	22.7	32.5	23.5	30.2	22.3	31.9	22.5
4	31.2	23.2	34.7	22	31.6	19.7	31.2	23.9	33.6	21.5	33.1	22.1	32.4	20.8	32.2	22.6
5	31.7	23	35	22.5	32.1	19.2	31.8	23.5	33.7	22.9	34.1	23.3	32.9	20.8	32.4	22
6	31.8	23	35.6	22.5	31.1	19	31.2	24.1	31.6	21.5	33	22.8	31.7	20.8	32	21.9
7	29.9	23.4	33.2	23.7	32.5	19.1	31	24.2	31.2	23.6	32.3	23.6	30	22.8	32.5	23.1
8	30.3	24.1	32.7	24	30.1	19	31	24.1	31.9	24	30.9	23.3	30.3	22.1	32.1	22.9
9	31.4	23.1	33.3	23	29.5	19.5	31.8	24	31.1	22.7	33	23.5	32.4	22.4	31.7	22.4
10	31.9	24	31	24	30	19.2	31	24	31.1	24.1	31.7	23.4	29.9	22.8	31	23.5
11	30.3	23.4	27.8	24.9	30.2	18.1	29.6	24.4	29.1	23.6	30.8	24.3	27.6	22.8	31.4	22.4
12	29.9	25	28.3	24.5	29	18.8	31.8	25	28.9	25.8	29.7	23.7	27.3	23	29.4	23
13	28.5	24.6	28.3	25.5	30.3	19.2	31	25.3	28.6	24.8	31.2	24.2	28.8	23.1	30.6	24
14	30	23.8	29.9	25.6	30.7	19.1	31	25.6	31.3	24.5	31.3	24.4	30	23.2	29.2	24
15	32.9	23.4	33.9	25	31	19.6	31.6	24.7	33	23.5	32.1	24.3	31.2	22.7	28.6	23
16	32.2	22.8	32	22	31.3	19.8	32.8	23.9	32.1	22.3	32.5	23.2	31.4	21.3	31.3	22.8
17	32.9	23.8	32.9	23.8	31.4	19.8	31.8	24.2	32	23.2	32.6	23.4	30.8	23.2	32	23
18	32.5	23.2	33.8	22	31.6	19.2	32.5	24.2	32.8	22.5	32.6	22.9	31.8	21.5	31.5	21.8
19	32.4	23	34	23.7	32	19.5	33.8	24.2	32.1	24.9	32.5	24.1	30.7	23.2	31.4	22.9
20	32	23.9	29.2	26	31.3	19.1	33.8	24.4	31	23.8	29	23.6	27.6	22.3	29.5	22.9
21	31.9	25.9	30.2	25.6	29.4	18.7	31.8	25.2	31.1	25.5	31.2	23.5	29	22.5	29	22
22	28.6	25	27.1	22.5	28.3	18.1	30.3	24.6	31.7	23.4	26.8	23.2	24.8	21.5	27	21.7
23	31.9	24.6	31	25.5	28	18.8	32.6	25.6	32.1	24.1	32	23.1	30	21.5	29.3	23.5
24	32.4	24.5	29.8	23.4	29.1	18.6	33.8	24.6	30.7	22.9	30.9	23.9	28.8	23.5	29	23.5
25	32.4	26.6	30	26.9	29.5	18.9	32.6	25.5	32	24.8	31.8	23.5	29.3	21.3	31	22.2
26	31.6	26.4	29.5	26.5	29.9	18.2	32	25.3	30.1	26.3	30	26.2	28.5	22.2	29	25.5
27	33	26.3	30.1	27	29.6	18	33.3	26.2	32.1	27.1	30.8	22.9	28.4	23.3	28.5	24.5
28	32.4	26.7	29	24.5	29	17.6	33.3	26	31.1	24.5	30.9	23.2	29.8	21.2	29.6	22.9
29	33.5	26.4	29.9	26.5	28.4	18.1	34.2	24.7	31.6	23.7	31.4	23.9	29.1	21.1	30.5	24.3
30	33.4	26.3	29.9	24.8	28.8	18.5	34.5	24.5	31.3	24	30.7	24.3	29.1	23	31	24
31	31.6	24.7	28.2	24.5	28.5	18	32.8	25.2	29.2	24	29.5	23.9	26.9	22.5	31	24.5
Mean	31.6	24.4	31.3	24.3	30.3	18.9	32.1	24.6	31.5	23.8	31.6	23.6	29.9	22.2	30.6	23.1

Day.	San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernando, Union.		Echague.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.7	23.5	34.8	22.6	34.1	22	35.3	24.1	31.6	23.8	23.9	15.5	32.9	23.4	34.8	22.7
2	33.9	23.8	34.7	22.7	35.5	22.6	32.3	24.5	32.1	24.4	23.8	15.7	32.6	23.5	35.1	22.9
3	33.4	22.6	34.4	23.8	32.4	22.5	31.9	24.2	32	24.8	22.3	15.5	32.8	23.9	34.2	22.5
4	33.2	23.3	35.2	23.8	32.4	22.6	33.1	24.5	32.9	25.2	24.2	14.7	33.1	23.6	34.7	22.4
5	33.5	23.4	35.4	22.7	31.9	23	34.3	24	33	24.2	22.3	15.4	33.2	23	35.4	21.9
6	34.2	23.5	35.1	23.4	31.4?	22.1	32.8	24.1	33.1	23.5	23.8	15.5	33.1	23.2	34.8	23.4
7	32	24.4	34.2	23.4	31.5	24.7	35.6	24.5	33	24.2	23.1	15.6	32.4	23.8	35.8	24.1
8	31.4	24.4	34	23.2	31	24.1	35.8	24.5	32.9	24.7	21.9	16.2	32.9	24.2	34.2	22.8
9	33.2	23.5	34.7	22.8	31.5	22.6	35.6	23.5	32.8	23.4	23.5	15.6	33.1	22.6	33.9	23.3
10	32.6	24	34	23.4	33.4	23.1	32.4	23.5	32.1	22.5	22.9	15.3	32.1	23	34.1	23
11	32.2	23.7	31.7	23.8	33.4	24.2	31.8	24	32.1	24.5	22.8	15.1	32.3	23.6	33.8	22.7
12	30.8	23.5	31	23.2	33.5	24.2	29.8	24.8	31	23.3	21.6	16.1	31.6	24.1	30.7	23
13	30.6	24.4	32.4	23.6	31.1	26	29.8	23.8	29.9	24.2	18	15.4	27.4	23.6	32.3	23.5
14	29	24	29.2	24.1	32	23.1	32.4	24.4	29.8	24.2	21.5	15.4	32.8	23.8	34.3	22.77
15	30.2	23.6	31.6	23.4	37 ?	23	31.8	24.4	27.1	23.9	21.9	15.2	32.3	24	35.8	22.9
16	33	22.6	34	22.8	32 ?	23.5	33.5	23.3	32.3	23.9	23.5	15	33.4	22.9	34.8	22.4
17	33.5	22.8	34.6	24.2	31.8	24.1	32.8	24	32.9	25.1	22.9	15.4	33	24.4	34.5	23.9
18	32.7	22.6	35	21.8	31.8	24	34.1	22.9	31.8	24.3	23.4	15.6	32.9	23.4	34.1	23
19	32.7	24	33.5	23.5	33.3	24.8	32.6	24.5	32.3	23.9	23.9	15.7	33.5	23.9	32	22
20	28.4	23.5	28	23	29.1	24.4	29.6	23.9	28.5	23.3	17.7	15.7	28.8	24	31.2	22.5
21	28.6	22.6	28	22.5	29.9	23.8	29.5	23.3	28.1	23.3	18.2	14.6	31.2	23.1	32.8	23.4
22	28.1	22.8	28.5	22.8	28.9	24.4	29.8	23	29	23.8	18	14.7	29.4	22.8	31.8	23.7
23	28.2	23.7	29.7	23.3	29.6	24.2	27.4	22.7	27.9	23.4	17.7	14.7	29.9	23	30	23.8
24	30.3	24	30.8	22.8	31.1	24.5	29.1	24	29.6	23.9	17.5	16	28.8	24.1	31	23.9
25	31.5	23	30.5	22.5	32.4	22.8	32.3	24	30.6	24.5	17.4	15	31.2	23.9	33.3	23.3
26	29.6	24.9	29	22.6	29.9	24.3	27.9	23	29.6	23.5	17.3	15.5	28.4		32.5	22.4
27	26.4	23.4	26.4	22.4	28.1	24.3	25.3	23.5	25.6	23.1	17.1	14.3	26.4	22.7	30	24.5
28	29.8	23	30.6	22.8	31.7	23.8	27.3	23	29.5	23.9	17.6	14.5	28.8	23.6	32.3	21.97
29	30	23.9	30	22.8	30.8	23.5	31.2	24	28.5	24.4	17.7	15	28.7	23.8	33.4	21.8
30	29.8	24.4	31	23	32.3	24	30.7	24.4	30	23.9	18.4	16	30.9	24.1	35	22.2
31	27.4	24.1	31.5	23	29.9	24.2	29.9	24.5	30.7	25.4	17.8	15.3	30.6	24.1	33.4	23.3
Mean	31.1	23.6	32	23.1	31.8	23.7	31.5	23.9	30.7	24	20.8	15.3	31.3	23.6	33.4	23

Maximum and minimum temperatures at the stations of the Weather Bureau, August, 1914—Contd.

Day.	Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.		Yap Western Carolines. ^a	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
1	31.4	24.1	31.2	24.1	37	24.3	33.3	23.1	32.2	24.1	32	24.3	32.6	23.7
2	31.1	24.8	31.3	24	36.2	23.7	32.7	23.3	32	23.8	32.4	24.5	32.6	23.5
3	31	24	31.4	23.3	36.2	22.4	33	22.5	31.8	22.8	32.7	26.4	30.6	23.2
4	31.1	26	31	24.5	36.3	22.6	33.4	22.9	31.6	22.5	32.5	27	26.7	22.6
5	31.1	24.2	31.5	24.2	37.4	22.9	32.7	22.6	31.9	24.1	31.1	24.8	30.8	22.4
6	31	24.4	31.3	23.7	36.9	23.2	32.6	22.8	32	23.6	31.3	24.4	29.9	22
7	32	25	34	25	38.7	23.3	33.2	23.5	32.5	24.1	32.6	25.7	29.9	22
8	31	25.5	31.5	24.8	37.6	23.4	33.3	24.1	31.8	24.6	32.6	24.4	31.2	24.5
9	31.6	23.5	31.5	23.3	37	23.3	33.2	23.4	32.6	24.1	33.3	24.7	30.3	23.4
10	30.5	25.4	31	24.3	35.6	24.9	32.2	24	31.5	24.1	31.7	24.1	30.7	24.1
11	30.5	24.8	31.5	24.5	32.8	24.5	32.1	23.1	29.8	23.6	31.4	24.7	28.2	21.2
12	29.7	25.6	29.9	24.2	28.5	24.4	31.6	24.2	28.9	23.5	28.6	25.4	29.7	24.1
13	27.5	25.5	29.4	23.5	28.5	24.5	28.5	24.3	27	23.8	27.8	24.1	28.8	22.3
14	31.2	25.2	30.8	25.5	35.4	24.3	32.7	24.1	33.1	24.6	30.8	24.7	31.2	24.2
15	31	26.1	29.7	25.3	38.4	23.9	31.8	24	33.2	24.3	31	25.3	32.1	23.9
16	31.5	23.8	31.5	24.2	35.4	23	33.5	22.9	31.6	23	32	24.2	31.4	24
17	30.4	25.2	32.6	24.8	35	24.1	33.7	24.5	31.7	24.6	30.9	24.7	30.7	24.1
18	31.1	24.2	32.8	23.8	36.1	23.6	33.2	22.9	32.6	23.6	30.9	23.6	31.6	25
19	31.5	25	30.7	24.3	36	23.6	33.7	23.6	32.7	24	30.7	23.7	31.3	24.7
20	28.7	24	28.5	23.1	32.3	23.5	30.6	23	30.2	23.8	28.2	25.4	31.4	24.4
21	27	24.5	27.3	23.2	31.8	23.6	27.5	23	26.9	23.7	27.9	24	31.5	24.7
22	26	24	26	23.2	32.4	24.4	28.1	22.8	32.4	23.4	29.9	24.5	32.1	23.4
23	29.5	24	29.6	23.1	31.4	24.4	31.7	23.7	31	24.1	28.2	24	32.2	23.7
24	27.6	25	26.6	22.2	31.5	25	27	23	30.4	24.6	27	24	31.3	25.3
25	29.5	24.7	29	23.9	35.6	24.6	27.7	24.4	30.9	24.2	27.3	24.2	31.6	22.6
26	26.5	24	28.2	22.5	31	24.3	26.7	22.9	28.2	23.5	26.9	24.7	31.3	25.1
27	26	24	26.9	23	30.6	24.1	28.4	22.7?	27.8	23.7	27.5	23.6	31.6	25.5
28	28	24	28.8	23.2	34	23.5	28.6	23.4	30.2	24.2	28.9	24.4	31.7	25
29	27.4	24.4	27.7	24	36.4	24.1	29.4	23.9	31.5	24.5	29.7	24.6	31.3	25.6
30	29.3	24.5	29.2	24	35	24.4	30.5	24.1	33.6	24.1	29.4	25.1	31.5	24
31	29.2	25.2	29.5	24	32	24	31.2	25.1	29.8	24.5	28.5	25.1	32	26
Mean	29.7	24.7	30.1	23.9	34.5	23.9	31.2	23.5	31.1	23.9	30.2	24.7	31	23.9

^a Received late.

SEISMOLOGICAL BULLETIN FOR AUGUST, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

2, 19^h 15^m [3, 3^h 15^m]. Aparri (NE of Luzon.) Oscillatory earthquake direction S-N, intensity III-IV, duration 4 seconds.

2, 19^h 23^m 54^{s*} [3, 3^h 23^m 54^s]. Island of Cuyo. Oscillatory earthquake, direction N-S, intensity III, duration 5 seconds. The epicenter appears to have been in the sea between Mindoro and Cuyo.

3, 4^h 16^m 41^{s*} [3, 12^h 16^m 41^s]. NE of Luzon. Earthquake of intensity V-VI, felt throughout the whole of the Province of Cagayan. In Aparri subsultory and rotary movements were observed which produced heavy shocks and lasted more than 10 seconds; in Tuguegarao, which is some 50 kilometers to the S, only slow oscillations, apparently in the NE-SW direction, were noted. In the Mirador Observatory, Baguio, about 240 kilometers to the SSW, the earthquake was recorded by the seismographs and was felt by some few persons who were sitting still. The epicenter of this and the other shocks which follow seems to be within the province itself, probably at a short distance from Aparri to the SE, where there is a volcanic or local center, whence, as we have already noted on several occasions² originate frequent earthquakes of small intensity and limited extension, like all those of this month. At 4^h 24^m of the same day [3, 12^h 24^m] a repetition of intensity IV with oscillatory movements in the direction SE-NW, was felt in Aparri, but not noted in Tuguegarao and not registered in Baguio or Manila.

4, 23^h 57^m [5, 7^h 57^m]. Aparri (NE of Luzon). Oscillatory earthquake, direction SE-NW, intensity III, duration 2 seconds.

12, 19^h 38^m 00^{s*} [13, 3^h 38^m 00^s]. Batangas (S of Luzon). Oscillatory earthquake, direction N-S, intensity III, duration 6 seconds. Although the epicenter was between Manila and Batangas it was not in the Taal Volcano, but in some other of the volcanic centers to the E of Taal, as was shown by the registers obtained in Ambulong.

17, 19^h 42^m 47^{s*} [18, 3^h 42^m 47^s]. Island of Cuyo. Oscillatory earthquake, direction E-W, intensity III-IV, duration 8 seconds.

17, 22^h 10^m [18, 7^h 40^m]. Guam (Mariana Islands). Earthquake of intensity III-IV.

19, 11^h 53^m 30^{s*} [19, 19^h 53^m 30^s]. N of Luzon. Earthquake of intensity V, felt throughout the whole of the northern part of Luzon above 16° lat. N; the epicenter was in the central Cordillera between 17° 40' lat. N and 18° lat. N. It had almost the same intensity in the Provinces of Ilocos Sur and Ilocos Norte, and as is to be expected, slightly greater in N of the Mountain Province. Toward the E and S the intensity diminished so that in the Provinces of Cagayan, Benguet, Isabela, and Union it did not exceed force II and III of the scale. Its duration in the central and southern part of

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

² The Relation of Seismic Disturbances in the Philippines to the Geologic Structure. The Phil. Journal of Science, Vol. VIII, No. 4, Sec. A.

Ilocos Norte and the northern part of Ilocos Sur, where it had intensity V, was not less than 20 seconds.

25, 14^h 00^m [25, 22^h 00^m]. Butuan (N of Mindanao). Oscillatory earthquake, direction E-W, intensity III, duration very short.

26, 7^h 03^m 57^s* [26, 15^h 03^m 57^s]. NE of Luzon. Earthquake of intensity IV, felt principally in the northern part of the Province of Cagayan and slightly in the northern part of Mountain and Ilocos Norte Provinces. It seems to have originated in the same region as those of the 3d and 4th. There was a repetition at 18^h 40^m [27, 2^h 40^m] perceptible only in Aparri with intensity III-IV.

29, 17^h 21^m [30, 2^h 51^m]. Guam (Mariana Islands). Earthquake of intensity II-III.

31, 7^h 53^m 02^s* [31, 15^h 53^m 02^s]. Iba (W of Luzon). Oscillatory earthquake, direction WSW-ESE, intensity III, short duration.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. $A_N: T_0=9.0, \epsilon=3.31, \frac{r}{T_0^2}=0.039$; $A_E: T_0=6.2, \epsilon=2.58, \frac{r}{T_0^2}=0.082$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
208	1	Iv	eP L F	<i>h. m. s.</i> 22 33 44 34 18 37				
209	2	Iv	eP F	19 23 54 38				Cuyo Island.
210	3	Iv	eP L M _N F	4 16 41 18 19 20 37 43	6	30		Northeastern Luzon.
211	4	Iv	eP L F	14 42 13 42 30 46				
212	4-5	IIr	eP eS iL M _E M _N F	22 48 53 54 45 23 01 08 04 48 06 32 0 56	12 11	394 662		
213	5	I	e F	10 44 11 22				
214	6	Ir	eP iS iL M _E M _N F	4 14 40 17 52 19 49 21 32 21 57 5 07	5 6	33 50		
215	6	I	e F	19 19 51 30				
216	7	I	e F	6 13 29 26				
217	8	Iv	eP L F	17 30 00 30 51 41				
218	12	Iv	eP L M _E F	12 46 54 47 14 47 17 52	2	59		
219	12	Iv	eP L F	19 38 00 38 10 42				Batangas (S Luzon).
220	14	Ir	e L M _N F	19 57 46 20 03 00 05 45 32	9	14		
221	15	Iv	eP F	21 56 20 59				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
222	17	Iv	eP F	h. m. s. 18 58 51 19 03				
223	17	Iv	eP L M _E F	19 42 47 43 24 44 07 52		3	26	Cuyo Island.
224	19	IIv	eP iS eL M _N F	11 53 30 54 10 54 55 56 24 12 19		7	237	Northern Luzon.
225	26	Iv	eP L M _N F	7 03 57 04 44 04 52 14		3	19	Northeastern Luzon.
226	29	I	e L M _N F	17 26 24 32 00 33 47 18 03		8	16	
227	31	Iv	eP L M _N F	7 53 02 53 23 53 33 57		1	13	Western Luzon.

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

2, 19^h 15^m [3, 3^h 15^m]. Aparri (NE de Luzón). Temblor oscilatorio, dirección S-N, intensidad III-IV, duración 4 segundos.

2, 19^h 23^m 54^{s*} [3, 3^h 23^m 54^s]. Isla de Cuyo. Temblor oscilatorio, dirección N-S, intensidad III, duración 5 segundos. El epicentro de este temblor parece estaba en el mar entre la Isla de Mindoro y la de Cuyo.

3, 4^h 16^m 41^{s*} [3, 12^h 16^m 41^s]. NE de Luzón. Temblor de tierra de intensidad V-VI sentido en la Provincia de Cagayán. En Aparri se observaron movimientos susultorios y rotatorios que producían fuertes choques y duraron más de 10 segundos; en Tuguegarao que dista unos 50 kilómetros al S tan sólo se percibieron oscilaciones lentas, al parecer de dirección NE-SW. En el Observatorio de Baguio, unos 240 kilómetros al SSW fué registrado por los sismógrafos y alguna persona en reposo lo sintió ligeramente. El epicentro de éste y de los otros que siguieron parece se hallaba dentro de la provincia, probablemente a poca distancia al SE de Aparri donde existe un centro de carácter volcánico o local, en el que, conforme hicimos notar otras veces,² se originan frecuentes temblores de poca intensidad y muy limitada extensión, como fueron todos los ocurridos este mes. A 4^h 24^m del mismo día 3 [3, 12^h 24^m] se sintió en Aparri una repetición de intensidad IV, con movimientos oscilatorios en dirección SE-NW, no sentidos en Tuguegarao ni registrados en Manila y en Baguio.

4, 23^h 57^m [5, 7^h 57^m]. Aparri (NE de Luzón). Temblor oscilatorio, dirección SE-NW, intensidad III, duración 2 segundos.

12, 19^h 38^m 00^{s*} [13, 3^h 38^m 00^s]. Batangas (S de Luzón). Temblor oscilatorio, dirección N-S, intensidad III, duración 6 segundos. El epicentro aunque se hallaba entre Manila y Batangas sin embargo no estaba en el volcán de Taal sino en alguno de los otros centros volcánicos del E de dicho volcán, según indican los registros de Ambulong.

17, 19^h 42^m 47^{s*} [18, 3^h 42^m 47^s]. Isla de Cuyo. Temblor oscilatorio, dirección E-W, intensidad III-IV, duración 8 segundos.

17, 22^h 10^m [18, 7^h 40^m]. Guam (Islas Marianas). Temblor de tierra de intensidad III-IV.

19, 11^h 53^m 30^{s*} [19, 19^h 53^m 30^s]. N de Luzón. Temblor de intensidad V, sentido en toda la parte septentrional de Luzón al N del paralelo 16° N; el epicentro se hallaba en la Cordillera central, entre los paralelos 17° 40' y 18°. Tuvo casi igual intensidad en las Provincias de Ilocos Norte e Ilocos Sur, y, como es de suponer, algo mayor en la parte N de la Montañosa, disminuyendo ya mucho hacia el E y S, en las Provincias de Cagayán, Isabel, Benguet y Unión, donde no pasó de intensidad III y II. Su duración en la parte central y S de Ilocos Norte y en la parte N de Ilocos Sur, que es donde tuvo intensidad V, no bajó de 20 segundos, según indican las notas recibidas.

25, 14^h 00^m [25, 22^h 00^m]. Butuán (N de Mindanao). Temblor oscilatorio, dirección E-W, intensidad III, duración corta.

26, 7^h 03^m 57^{s*} [26, 15^h 03^m 57^s]. NE de Luzón. Temblor de tierra de intensidad IV sentido principalmente en la parte N de la Provincia de Cagayán y algo en la parte sep-

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

² The Relation of Seismic Disturbances in the Philippines to the Geologic Structure. The Phil. Journal of Science, Vol. VIII, No. 4, Sec. A.

tentrional de la Provincia Montañosa y de Ilocos Norte. Al parecer se originó en la misma región que los de los días 3 y 4. Repitió a 18^h 40^m [27, 2^h 40^m] siendo sólo perceptible en Aparri con intensidad III-IV.

29, 17^h 21^m [30, 2^h 51^m]. Guam (Islas Marianas). Temblor de tierra de intensidad II-III.

31, 7^h 53^m 02^s* [31, 15^h 53^m 02^s]. Iba (W de Luzón). Temblor oscilatorio, dirección WSW-ENE, intensidad III, duración muy corta.

BULLETIN FOR SEPTEMBER, 1914.

METEOROLOGICAL BULLETIN FOR SEPTEMBER, 1914.

By Rev. JOSÉ CORONAS, S. J.

Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was slightly less than that of last year in almost all the stations. In Manila it was 0.09 mm. less than the normal for the month and 0.32 mm. less than the mean for September, 1913. The highest pressures were observed on the 19th and 20th, the lowest on the 5th and 6th.

The mean monthly temperature was a trifle higher than that of last year in the Visayas and Mindanao, and slightly lower in Luzon. In Manila it was 0.7° C. and 0.5° C. less than the normal for the month and the mean of September, 1913, respectively; the extreme temperatures were 34.1° C. on the 25th, and 22.2° C. on the 21st. In Baguio the extremes were 24.8° C. and 13.9° C. at Mirador, and 25° C.; 13° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR SEPTEMBER, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from Sept., 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Sept., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	758.07	-0.22	759.81	19	756.37	5	28	+1.5	34.5	11	22.5	30
Surigao	57.72	-.37	59.72	19	55.70	3	28.5	+1.1	35.6	8	22.3	19
Cebu	57.83	-.32	59.88	19	55.82	4	28.2	+ .6	32.5	10	22.7	21, 23
Iloilo	57.87	-.17	59.85	20	56.72	6	26.8	0	31.9	19	21.8	14
Ormoc	58.04	-.27	59.96	19	56.13	5	27.7	+1.1	33	19	21.4	21
Tacloban ^a	58.09	+ .22?	60.12	20	55.89	6	27.7	+ .5	35.7	6	22.6	27
Capiz	57.71	-.27	59.77	19	55.13	6	26.7	-.1	34.4	6	22.2	19, 24
Calbayog	57.59	-.24	59.81	19	55.25	6	27.4	+ .6	34.2	30	21.9	22
Legaspi	56.90	-.56	59.58	20	54.35	6	26.9	-.6	34.7	19	21.6	21
Atimonan	56.74	-.53	59.52	20	53.60	6	26.3	-.6	32.8	11	21.6	15, 16, 17
Ambulong, Tanauan	56.89	-.37	59.58	20	53.30	6	26.3	-.4	33.2	22	21.5	18
Paracale	56.73	-.59	59.73	20	53.40	6	27.1	0	34	11, 16	23	13, 21
Manila	57.35	-.32	60.22	20	53.64	6	26.2	-.5	34.1	25	22.2	21
San Isidro	57.31	-.28	60.45	20	53.42	6	26.2	-.1	33.7	25	22.1	21
Dagupan	56.26	-.46	59.43	20	52.34	6	26.8	-.1	34.5	25	23	23
Bolinao	56.53	-.32	59.92	20	52.51	6	26.6	-.2	33.5	25	22.6	23
Baguio ^b	634.99	-.27	637.91	20	631.31	6	17.4	-.3	24.8	26	13.9	10
Vigan	756.41	-.10	759.92	20	751.92	6	26.5	-.3	32.5	20, 22	22.7	10, 30
Tuguegarao	56.28	-.04	60.30	20	50.80	6	27.2	+ .3	37.8	11	22	20, 23
Aparri	56.12	+ .20	60.17	21	50.55	6	26.8	-.4	33	19	22.4	23

^a The barometric readings of this station seem to be too high by about 0.50 mm.

^b The barometric readings of this station are not reduced to sea level.

Rainfall.—With the exception of a few provinces near Manila in the southwest of Luzon, the majority of the stations had less rain than in September, 1913; Rizal, Batangas, Zambales, La Laguna, etc., the provinces near Manila, having much more rain than last year. As for the normal of the month, in the central and western part of Luzon the total rainfall was greater than the September normal, and less in the rest of the Archipelago.

In Manila there was a total rainfall of 887.7 mm., which is 517.4 mm. more than the normal, and 522.2 mm. more than that of the preceding September. In Baguio 1,194.2 mm. of rain fell, this quantity being 913.9 mm. less than that of the preceding year, and 304 mm. more than the normal.

More details of the extraordinary rainfall of the first three days of the month will be given later on.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF SEPTEMBER, 1914.

Station.	Total.	Departure from September, 1913.	Departure from normal.	Rainy days.	Departure from September, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from September, 1913.	Departure from normal.	Rainy days.	Departure from September, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	90.6	-29.7	-76	9	-4	21.3	18	Virac	81.2	-169.5	-	16	0	16.5	9
Isabela, Basilan	158.6	-59.3	-39.4	8	-3	53.8	11	Nueva Caceres	170.1	+33.4	-78.1	20	+3	53	29
Zamboanga	^a 63.2					27.7?	23?	Batangas	676.8	+380.7		20	+4	244.9	3
Davao	61.9	-116	-128.4	3	-12	36.3	14	Atimonan	280.1	+108.4	+1.2	18	+3	46	21
Cotabato	^b 46.8							Ambulong, Tana-uan	1,022.8	+587.6		19	+1	228.3	3
Cagayan, Misamis	177.6	+67.1		11	-3	50.8	21, 24	Silang	681.1	+428.4	+296.3	16	+2	106.9	4
Butuan	151.4	+60.7	+13.9	5	-7	120.4	21	Paracale	115.5	-116		17	+4	19.4	22
Dumaguete	34.8	-75.3		6	-7	10.4	13, 26	Santa Cruz, Laguna	632.6			20		157.2	1
Yap, W. Carolines	205.6	-162.7		18	-5	82.8	17	Manila	887.7	+522.2	+517.4	21	+1	234.7	2
Tagbilaran	84.1	-34.9	-84.2	4	-4	82.8	19	Antipolo	1,100.9	+463.7		21	0	282.9	1
Iwahig	91.9			18		23.1	22	Iba	1,407.2	-601		21	-4	296.1	3
Surigao	79.5	-48.6	-85	9	-3	19.3	18	San Sidro	208.5	-93.4	-124.2	25	+5	55.1	1
Maasin	151.7	-111.4	-129.6	7	-2	47.8	26	Tarlac	317.2	-49.2	-30.8	19	-3	54	1
Cebu	89.2	+41.9	-81.7	11	-2	39.6	23	Baler	^b 81						
Iloilo	616.4	+276	+283.4	21	+3	89.1	25	Dagupan	665.7	-268.7	+185.2	17	-3	184.6	3
San Jose Buena-vista	459.5	+21.6	-80.3	23	+1	60.7	8	Bolinao	566.6	-341.2	+14.9	24	+5	124.8	3
Cuyo	194.7	-200.2	-202.8	22	+7	27.7	5	Baguio	1,194.2	-913.9	+304	28	+1	259.5	1
Ormoc	87.7	-395.2	-203.8	14	-6	20	8	San Fernando, Union	595.7	-386.9	+139.7	19	-1	132.5	2
Guiuan	159.2			12		63.5	17	Echague	280.5	+115.7		18	+2	53.1	14
Tacloban	145.5	+22.9	-10.7	14	-2	39.9	25	Candon	697.7	-481.9	+191.7	19	+1	139.4	4
Capiz	183.7	+67.9	-129.6	18	+4	30	25	Vigan	655	-836.1	+107.5	20	+2	105.6	30
Borongon	60.3	-108.5	-147	16	0	16.3	8	Tuguegarao	181.6	-522.3	-97.4	12	+2	45.8	12
Calbayog	114.1	-20	-159.3	17	+3	42.7	22	Laoag	392.1	-988.7		13	-3	78.7	1
Masbate	84.5	-52.5	-98.9	17	+2	11.9	12	Aparri	208.6		-86	11		82.4	23
Romblon	265.2	+124.8	+63.1	19	+4	74.9	3	Santo Domingo, Batanes	354.2	-143.4	-12	20	+2	62.2	12
Batag	^a 111.4					33.8?	5?								
Legaspi	228.1	+108.7	-20.4	23	+9	29	12								
Sumay, Guam	506.9	+92.8		26	+2	78.7	1								
Calapan	491.2	+413.5		17	+7	78.5	3								

^a 28 days of observation.

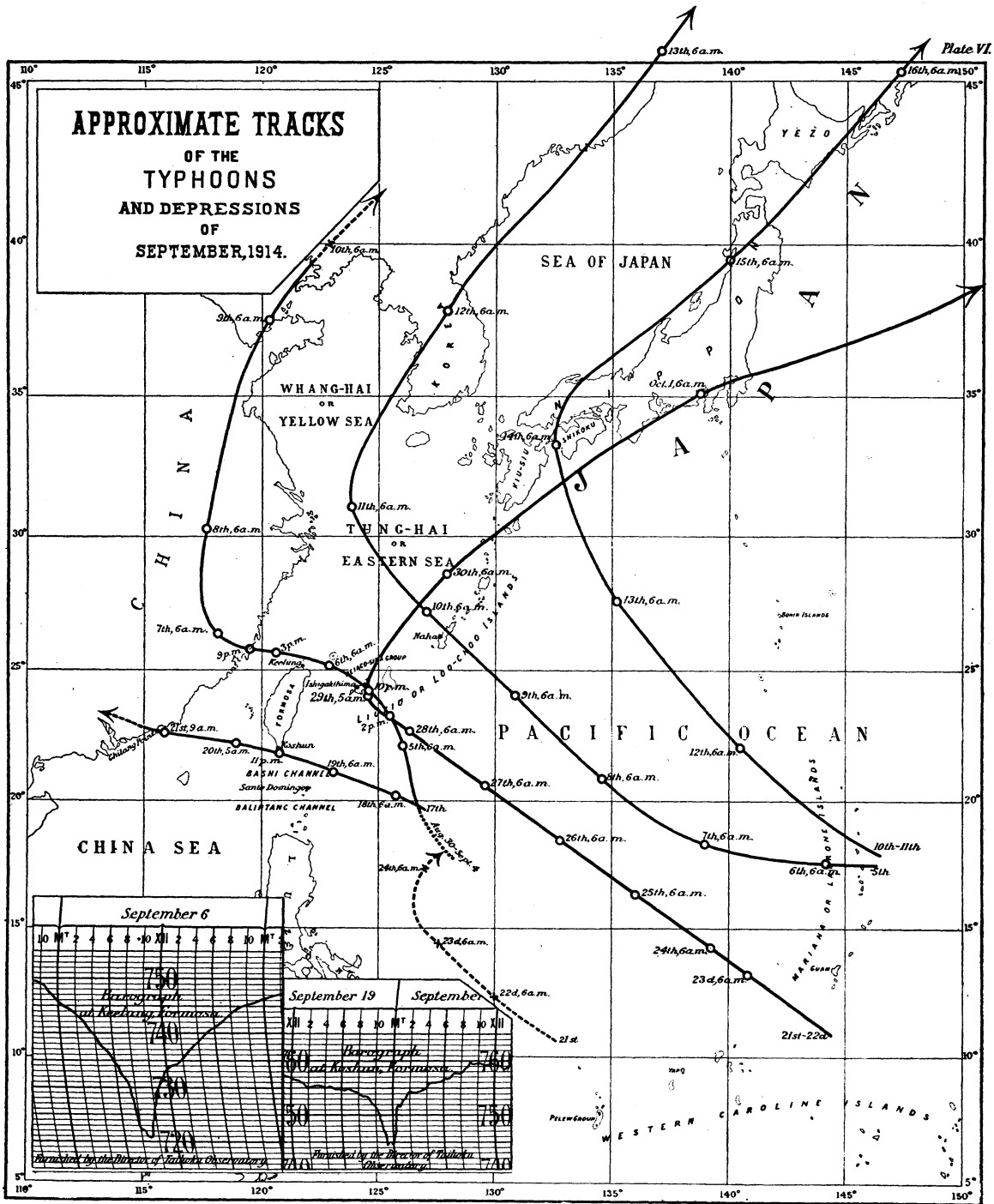
^b 24 days of observation.

DEPRESSIONS AND TYPHOONS.

It may be said that during the month there were continual atmospheric disturbances in the Far East. There were six typhoons in all, two of which crossed Japan, two passed close to Formosa, another crossed Korea, and other filled up in the Pacific to the E of northern Luzon. For the tracks of these typhoons see Plate VI.

The typhoon of August 30 to September 10, 1914.—Indications of the formation of this typhoon were observed in the Philippines on August 30, when the Observatory announced it as being between 400 and 500 miles to the E of Luzon. As was said in the ordinary notes of the following days, the storm remained almost stationary or moved exceedingly slowly till the 3d of September inclusive. On the 4th it moved almost directly N, but on the 5th it began to recurve more and more to the W till on the 6th it moved almost directly W, and thus passed close to the northern coast of Formosa between 8 and 10 o'clock a. m. of the same day, after having crossed the Meiacosima Islands on the previous night.

The storm entered the continent close to Foochow during the night of the 6th, recurved again to the N on the 7th, passed to the W of Shanghai on the 8th, and filled up on the 9th to 10th to the NW of Korea.



The Director of Taihoku Observatory, Mr. H. Kondo, kindly furnished us with the following particulars of the passage of the typhoon over Meiacosima and northern Formosa:

This typhoon was the third one this year in northern Formosa, and it was a very violent one. The barometric minima, the greatest velocity of the wind, and the rainfall in the different stations of Formosa are as follows:

Station.	Barometer, minimum.	Day and hour.	Wind.			Day and hour.	Rain in 24 hours—5th, 1 p. m., to 6th, 1 p. m.
			Direction.	Maximum velocity.			
	<i>mm.</i>			<i>m. p. s.</i>	<i>0-12.</i>		<i>mm.</i>
Agincourt	713.2	6, 7 a. m.					
Keelung	720.7	6, 8.45 a. m.	W	44.9	12	6, 8 a. m.	116
Taihoku	725.6	6, 9.40 a. m.	SW	30	11	6, 10 a. m.	192
Taichu	742	6, 5 a. m.	NNW	19.1	8	6, 5 a. m.	82
Tainan	745.3	6, 3 p. m.	NNW	17.4	7	6, 3 a. m.	4
Karenko	735.8	6, 10 a. m.	SW	12.2	5	6, 3 a. m.	35
Taito	735.4	6, 8 a. m.	SSW	16.2	7	6, 9 p. m.	3
Koshun	741.9	6, 3 a. m.	NW	28.2	10	6, 9 a. m.	0
Kokoto	743.6	6, 3 p. m.	N	23.2	9	6, 1 a. m.	2

The station of Ishigakihima informed me that the barometer fell to 702.6 mm. at midnight on the 5th, and that the highest velocity of the wind was 69 m. p. s. at 3 a. m. of the 6th. This is the lowest minimum that has ever been recorded near Formosa, the previous record being 704.3 on August 26, 1911, at Koshun. The damage caused by the typhoon was 610 houses entirely destroyed, 776 partly destroyed, and 1,288 damaged. One person was killed and 7 injured.

The typhoon of September 5 to 13, 1914.—The observations made in Guam on the 4th to 8th, which are given below, prove clearly that this typhoon passed by the north of that island during the afternoon or night of the 5th in a westerly direction. On the 7th it began to move to the NW toward the Loochoos, which it crossed during the night of the 9th not far from Naha; in the morning of the 11th it recurved to the NE, when the vortex was in the Eastern Sea to the east of Shanghai; on the 12th it crossed Korea and part of the Sea of Japan, and on the 13th it was still observed moving to the NE along the eastern coast of Manchuria.

METEOROLOGICAL OBSERVATIONS MADE AT SUMAY, GUAM, LADRONE ISLANDS, SEPTEMBER 4, TO 8, 1914.

Date and hour.	Pres-sures.	Wind.		Weather.	Rainfall 24 hours, beginning 6 a. m.	Date and hour.	Pressure.	Wind.		Weather.	Rainfall 24 hours, beginning 6 a. m.
		Direction.	Force.					Direction.	Force.		
	<i>mm.</i>		<i>0-12.</i>		<i>mm.</i>		<i>mm.</i>		<i>0-12.</i>		<i>mm.</i>
Sept. 4:						Sept. 6:					
6 a. m.	755.15	W	4	o	5.1	11 a. m.	752.67	SW	8	o	
2 p. m.	55.68	W	5	o		2 p. m.	52.10	SW	8	o	
Sept. 5:						5 p. m.	52.20	SSW	8	o	21.6
6 a. m.	53.85	W	5	o		Sept. 7:					
11 a. m.	54.05	W	6	o		6 a. m.	55.22	S	8	o	
2 p. m.	52.37	WSW	7	o		2 p. m.	55.63	S	7	o	16.5
6 p. m.	51.87	WSW	7	o	22.9	Sept. 8:					
Sept. 6:						6 a. m.	57.58	S	3	o	
5 a. m.	51.80					2 p. m.	57.37	S	2	o	41.9
7 a. m.	52.47	SW	8	o							

That this typhoon broke with great intensity on the Loochoos is clear from the Japanese weather maps, though up to the present we have been unable to learn the barometric minimum and the maximum velocity of the wind registered in Naha.

The Manila Observatory followed the course of the typhoon from the 6th, when it was close to Ladrone or Mariana Islands, till it reached Korea on the 12th. We copy the following warnings which indicate the principal changes in direction of the track.

September 6, 11.55 a. m.: There is a new typhoon far away over the Pacific to the west of the Ladrone or Mariana Islands, moving at present westward. It will take two or three days before it will influence the weather in the Philippines.

September 8, 11.55 a. m.: The typhoon of the Pacific lies this morning about half way between the Mariana and the Loochoo Islands. It has inclined northward since yesterday, and is moving at present WNW or NW. Hence it is not dangerous for the Philippines.

September 12, 12.15 p. m.: The typhoon of the preceding days recurved northeastward yesterday, when it reached the Yellow Sea. Its center was situated at 6 o'clock this morning in the neighborhood of northern Korea, moving toward the Sea of Japan.

The typhoon of September 10 to 16, 1914.—This typhoon followed a track very similar to the preceding one, though the recurve took place about 550 miles more to the east. It appeared on the 10th in the vicinity of the Ladrone or Mariana Islands, to the NNE of Guam, moved at once to the NW and recurved to the NE on the 14th when the vortex was over the SW of Japan. According to the Japanese weather maps, this typhoon was less intense and less well developed than the first two of the month.

The typhoon of September 17 to 21, 1914.—This typhoon had a very small diameter, as may be seen by comparing the observations from Santo Domingo, Batan Islands, and Koshun, Formosa, given below. The vortex passed by the north of Santo Domingo and the south of Koshun although much nearer to Koshun, where the barometer fell to 746.1 mm., while in Santo Domingo it only fell to 751.87 mm. After passing close to the southern point of Formosa, the vortex moved almost due west across the southern part of the Formosa Channel till it entered the continent on the morning of the 21st, as is clearly shown by the observations made at Chilang Point (115° 35' long. E, 22° 40' lat. N.).

METEOROLOGICAL OBSERVATIONS FOR SEPTEMBER 18 TO 21, 1914.

Santo Domingo, Batan Islands.				Koshun, Formosa.				Chilang Point, southern China coast.					
Date and hour.	Presure.	Wind.		Rain-fall, 24 hours, beginning 6 a. m.	Date and hour.	Presure.	Wind.		Date and hour.	Presure.	Wind.		Weather.
		Direction.	Force.				Direction.	Force.			Direction.	Force.	
Sept. 18:	mm.		0-12.	mm.	Sept. 19:	mm.	m. p. s.	0-12.	Sept. 21:	mm.	0-12.		
6 a. m.	756.20	NNW	3		9 p. m. ---	754.3	NNW	12.7	3 a. m.	758.09	N	2	o, q, m
2 p. m.	55.77	NNW	4	61.3	10 p. m. ---	51.9	NNW	21.6	6 a. m.	57.17	NW	5	o, r, m
Sept. 19:					11 p. m. ---	47.2	N	33.8	9 a. m.	51.87	NNW	8	o, r, m
6 a. m.	55.74	WNW	6		11.30 p. m.	46.1	NE	32	Noon.	55.43	SSE	7	o, m, p
2 p. m.	57.23	WbyS	5	43.9	Midnight	51.6	ESE	33.2	3 p. m.	58.19	SSE	6	o, m, p
Sept. 20:					Sept. 20:				6 p. m.	59.39	SE	5	b, c, m
6 a. m.	59.30	SSE	1		1 a. m. ---	55.1	ESE	27.7	9 p. m.	60.91	E	4	b, c, m
2 p. m.	59.81	SSE	1	14.3	3 a. m. ---	56.9	SE	15.1					
					5 a. m. ---	58	SE	12.3					

In Plate VI we reproduce the barographic record obtained in Koshun during this typhoon and which was kindly placed at our disposal by the Director of Taihoku Observatory, who declared that there had never been a typhoon of such small dimensions in Formosa.

Depression of September 21 to 24, 1914.—This depression or typhoon was of very small importance as it recurved to the N and NE far from the east of Luzon and it filled up soon after. The first indications of its existence were noticed on the 21st and it filled up probably on the 25th. Its probable track is given in Plate VI.

The "Rizal" typhoon: September 21 to October 1, 1914.—We call this typhoon the "Rizal" typhoon on account of the steamer of that name being caught in the vortex, as we shall see further on. The track of the typhoon is somewhat similar to those of the second and third typhoon of the month, as may be seen in Plate VI. The recurve, however, was much more acute in this case and the typhoon itself originated in lower latitudes.

Below we give the observations made in Guam from the 21st to the 25th of September. The fall of the barometer on the 22d with winds so decided from the ENE scarcely allowed one to doubt of the formation of a typhoon to the south of the island not far from 145° long. E and 11° lat. N.

METEOROLOGICAL OBSERVATIONS MADE AT SUMAY, GUAM, LADRONE ISLANDS, SEPTEMBER 21 TO 25, 1914.

Date and hour.	Pressure.	Wind.		Weather.	Rainfall 24 hours begin- ning 6 a. m.	Date and hour.	Pressure.	Wind.		Weather.	Rainfall 24 hours begin- ning 6 a. m.
		Direc- tion.	Force.					Direc- tion.	Force.		
Sept. 21:	<i>mm.</i>		0-12.		<i>mm.</i>	Sept. 23:	<i>mm.</i>		0-12.		<i>mm.</i>
6 a. m.	756.90	SSW	1	o	22.9	2 p. m.	754.90	SE	4	o	16.5
2 p. m.	56.20	NE	4	o		6 p. m.	55.57	SSE	4	o	
Sept. 22:						Sept. 24:					
6 a. m.	56.10	ENE	6	o		6 a. m.	56.42	SSE	5	o	
Noon	55.77	ENE	6	o, q		2 p. m.	55.53	SSE	6	o	3.8
2 p. m.	54.52	ENE	5	o		Sept. 25:					
5 p. m.	54.77	ENE	5	o	53.3	6 a. m.	57.50	S	2	c	
Sept. 23:						2 p. m.	56.78	S	4	o	
6 a. m.	55.90	SE	3	o							

The Observatory announced the typhoon on the 23d in these terms:

September 23, 11.30 a. m.: A new typhoon appeared yesterday afternoon to the S of Guam, its center being at 6 o'clock this morning to the W of Guam, and moving WNW or NW.

As a matter of fact the direction of travel of this typhoon from the time it appeared to the S of Guam till it passed over the *Rizal* on the 28th was intermediate between the two directions indicated in the note, i. e. NW by W. (See Plate VI.) Below we give the observations made on board the *Rizal* on September 27 to 29. Captain Wm. de C. Wetherell very kindly let us see his log book and sent us the barographic record and several photographs taken after the vessel had passed through the storm. The record is reproduced in Plate VII; it was necessary to complete the recorded curve by direct observations because the paper was not large enough to mark the low readings observed on that occasion.

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE STEAMER "RIZAL" (CAPT. WM. DE C. WETHERELL), SEPTEMBER 27 TO 29, 1914.

Date and hour.	Approximate position.		Pressure (reduced to sea level).	Wind.		Remarks.
	Latitude north.	Longitude east.		Direction.	Force.	
Sept. 27:	o	o	<i>mm.</i>		0-12.	
6 a. m.			755.11	NE	7	7 a. m. Rainy with strong NE winds and heavy swell.
8 a. m.			55.87	NE	7	
Noon	22 53	124 55	53.33	E	7-8	Moderate to fresh gale, heavy sea and swell. Vessel laboring heavily at times and shipping water fore and after.
4 p. m.			49.27	ESE	8-9	Fresh to strong gale and heavy sea, weather ugly.
8 p. m.			49.02	S	10	Full gale blowing, frequent squalls of rain and heavy sea.
Midnight			47.75	S		Wind hauled to south with squalls of hurricane force. Center of typhoon determined to be bearing west-northwest.
Sept. 28:						
1 a. m.			44.70	S	10	
2 a. m.			43.68	S		
3 a. m.			43.68	ENE	10	Wind hauled to east-northeast.
4 a. m.			43.17	NE		3.30 a. m. Wind hauled to northeast then north. Cyclonic squalls increasing in force. Sail blown away.
5 a. m.			43.17	N	12	
6 a. m.			40.63	N		
7 a. m.			40.38	N		
8 a. m.			40.13	N		Boats blown out of davits. Port searchlight blown away.
9 a. m.			37.08	N		
10 a. m.			32	NNW		Wind hauled to north-northwest with hurricane force.
11 a. m.			27.43	NNW		
Noon	23 13	125 20	22.35	NNW	12	Wind hauled to northwest, mountainous seas. 1.30 p. m. Barometer fell to lowest point marked on dial, 27.70 inches (27.74 inches or 704.59 mm. reduced to sea level).
1 p. m.			09.66	NW		Passed through center of typhoon, wind fell almost calm.
2 p. m.			04.83	NW		2.25 p. m. Wind hauled to southwest then to south increasing to hurricane force.
3 p. m.			709.15	S		Ship not answering helm, came head to wind on port tack.
4 p. m.			09.66	S		
5 p. m.			10.67	S		
6 p. m.			12.19	S		
7 p. m.			13.71	S		
8 p. m.			14.73	S	11-12	
9 p. m.			16.76	S		
10 p. m.			19.30	S		Flooding cabins. All glasses in skylights, smoking room, and pursuer's office and rooms broken.

Meteorological observations made on board the steamer "Rizal" (Capt. Wm. de C. Wetherell),
September 27 to 29, 1914—Continued.

Date and hour.	Approximate position.		Pressure (reduced to sea level).	Wind.		Remarks.
	Latitude north.	Longitude east.		Direction.	Force.	
Sept. 28: 11 p. m.	0	0	mm. 21.08	S	0-12.	10.15 p. m. Dynamo lights all out, ship in darkness. Hurricane gale still blowing.
Midnight			22.35	S	11-12	
Sept. 29: 2 a. m.			22.09	S		Barometers show tendency to fall, wind increasing.
4 a. m.			21.84	S		Wind hauled to southwest with frequent cyclonic squalls. Typhoon determined to bear north-northwest, recurving and traveling toward NE.
6 a. m.			21.58	SW		
8 a. m.			31.24	SW		8.30 a. m. Weather clearing up.
10 a. m.			37.59	SW		
Noon	23 26	125 37	40.63	SW	11-12	
2 p. m.			45.71	SW		Strong breeze and heavy sea and swell.
4 p. m.			47.75	SW	9	Strong gale and high sea, frequent hard squalls with rain.
8 p. m.			53.33	SW	7	Moderate gale and drizzling, heavy sea and swell.
Midnight			55.87	SW	5	Fresh breeze.

The first thing that calls one's attention on reading these observations is the fact that the winds on the 27th veered from NE to E, ESE and S, and on the 28th backed to NE, N and NW. The first veering of the winds would seem to indicate that the typhoon passed by the south in a direction to the NW, and yet the winds which then came from the north quadrants pointed to the vortex being still to the SE of the *Rizal*. After a long interview with Captain Wetherell there seems to be no doubt as to the exactness of the observations both with regard to the winds and the position of the ship. Hence it would seem that the only possible solution is to suppose that there were two centers in the typhoon and that the first of them disappeared soon, for there were no signs of it either in the Meiacosima Islands or in Formosa. This supposition is not altogether satisfactory, we confess, although the fact that the barometer remained almost stationary from 2 to 5 a. m. of the 28th, instead of continuing to fall, may perhaps lend some force to the argument.

The *Rizal* was in the vortex of the typhoon about 2 p. m. of the 28th, the barometer having fallen to 699.50 mm. and the central calm being observed as may be seen in the following note taken from the log book: "Passed through center of typhoon, wind fell almost calm." After the calm the wind jumped round to SW and S increasing again to hurricane force which lasted for about twenty-four hours, the barometer remaining very low for about sixteen hours. All this indicated the slowness with which the typhoon moved while it was making a complete recurve to the NE in the vicinity of Meiacosima. The violence with which the storm broke, especially in the squalls, was altogether indescribable and it appears almost miraculous how a vessel in the condition of the *Rizal* could have escaped the shipwreck that seemed inevitable.

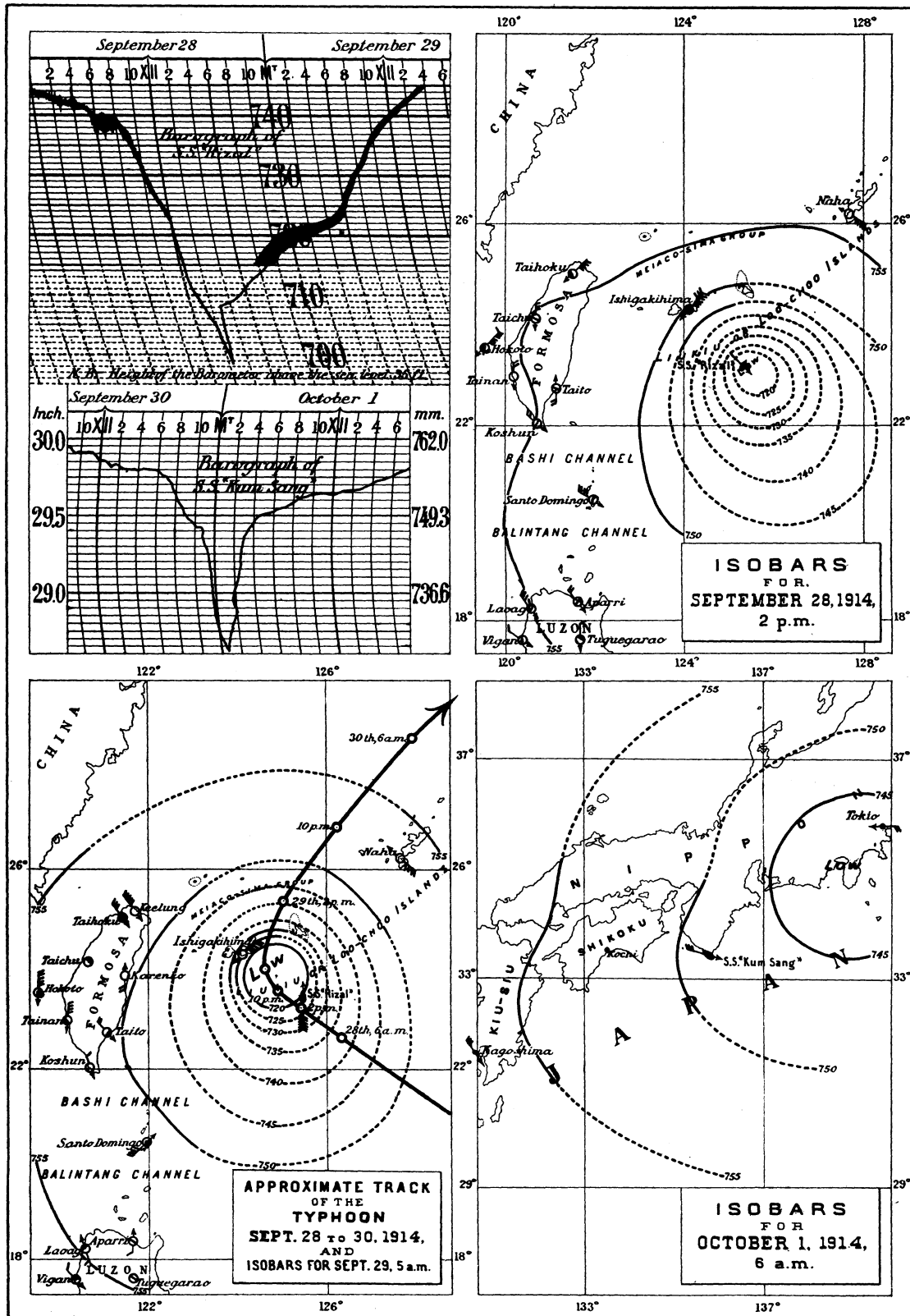
Captain Wetherell calculated that the velocity of the wind must have reached 140 miles an hour, and we do not consider this estimate exaggerated, for, according to the Director of Taihoku Observatory, the wind in Ishigakihima at 4 a. m. of the 29th reached the velocity of 51 m. p. s. or 114 miles or 183.4 kilometers per hour, and yet the barometer minimum was only 723.9 mm., that is 24 mm. higher than on the *Rizal*.

It is not necessary to say that the *Rizal* was very badly battered when the storm was done. The following interesting description was written by one of the passengers and appeared in the Manila Daily Bulletin December 22, 1914:

The boat is an awful sight—complete wreck—upstairs saloon walls all stained and torn up—2 feet of water on floors—curtains, seats, and rugs swimming around—all furniture broken—all lifeboats

TYPHOON OF SEPTEMBER 21 TO OCTOBER 1, 1914.

Plate VII.



N.B.—The Barometric readings for the isobars have been reduced to standard gravity.

smashed to pieces—all but one railing taken away—one entire stairway with brass rail leading to upper deck entirely missing—part of captain's bridge torn away—captain's room looks like after fire, etc.

Before proceeding with the history of this typhoon we would like to insist once again on the necessity there is for the ships that navigate these waters to be fitted with wireless, so that they may be able to send observations and receive typhoon warnings from one or other of the different observatories in these regions. There is the same necessity for the erection of wireless station in the Philippines, powerful enough to reach all parts of the seas of the Orient, that ships may send observations and receive warnings concerning typhoons.

After the typhoon recurved in the vicinity of Meiacosima on the 29th, it moved to the NE, reaching the south coast of Japan during the night of the 30th. The vortex passed very close to the port of Oshima where the steamer *Kum-Sang* was at anchor. Below we give the observations made on board this steamer. We owe these observations to the captain, Mr. M. F. Wheeler. The barometric minimum was 726.68 mm. and the relative calm was noted. The barographic record is reproduced in Plate VII, together with that of the *Rizal*.

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE STEAMER "KUM-SANG" ANCHORED AT OSHIMA HARBOR (CAPT. F. WHEELER), SEPTEMBER 30 AND OCTOBER 1, 1914.

Date and hour.	Pres- sure.	Wind.		Remarks.	Date and hour.	Pres- sure.	Wind.		Remarks.
		Direc- tion.	Force.				Direc- tion.	Force.	
Sept. 30:	<i>mm.</i>		<i>0-12.</i>		Oct. 1:	<i>mm.</i>		<i>0-12.</i>	
4 p. m.	756.91	NEbyE	6	At 9 p. m. Thick heavy cyclonic squalls and rain during the watch. Lowest barometric reading 28.61 in. (726.68 mm.).	1 a. m.	728.97	W	5-8	12.45 a. m. Light winds from SE to S and W as vortex passed to the westward. Squalls recommenced as barometer rose. 3.30 a. m. Observed a colorless rainbow.
6 p. m.	55.89	NEbyE	5-7		2 a. m.	37.09	NW	7-12	
8 p. m.	52.59	NEbyE	5-9		3 a. m.	45.73	NW	4-10	
10 p. m.	48.02	NNE	8-12		4 a. m.	48.52	NW	2-8	
Midnight ..	31.51	ESE	8-12		5 a. m.	49.29	WbyN	2-3	
Oct. 1:					7 a. m.	50.56	WbyN	3	
12.30 a. m. .	28.20	SW	0-4	8 a. m.	51.57	WbyN	2		

EXTRAORDINARY RAINS AND FLOODS IN LUZON, SEPTEMBER 1, 2, 3, 1914.

Many still remember the heavy rains and the consequent floods that occurred in Manila and in several provinces in the western part of Luzon during the first few days of this month of September. We have brought together here all the data we could obtain on the subject and we believe that it will not be without interest to our readers.

In the following table we give the amount of rain that was registered in our stations in Luzon on each of three consecutive days of heavy rain, together with the total fall for the three days. In order to make this table more intelligible it is necessary to point out that the rainfall in the official stations is reckoned from 6 a. m. of one day to 6 a. m. of the next, except in Manila, where it has been the custom since 1865 to count the day for rainfall statistics from midnight to midnight. Nevertheless, in order to make the comparison more easy, we have used for the table and for the rainfall chart of Plate VIII the same reckoning for Manila as for the other stations, viz, 6 a. m. to 6 a. m.

As the period of extraordinary rains began in Manila a little before midnight of August 31 and ended at about 6 a. m. of September 3, it follows that if we reckon the daily rainfall from 6 a. m. to 6 a. m., August 31 must be counted as one of the three days of heavy rain, whereas if we count from midnight to midnight, September 3 must

be included as one of the rainy days instead of August 31. Something of the same style happened in some of the other stations.

RAINFALL IN THE STATIONS OF LUZON DURING THE THREE DAYS SEPTEMBER 1, 2, 3, 1914.

Stations.	August 31.	Sep-tember 1.	Sep-tember 2.	Sep-tember 3.	Total in 3 days.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Aparri.....		0	1	1	2
Laoag.....	56.6	78.7	59.4		194.7
Tuguegarao.....		3.8	15.7	0	19.5
Vigan.....		61	99.5	65.6	226.1
Candon.....	77.3	51.4	36.3		165
Echague.....		0	8.1	25.1	33.2
San Fernando, Union.....		44.2	132.5	51.4	228.1
Baguio.....	190.6	259.5	95.6		545.7
Bolinao.....		15.5	60.5	124.8	200.8
Darupan.....		129.3	96.7	184.6	410.6
Baler.....	16.5	1.8	6.4		24.7
Tarlac.....		5.4	17.8	18.6	41.8
San Isidro, Nueva Ecija.....	17	55.1	19.6		91.7
Iba.....		59.7	67	296.1	422.8
Olongapo ^a		165.1	146.6	422.1	733.8
Montalban.....	264.2	274.3	182.9		721.4
Antipolo.....	114.8	282.9	248.9		646.6
Manila: ^b					
In the park.....	151.4	239.4	249.2		640
On the tower.....	127.3	176.2	223.2		526.7
Lamao.....		147.8	186.4	196.9	531.1
Alabang.....		121.9	108	106.7	336.6
Corregidor ^a		63.2	85.1	225	373.3
Santa Cruz, Laguna.....	95.5	157.2	92.4		345.1
Paracale.....		6.4	1.8	0	8.2
Silang.....		101.9	80	102.3	284.2
Ambulong, Tanauan.....		97.5	103.4	228.3	429.2
Atimonan.....		34.6	26.1	33.8	94.5
Batangas.....		54.4	25.2	244.9	324.5
Nueva Caceres.....		5.8	2.1	2.6	10.5
Legaspi.....		12	3.8	6.3	22.1

^a In Olongapo and Corregidor the day for rainfall statistics is counted from 8 a. m. to 8 a. m. and 7 a. m. to 7 a. m., respectively.

^b We include here the amount of rain registered by the gauges in the meteorological park for the following reasons: The rainfall measured on the Observatory tower, which is about 18 meters above the level of the ground, is the only one that can be used to compare the rainfall of this year with that of preceding years, because all the rainfall statistics for Manila published by the Observatory since 1865 are taken from records made by gauges placed in similar conditions as those which we have at present on the central tower of the Observatory building. The rainfall measured by the gauges placed in the park, 1 meter above the ground, gives a much more accurate idea of the amount of rain which fell in Manila and vicinity, for it is well known that, owing to the action of the wind, the amount of rain collected in instruments placed on roofs or towers is much less than in those on the ground.

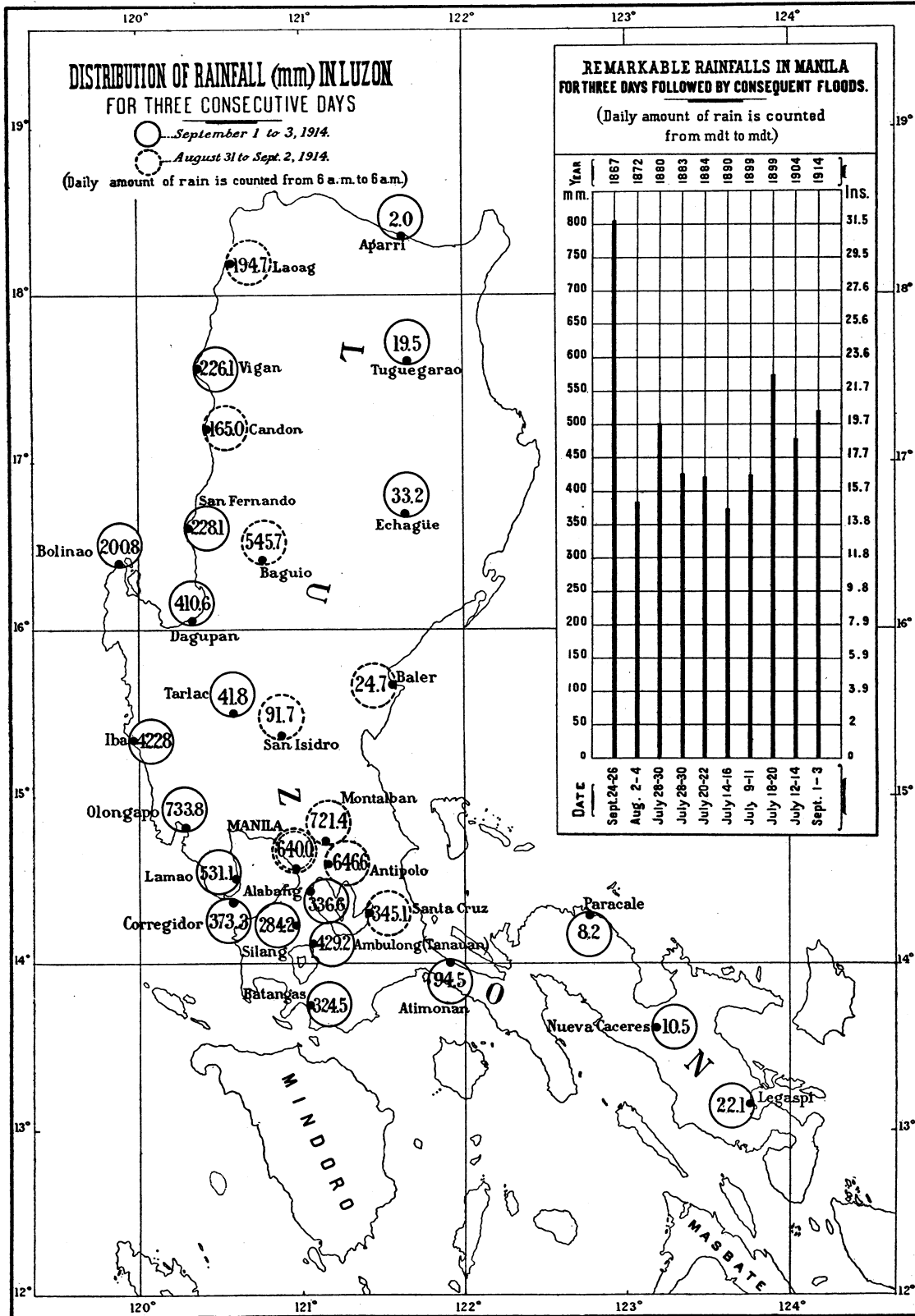
As we have stated above, the daily rainfall given in the table is that collected from 6 a. m. to 6 a. m. If the Manila daily rainfall be counted from midnight to midnight, we would have as the three most rainy days, September 1, 2, and 3 with the following numbers:

	In the park.	On the tower.
	<i>mm.</i>	<i>mm.</i>
September 1.....	212.2	169.5
September 2.....	288.3	234.7
September 3.....	125.6	114.5
Total for 3 days.....	626.1	518.7

A cursory examination of the table shows the following facts:

(1) The rainiest zone of the period was that which includes the western part of the island from the Province of Pangasinan to that of Batangas, both included. It will also be remembered that in the provinces of this zone there occurred the greatest floods, the effects of which were spoken of for several days in the Manila press.

(2) The rains were not equally heavy throughout the whole of this zone, nor were the maximum falls recorded on the same dates. The heaviest rains were (prescinding from Baguio) in Olongapo, Antipolo, Lamao, Manila, and Montalban; in other words, the Provinces of Rizal and Bataan and the southern part of the Province of Zambales. The greatest amount of rain of the three days was recorded on the 1st, in Antipolo,



N.B.—The rainfall for Manila in this Map is that collected in the park, and counted from 6 a.m. to 6 a.m. The rainfall given in the small drawing, where a comparison is made with other three-day-periods of rain, is that collected on the tower and from midnight to midnight.

Montalban, Alabang, and Santa Cruz, Laguna; on the 2d, in Manila; and on the 3d, in Bolinao, Dagupan, Iba, Olongapo, Lamao, Corregidor, Silang, Ambulong, and Batangas.

In Montalban, Manila, and Antipolo as this period of heavy rains began somewhat earlier than in the other stations, so it ended sooner, and the rains that fell after 6 a. m. of the 3d were of little importance. This may perhaps throw some light on the question of the great floods of the 1st and 2d in the Province of Rizal, and the rapidity with which the waters subsided on the 3d. The condition of the weather on the 2d was such that the Observatory had good cause to fear that the rains would continue on the 3d with the same or even greater abundance than on the previous days, and hence warnings were given that proper precautions might be taken in case, as appeared probable, the water would rise still higher. That these fears were well founded is clear from the fact that in the towns of the provinces so close to Manila—as Cavite, Batangas, Bataan, and Zambales—the greatest rainfall of the period took place on the 3d. It was very providential, however, that in Rizal the rains diminished in intensity so notably from daybreak of the 3d, so that during the morning and afternoon of the same day there was a rapid fall of the flood.

(3) Outside the zone mentioned above, the rains of this period were somewhat abundant in the western part of northern Luzon, i. e., in the Provinces of La Union, Ilocos Sur and Norte; but small throughout the whole of the eastern part of the island.

It may be good to note here that this rainy period had been preceded in the western and central part of Luzon by several days of fairly good rains. (See BULLETIN for August, 1914.) This must have contributed in no small measure to the floods of the first few days of September.

With regard to the hourly distribution of the rain in Manila during the three days, September 1, 2, and 3, we may note that the hours in which it rained most were from 11 p. m. August 31 to 6 a. m. September 1 (92 mm. on the tower and 103.2 mm. in the park, in seven hours), from 8 p. m. September 1 to 8 a. m. of the 2d (184.8 mm. on the tower and 250 mm. in the park, in twelve hours), and from 9 p. m. of the 2d to 6 a. m. of the 3d (105.5 mm. on the tower and 117.2 mm. in the park, in nine hours). There was the highest tide of the month during the greatest of these periods, and hence everything was favorable for the formation of the great floods which occurred in Manila during the morning of the 2d. We do not think that the flood would have been so high if the amount of rain that actually fell had been better divided during the hours of these three days.

To form some idea of the extraordinary rainfall in Manila during these days it will be sufficient to point out the following facts:¹

(a) The normal rainfall of Manila for the whole of the month of September, which is one of the wettest of the year, is 370.3 mm.; so that the amount of rain that fell in the first three days of September, 1914, was 148.4 mm. greater than the normal of the whole month. Moreover, even the rainfall of the first two days was 33.9 mm. greater than the normal.

(b) During the last fifty years there have only been two occasions on which the rainfall for three consecutive days was greater than the present period. These quantities were 804.7 mm. for September 24, 25, and 26, 1867, and 571.6 mm. for July 18, 19, 20, 1899. Two other amounts which come close to that of this year are 500.5 mm. for July 28, 29, 30, 1880, and 475.9 mm. for July 12, 13, 14, 1904.

It will not be without interest to copy here from the records of the Observatory the

¹ It must be borne in mind that when speaking of the rainfall of Manila on September 1, 2, and 3 in the rest of this article, we refer always to the records of the gauge on the Observatory tower and that we reckon the daily fall from midnight to midnight. Only in this way can we compare the rain of this period of 1914 with those of previous years and with the normal values for September.

following data concerning the greatest rainfalls for three days that have occurred in Manila since 1865:

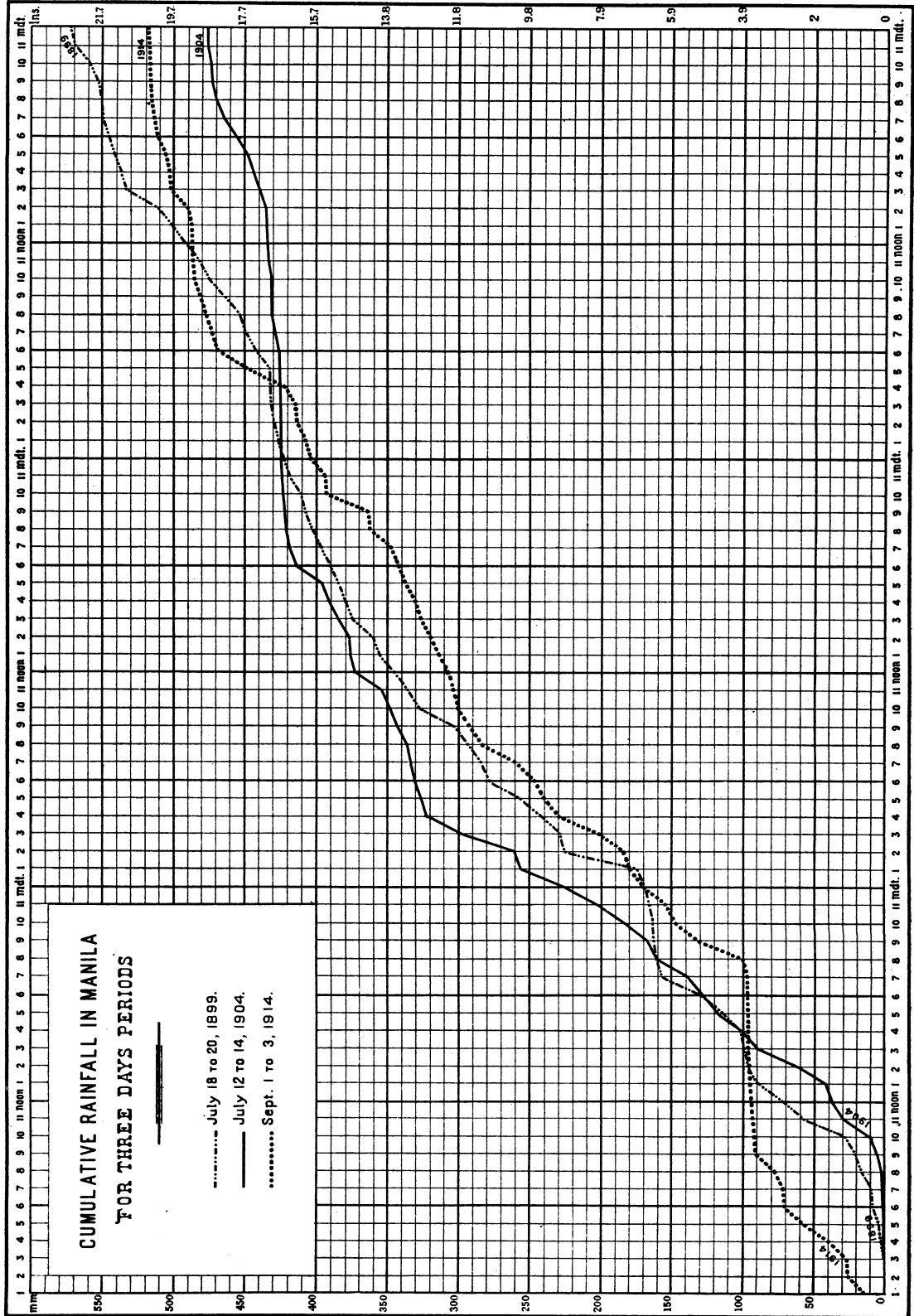
Year.	Month.	Days.	Daily rainfall.	Total in 3 days.	Year.	Month.	Days.	Daily rainfall.	Total in 3 days.
			<i>mm.</i>	<i>mm.</i>				<i>mm.</i>	<i>mm.</i>
1867	September	24	336	804.7	1890	July	14	58.7	372.1
		25	306.3				15	124.3	
		26	162.4				16	189.1	
1872	August	2	226.5	383.1	1899	do	9	209.8	423.2
		3	129.2				10	158.7	
		4	27.4				11	54.7	
1880	July	28	44.4	500.5	1904	do	18	169.3	571.6
		29	166				19	253.5	
		30	290.1				20	148.8	
1883	do	28	154.6	425.5	1914	do	12	226.2	475.9
		29	156.9				13	197.5	
		30	114				14	52.2	
1884	do	20	178.3	420	1914	September	1	169.5	518.7
		21	179.5				2	234.7	
		22	62.2				3	114.5	

It may be asked whether the floods observed in these periods were as great as the total amount of rain during the three days would seem to suppose. As we have not at hand data on floods that occurred previous to 1899, we restrict ourselves to the floods of 1899, 1904, and 1914. Of these three, the greatest was the one of 1904; then comes very similar in character, although perhaps a little inferior, that of this year; and in the third place the flood of 1899, which was of very slight importance compared with the other two. And yet against all what we would expect, we find that the total amount of rain for the three days corresponding to these floods are in inverse order, viz, 1899, 1914, and 1904. If instead of three days we take only two days, the result is not much more satisfactory for we have 423.7 mm. in 1904, 422.8 mm. in 1899, and 404.2 mm. for 1914; so that the rainfall in two days is almost the same for 1904 and 1899 and both of them greater than in 1914, and yet, as was indicated above, the floods of 1904 and 1914 were very similar and that of 1899 very much smaller.

Prescinding from other circumstances that could influence more or less the greatness of the floods, and fixing our attention only on the manner in which the greater or less amount of rain probably influences the flood, we believe that it is not so much the sum total of rain in two or three consecutive days that has the greatest influence in producing greater or smaller floods, as the greater or less amount of rain accumulated in intervals of a few hours. Moreover, even supposing the same or similar quantities of rain in the same number of hours, the greatness of the consequent flood will depend in great part on whether this rainy period has followed two or three days of more or less wet weather during which the subsoil has already been saturated, or has followed two or three days of little or no rain.

With this, let us see what happened in the three floods we are engaged upon. In order to show more clearly the times during which most of the rain fell, we have drawn in Plate IX three curves, which we call curves of cumulative rainfall for the three days of each of the three years, for they show the quantity of water that was being accumulated from hour to hour beginning with 0^h a. m. of the first of the days. The steepest portion of the curve and its duration show at once which of the three periods accumulated most water in the same or a similar number of hours. In 1904, which is the year of the greatest floods, 281.1 mm. of rain fell in fifteen hours (July 12, 1 p. m. to July 13, 4 a. m.), while in 1899 and 1914 the greatest amount accumulated in twelve hours was respectively 182 mm. (July 19, 1 a. m. to 1 p. m.), and 184.8 mm. (September 1, 8 p. m. to September 2, 8 a. m.). According to this it would appear that the flood of 1899 ought not to have been less than that of 1914, nor the one of 1914 so similar to that of 1904. Nevertheless, it must be remembered that while the three days of rainfall in 1899 began

Plate IX



suddenly after six days of practically no rain, in 1914 they took place after a series of wet days and especially after two days in which the rain had been somewhat heavy, viz, 43.3 and 57.9 mm., respectively, on August 30 and 31. On the other hand, although it is true that the three days of rain in 1904 had also been preceded by a few more or less wet days, yet these rains were of much less importance than those which preceded the 1914 period of rains; thus during the two days preceding July 12, 1904, only 30.5 and 26.7 mm. were collected in the gauges in Manila, and during these days themselves there were intervals of several hours without any rain at all, with more than five hours of sunshine on the 10th and more than two hours on the 11th, while in 1914 there were only two hours of sunshine on the 30th and none at all on the 31st of August. Hence though the accumulation of water in a determined period of hours was considerably less in 1914 than in 1904, nevertheless the saturated condition of the subsoil at the beginning of the three days of abundant rain in September, 1914, caused the flood to be much greater than would otherwise have been the case.

These notes had already been prepared for the printer when we received from Mr. A. Gideon, superintendent, division of water supply and sewers, the following interesting report which we had asked him to write for us, and which we publish here as completing what we have said on the rains and floods of September, 1914.

It would be difficult to compare the flood of September 1-3, 1914, to previous floods, even if authentic records were on file, due both to the changing conditions of rate of rainfall on the watershed of the Pasig River at the various places, and the changes of the regimen in the river and adjacent terrain. The records in this office date back only to 1904, during which year I made some observations and notes on the results of the floods of that year.

Since that time, the Montalban dam has been built which slightly modifies the result of the run-off of the Mariquina River.

The Pasig River has been dredged below the Bridge of Spain to a depth of 18 ft. (5.5 meters), and has scoured out in places to greater depths.

On the south side below the Bridge of Spain, the river has been walled in and has also been more or less improved in other places since 1904, thus increasing the water carrying capacity of the same, so that it is very likely that for the same water elevation it can carry a great deal more water than previously. Thus it may be possible that, though the rainfall was greater this year than in 1904, the water ran off faster and consequently the flood level did not rise higher.

In general it may be stated that the only parts of the city that were not flooded September last, were the following:

- (1) Santa Mesa, on account of its high ground.
- (2) Intramuros, on account of its comparatively high ground and the new large drain on Calle Cabildo, discharging into the Pasig, below the Bridge of Spain.
- (3) A portion of the San Lazaro Estate, on account of its comparatively high ground.
- (4) San Nicolas and portions of Tondo, on account of its proximity to the ocean, the mouth of the river, and improved drainage.
- (5) Port district, on account of its relatively high location, proximity to the ocean, and excellent drainage.
- (6) That part of Ermita and Malate between the bay and approximately Calle Nebraska on account of its proximity to the bay and the new drains recently installed, which discharge directly into the bay.

In general, it may be stated that the parts of the city abutting the Pasig River below the Bridge of Spain, and on the bay, and discharging their drainage into the same, were comparatively free from water, though the land is not higher than at some of the inundated territory farther up the river. The elevation of the flood level increased very rapidly up the river, thus in Santa Ana, Paco, the upper end of Ermita, Malate, and Santa Mesa the water reached to a height of several feet over the street level, though portions of it are somewhat higher situated than San Nicolas which was free of water.

The Escolta may be given as the best illustration, the water being about 1 foot (30 centimeters) higher on the eastern end or above the Bridge of Spain than the western or below the bridge.

The reason for this is not far to seek. The bridge of Spain and the ones above form an obstacle, and considerably reduce the cross section of the river, and reduce its carrying capacity. The river above the Bridge of Spain is not dredged, nor improved and these tend to pile up the water to give it the same carrying capacity as below, thus rapidly raising the water level, which results in flood.

In my opinion the main cause of the floods is the Mariquina River, the watershed of which is very mountainous, has no natural storage of any kind, and runs off very rapidly. Although the watershed of this river is but a small part of the total watershed of the Pasig River, yet the discharge of it at the Montalban dam during September 1 and 2, is estimated to be at times greater than the total amount carried by the Pasig River during the corresponding period. This river varied, by actual measurements, from 6 cubic feet per second in April, 1912, to 60,000 cubic feet per second during the flood, while the total carried by the Pasig River below the Bridge of Spain in Manila, was probably not more than 50,000 cubic feet per second. The balance together with the water that fell below the dam and throughout the lake region was stored in the Laguna de Bay and on the flooded area.

As soon as the rain eased off on the Mariquina watershed, the flood commenced to recede. The heights of the flood water were approximately the same as in 1904, varying somewhat at different localities.

The damages done to city property were very small and will, outside of the Bridge of Spain, not exceed ₱50,000.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es para casi todas las estaciones de Filipinas algo menor que la del año pasado. La de Manila difiere en -0.09 mm. de la normal de este mes, y en -0.32 mm. de la media de Septiembre, 1913. Las presiones más altas se observaron casi en todas partes los días 19 y 20, y las más bajas los días 5 y 6.

La temperatura media mensual comparada con la del año pasado es algo más alta en las estaciones de Visayas y Mindanao, y ligeramente más baja en Luzón. La de Manila se diferencia en -0.7° C. y -0.5° C. respectivamente de la normal de este mes y de la media de Septiembre, 1913. Las temperaturas extremas en Manila fueron 34.1° C. el día 25, y 22.2° C. el 21. La máxima y mínima absolutas de Baguio fueron 24.8° C., 13.9° C. para la cumbre de Mirador, y 25.0° C., 13.0° C. para el valle.

Precipitación acuosa.—Comparando la lluvia total de este mes con la del año pasado, hallamos que, a excepción de algunas provincias próximas a Manila en la parte sudoeste de Luzón, en la mayoría de las estaciones las diferencias son negativas, y si hay algunas positivas, son en general de poca consideración. En las provincias indicadas, como Rizal, Batangas, Zambales, La Laguna, etc., la cantidad de lluvia de este mes es bastante mayor que la de Septiembre, 1913. Si comparamos los mismos totales de lluvia con la lluvia normal del mes, tenemos que son mayores generalmente en la parte central y occidental de Luzón, y menores en el resto del Archipiélago.

En los pluviómetros del Observatorio Central se han recogido en todo el mes 887.7 mm. de agua, cantidad mayor que la normal en 517.4 mm., y mayor también que la del año anterior en 522.2 mm. La cantidad mensual de agua caída en Baguio fué 1,194.2 mm., menor que la de Septiembre, 1913, en 913.9 mm. y mayor que la normal de este mes en 304 mm.

Más abajo daremos algunos detalles sobre las lluvias extraordinarias e inundaciones de los tres primeros días del mes.

DEPRESIONES Y TIFONES.

Este mes puede decirse que fué de continua perturbación atmosférica en el Extremo Oriente. Seis tifones hubo en todo el mes, de los cuales dos atravesaron el Japón, dos pasaron muy cerca de Formosa, otro atravesó la Korea y otro se deshizo en el Pacífico sin seguir más adelante, al E del norte de Luzón. Véanse las trayectorias de todos estos tifones en la lámina VI.

Tifón de 30 de Agosto a 10 de Septiembre, 1914.—Indicios de la formación de este tifón se observaron en Filipinas desde el día 30 de Agosto, cuando el Observatorio de Manila lo anunció situándolo a unas 400 ó 500 millas al E de Luzón. Según se fué diciendo en las notas ordinarias de los días siguientes, permaneció el tifón casi estacionario o moviéndose con suma lentitud hasta el día 3 de Septiembre inclusive. El día 4 se movió casi al N, pero el día 5 empezó a recurvar más y más hacia el W hasta que el 6 se dirigió casi enteramente al W, viniendo de esta suerte a pasar muy cerca de la costa norte de Formosa de 8 a 10 a. m. de dicho día, después de haber atravesado la noche anterior el grupo de las islas Meiacosima. Habiendo penetrado el tifón en el Continente cerca de Foochow la noche del 6, volvió a recurvar al N el día 7, pasó al W de Shanghai el día 8, y se deshizo del 9 al 10 al NW de Korea.

El Director del Observatorio de Taihoku, Mr. H. Kondo, nos facilitó los siguientes datos referentes al paso de este tifón sobre Meiacosima y el norte de Formosa.

Este tifón fué el tercero de este año en el norte de Formosa y muy violento. Las mínimas barométricas, máxima velocidad del viento y lluvia registradas en Formosa son como siguen:

Estaciones.	Mínima barométrica.	Día y hora.	Viento.			Día y hora.	Lluvia en 24 horas, 1 p. del 5 á 1 p. del 6.
			Dirección.	Máxima velocidad.			
				m. p. s.	0-12.		
Agincourt.....	713.2	6, 7 a. m.					
Keelung.....	20.7	6, 8.45 a. m.	W	44.9	12	6, 8 a. m.	116
Taihoku.....	25.6	6, 9.40 a. m.	SW	30	11	6, 10 a. m.	192
Taichu.....	42	6, 5 a. m.	NNW	19.1	8	6, 5 a. m.	82
Tainan.....	45.3	6, 3 p. m.	NNW	17.4	7	6, 3 a. m.	4
Karenko.....	35.8	6, 10 a. m.	SW	12.2	5	6, 3 a. m.	35
Taito.....	35.4	6, 8 a. m.	SSW	16.2	7	6, 9 p. m.	3
Koshun.....	41.9	6, 3 a. m.	NW	28.2	10	6, 9 a. m.	0
Hokoto.....	43.6	6, 3 p. m.	N	23.2	9	6, 1 a. m.	2

La estación de Ishigakihima nos informó que el barómetro bajó allí hasta 702.6 mm. a media noche del 5 y que la máxima fuerza del viento llegó a 69 m. p. s. a 3 a. m. del 6. Mínima tan baja no se había observado hasta ahora en las cercanías de Formosa, pues la más baja registrada en los años anteriores había sido 704.3 mm. en Koshun el 26 de Agosto, 1911. Los daños causados por el tifón fueron: 610 casas enteramente destruidas, 776 parcialmente destruidas, y 1,288 damnificadas. Afortunadamente no hubo más que una persona muerta y 7 heridas.

Tifón de 5 a 13 de Septiembre, 1914.—Las observaciones hechas en Guam del 4 al 8, las cuales ofrecemos en una tabla en el texto inglés, prueban con bastante claridad que pasó este tifón por el norte de aquella Isla la tarde o noche del 5, moviéndose al W. El día 7 empezó a moverse al NW, en dirección a las islas Liukiu o Loochoos, las cuales atravesó la noche del 9 cerca de Naha; el 11 por la mañana recurvió al NE cuando se hallaba el vórtice en el Mar del Este al E de Shanghai; el 12 atravesó la Korea y parte del Mar de Japón, y el 13 se le veía todavía moviéndose al NE a lo largo de la costa oriental de Manchuria.

Que este tifón desfogó con mucha intensidad en las islas Liukiu o Loochoos se echa de ver claramente por los mapas del tiempo de Japón, aunque hasta el presente no nos ha sido posible saber la mínima barométrica y máxima fuerza del viento registradas en Naha.

El Observatorio de Manila fué siguiendo la trayectoria de este tifón desde el día 6 cuando se hallaba muy cerca de las islas Ladrones o Marianas hasta que llegó a Korea el día 12. Copiaremos aquí solamente las que indicaban los cambios principales en la dirección de dicha trayectoria.

Día 6, 11.55 a. m.: Hay un nuevo tifón lejos en el Pacífico al W. de las Marianas moviéndose al presente hacia el W. Pasarán dos o tres días antes que pueda influir en el tiempo de Filipinas.

Día 8, 11.55 a. m.: El tifón del Pacífico se halla esta mañana a la mitad de distancia entre las islas Marianas y Liukiu. Se ha inclinado hacia el N desde ayer y se mueve actualmente al WNW o NW; por lo cual no es peligroso para Filipinas.

Día 12, 12.15 p. m.: El tifón de los días anteriores recurvió al NE al llegar al Mar Amarillo. Su centro se hallaba a las 6 de esta mañana en los alrededores del N de Korea, moviéndose hacia el Mar de Japón.

Tifón de 10 a 16 de Septiembre, 1914.—Siguió este tifón una trayectoria muy parecida a la anterior, solo que verificó la recurva unas 550 millas más al E. Apareció el día 10 en las cercanías de las islas Ladrones o Marianas, al NNE de Guam, se movió desde luego al NW, y recurvió al NE el día 14 cuando se hallaba el vórtice en la parte SW de Japón. Según se echa de ver en los mapas del tiempo de Japón, este tifón fué menos intenso y desarrollado que los dos primeros de este mes.

Tifón de 17 a 21 de Septiembre, 1914.—Este tifón fué de muy pequeño diámetro, como puede verse comparando entre sí las observaciones de Santo Domingo, Islas Batanes,

y Koshun, Formosa, las cuales damos en una tabla en el texto inglés, juntamente con las de Chilang Point, cerca de la costa sur de China. El vórtice pasó por el norte de Santo Domingo y por el sur de Koshun, aunque mucho más cerca de esta última donde bajó el barómetro hasta 746.1 mm., siendo así que en la primera no bajó más de 751.87 mm. Habiendo pasado el vórtice muy cerca de la punta sur de la isla Formosa, las observaciones hechas en Chilang Point (115° 35' long. E, 22° 40' lat. N) prueban evidentemente que el tifón se movió muy inclinado al W a través de la parte sur del Canal de Formosa hasta que penetró en el Continente la mañana del 21.

En la lámina VI reproducimos la curva barográfica obtenida en Koshun durante este tifón, la cual agradecemos al Director del Observatorio de Taihoku, quien asegura que jamás se había experimentado en Formosa un tifón de tan pequeñas dimensiones.

Depresión o tifón de 21 a 24 de Septiembre, 1914.—Esta depresión o tifón fué de muy poca importancia cuanto que recurvó al N y NE cuando se hallaba aún lejos al E de Luzón, deshaciéndose poco después. Se notaron sus primeros indicios el día 21, y se deshizo probablemente el 25. Véase su trayectoria probable en la lámina VI.

El tifón del "Rizal": 21 de Septiembre a 1 de Octubre, 1914.—Llamamos a este tifón "el tifón del *Rizal*," por haberse hallado este vapor en el vórtice de él, según se verá por lo que iremos diciendo. Su trayectoria es algo parecida a las del segundo y tercer tifón de este mes, como puede verse en la lámina VI. La recurva, sin embargo, en este caso fué mucho más aguda que en los anteriores, y el origen del tifón tuvo lugar en más bajos paralelos.

En el texto inglés damos las observaciones hechas en Guam desde el 21 hasta el 25 de Septiembre. La bajada del barómetro observada el 22 con vientos tan entablados del ENE apenas deja lugar a duda de que el tifón se formó al S de aquella isla no lejos de 145° long. E y 11° lat. N. El Observatorio de Manila anunció por vez primera este tifón en la nota ordinaria del tiempo del 23 en estos términos:

Día 23, 11.30 a. m.: Un nuevo tifón apareció ayer tarde al S de Guam, hallándose su centro a las 6 de esta mañana al W de Guam, moviéndose al WNW o NW.

En hecho de verdad la dirección que llevó este tifón desde que apareció al S de Guam el 22 hasta que pasó sobre *Rizal* el 28 fué la intermedia entre las dos indicadas en esta nota del Observatorio, es decir, NW $\frac{1}{4}$ W. Véase la lámina VI. En el texto inglés damos las observaciones hechas a bordo del vapor *Rizal* desde el 27 hasta al 29 ambos inclusive. Al Capitán Mr. Wm. de C. Wetherell, agradecemos el haber puesto a nuestra disposición el *libro de bitácora*, la curva barográfica y varias fotografías tomadas después de pasado el tifón. La curva barográfica va reproducida en la lámina VII, habiéndonos sido preciso completar parte de ella con las observaciones directas por no alcanzar la amplitud del registro lecturas tan bajas como las observadas en esta ocasión.

Desde luego nos llamó la atención en estas observaciones que después de haber rolando los vientos el 27 del NE al E, ESE y S, volviesen el 28 al NE, N y NW. El primer role de vientos parecía indicar que el tifón había pasado por el S en dirección al NW, y sin embargo, los vientos que luego se entablaron de los cuadrantes del N daban a entender que el vórtice demoraba todavía al SE del *Rizal*. Después de una larga conferencia que hemos tenido con el Capitán Wetherell no nos cabe la menor duda de la exactitud así de los vientos anotados como de la posición del vapor. De donde parece seguirse que no queda otra solución posible que suponer que había en este tifón como dos centros, el primero de los cuales hubo de desaparecer pronto, pues no se notaron señales de él ni en las islas Meiacosima ni en Formosa. Confesamos que esta suposición no nos satisface por completo, si bien el haberse estacionado algo el barómetro de 2 a 5 a. m. del 28, en vez de seguir bajando como antes, podría acaso ser un argumento, aunque no muy fuerte, en favor de la misma.

El *Rizal* se halló en el vórtice del tifón a eso de 2 p. m. del 28, habiendo bajado el barómetro hasta 699.50 mm. y observándose la calma vortical, según se hace notar en la tabla de observaciones que acompaña el texto inglés: "El barco ha pasado por el centro del tifón, el viento calmó casi por completo." Después de la calma, saltó el viento al SW y S, soplando con fuerza huracanada de estas dos direcciones por espacio de unas 24 horas, y el barómetro se mantuvo muy bajo durante 16 horas. Todo era indicio de la suma lentitud con que se movía el tifón mientras verificaba una completa recurva al NE en los alrededores de Meiacosima. La violencia con que desfogó el temporal, sobre todo en algunos de los chubascos, es indescriptible, y con razón se puede afirmar que parece poco menos que milagroso que un vapor de las condiciones del *Rizal* pudiera zafarse de un naufragio que parecía inevitable. El Capitán Wetherell calculaba que la fuerza de los vientos habría alcanzado la velocidad de unas 140 millas por hora, y a la verdad no creemos que sea nada exagerado este cálculo. Bastará en confirmación de e'lo indicar lo observado en Ishigakihima donde, según datos que agradecemos al Director del Observatorio de Taihoku, el viento alcanzó a 4 a. m. del 29 la máxima velocidad de 51 m. p. s. o sea 114 millas o 183.4 km. por hora, a pesar de que la mínima barométrica fué solo 723.9 mm. es decir, unos 24 mm. más alta que la del *Rizal*.

Inútil es decir lo mal parado que quedó este vapor después de la tempestad. En el texto inglés copiamos, tomándolo de un periódico de la capital, una breve descripción escrita por uno de los pasajeros, la cual, salva alguna que otra exageración de poca importancia, nos aseguró el Capitán ser bastante exacta.

Antes de pasar adelante, bueno será insistir una vez más en la necesidad de que barcos que navegan por estos mares del Extremo Oriente, tan expuestos a perturbaciones atmosféricas como la presente, fuesen provistos de aparatos de telegrafía sin hilos para transmitir sus observaciones y recibir avisos de tifón de alguno de los varios Observatorios que existen en estas regiones. Igual necesidad debe reconocerse para establecer en Filipinas aparatos bastante potentes para transmitir los avisos de tifón a grandes distancias y recibir a la vez las observaciones hechas a bordo de tantos barcos como navegan por estos mares, según se viene ya practicando en el Japón.

Terminaremos lo referente a este tifón, diciendo que, después de recurvar en los alrededores de Meiacosima el 29, se dirigió al NE llegando a la costa Sur del Japón la noche del 30 de Septiembre al 1 de Octubre. El vórtice pasó muy cerca del puerto de Oshima donde se hallaba fondeado el Vapor *Kumsang*. En el texto inglés publicamos parte de las observaciones hechas a bordo de este vapor, las cuales mucho agradecemos al Capitán M. F. Wheeler. La mínima barométrica fué 726.68 mm. y se observó calma relativa. La curva barográfica va reproducida en la lámina VII juntamente con la del vapor *Rizal*.

LLUVIAS EXTRAORDINARIAS E INUNDACIONES EN LUZON, 1 A 3 DE SEPTIEMBRE, 1914.

Presentes están todavía en los ánimos de todos los grandes lluvias y consiguientes inundaciones que ocurrieron en Manila y en varias provincias de la parte occidental de Luzón durante los primeros días de este mes de Septiembre. Procuraremos reunir aquí todos los datos que nos ha sido posible obtener sobre el particular, y que creemos han de ser de especial interés para nuestros lectores.

Ante todo ofrecemos en la siguiente tabla la cantidad de agua diaria recogida en nuestras estaciones de Luzón durante los tres días consecutivos en que fueron las lluvias más abundantes, juntamente con la lluvia total de los tres días. Para mejor inteligencia de esta tabla hemos de advertir que la lluvia diaria en nuestras estaciones oficiales se cuenta de 6 a. m. del día de que se trata hasta 6 a. m. del día siguiente, a excepción solamente de Manila donde hemos seguido hasta ahora la costumbre de dar la lluvia dia-

ria de media noche a media noche con el fin de guardar uniformidad con los datos de lluvia publicados por este Observatorio desde 1865. Sin embargo, así en la tabla siguiente como en el mapa de lluvia de la lámina VIII la lluvia diaria de Manila es también de 6 a. m. a 6 a. m. para que pueda así ser comparada con la de las otras estaciones. Como el período de lluvias verdaderamente extraordinarias empezó en Manila poco antes de media noche del 31 de Agosto y terminó a eso de 6 a. m. del 3 de Septiembre, de ahí que, contando la lluvia diaria de 6 a. m. a 6 a. m., resulte ser el 31 de Agosto uno de los tres días de mucha lluvia, siendo así que, si diésemos la lluvia de media noche a media noche, habríamos de incluir como día de mucha lluvia el 3 de Septiembre en vez del 31 de Agosto. Algo parecido ocurrió en algunas otras estaciones.

LLUVIA EN LAS ESTACIONES DE LUZON DURANTE TRES DIAS CONSECUTIVOS SEPTIEMBRE, 1, 2, 3, 1914.

Estaciones.	Agosto 31.	Septiembre 1.	Septiembre 2.	Septiembre 3.	Total en tres días.
	mm.	mm.	mm.	mm.	mm.
Aparri		0	1.0	1.0	92.0
Laoag	56.6	78.7	59.4		194.7
Tuguegarao		3.8	15.7	0	19.5
Vigan		61.0	99.5	65.6	226.1
Candón	77.3	51.4	36.3		165.0
Echagüe		0	8.1	25.1	33.2
San Fernando, Unión		44.2	132.5	51.4	228.1
Baguio	190.6	259.5	95.6		545.7
Bolinao		15.5	60.5	124.8	200.8
Dagupan		129.3	96.7	184.6	410.6
Baler	16.5	1.8	6.4		24.7
Tarlac		5.4	17.8	18.6	41.8
San Isidro, Nueva Ecija	17	55.1	19.6		91.7
Iba		59.7	67.0	296.1	422.8
Olongapó ^a		165.1	146.6	422.1	738.8
Montalbán	264.2	274.3	182.9		721.4
Antipolo	114.8	282.9	248.9		646.6
Manila: ^b					
En el Parque	151.4	239.4	249.2		640.0
En la Torre	127.3	176.2	223.2		526.7
Lamao		147.8	186.4	196.9	531.1
Alabang		121.9	108.0	106.7	336.6
Corregidor ^a		68.2	85.1	225.0	378.3
Santa Cruz, Laguna	95.5	157.2	92.4		345.1
Paracale		6.4	1.8	0	8.2
Silang		101.9	80.0	102.3	284.2
Ambulong, Tanauan		97.5	103.4	228.3	429.2
Atimonan		34.6	26.1	33.8	94.5
Batangas		54.4	25.2	244.9	324.5
Nueva Cáceres		5.8	2.1	2.6	10.5
Legaspi		12.0	3.8	6.3	22.1

^a Las lluvias de Olongapó y Corregidor se observaron respectivamente a 8 a. m. y 7 a. m. en vez de 6 a. m.

^b Incluimos aquí la cantidad de lluvia recogida en el Parque y en la Torre del Observatorio por las razones siguientes. La lluvia recogida en la Torre, a la altura de unos 18 metros sobre el nivel del suelo, es la única que podrá servir para comparar la lluvia de este año con la de años anteriores, toda vez que todos los datos de lluvias de Manila publicados por el Observatorio desde 1865 están tomados de observaciones hechas en pluviómetros colocados en circunstancias iguales o muy parecidas a los pluviómetros que hoy funcionan en la torre central del Observatorio. La lluvia recogida en el parque, en pluviómetros colocados a 1 metro de altura sobre el suelo, es la que da una idea más aproximada de la cantidad de agua caída en Manila y sus alrededores, pues es cosa sabida que, debido a la acción del viento, deja de recogerse mucha cantidad de lluvia en pluviómetros colocados encima de los tejados o en las torres de los edificios.

Hemos dicho antes que la lluvia diaria que damos en esta tabla es la recogida de 6 a. m. a 6 a. m. Si la lluvia diaria de Manila se contase de media noche a media noche, tendríamos como los tres días más lluviosos el 1, 2 y 3 de Septiembre con las siguientes cantidades. En el Parque: día 1, 212.2 mm.; día 2, 288.3 mm.; día 3, 125.6 mm.; total en tres días, 626.1 mm. En la Torre: día 1, 169.5 mm.; día 2, 234.7 mm.; día 3, 114.5 mm.; total en tres días, 518.7 mm.

La sola vista de esta tabla se ofrece a las siguientes observaciones:

(1) La zona más lluviosa de este período comprende la parte occidental de la Isla desde la provincia de Pangasinán hasta la de Batangas ambas inclusive. Nuestros lectores recordarán muy bien que en las provincias comprendidas en esta zona ocurrieron también las inundaciones más notables, cuyos efectos aparecieron por varios días en la prensa de Manila.

(2) Las lluvias no fueron igualmente copiosas en toda esta extensión ni se observó la máxima cantidad de lluvia en las mismas fechas. Las lluvias más abundantes corresponden (prescindiendo de Baguio) a Olongapó, Antipolo, Lamao, Manila y Mon-

talbán, o sea, a las provincias de Rizal y Bataán y parte sur de la provincia de Zambales. La máxima cantidad de lluvia de los tres días se observó el día 1 en Antipolo, Montalbán, Alabang y Santa Cruz, Laguna; el día 2 en Manila; y el día 3 en Bolinao, Dagupan, Iba, Olongapó, Lamao, Corregidor, Silang, Ambulong y Batangas.

En Montalbán, Manila y Antipolo así como empezaron algo antes las grandes lluvias de este período, así terminaron más pronto; de suerte que después de 6 a. m. del 3 las lluvias fueron ya relativamente de poca importancia. Tal vez pueda esto dar alguna luz para explicar las grandes inundaciones de los días 1 y 2 en la provincia de Rizal, y la rapidez con que se retiraron las aguas en dicha provincia el día 3. Las condiciones del tiempo eran tales el día 2, que con razón temía el Observatorio que continuarían las lluvias el día 3 con tanta o mayor abundancia que los dos días anteriores, y de ahí que diese los avisos oportunos para que se tomasen las debidas precauciones para el caso que parecía probable de que las aguas adquiriesen todavía mayor altura. Que los temores del Observatorio estuviesen bien fundados lo prueba el hecho de que en pueblos de provincias tan próximas como Cavite, Batangas, Bataán y Zambales ocurriesen las mayores lluvias de todo este período el día 3. Fué, sin embargo, providencial que lejos de suceder así, como era de temer, en la provincia de Rizal, las lluvias disminuyesen de una manera muy notable desde la madrugada del 3, dando así lugar al rápido decrecimiento de las aguas durante la mañana y tarde de dicho día.

(3) Fuera de la zona indicada, las lluvias de este período fueron todavía algo abundantes en la parte occidental del norte de Luzón, o sea, en las provincias de La Unión, Ilocos Sur e Ilocos Norte; pero muy insignificantes en toda la parte oriental de la Isla.

Bueno será añadir aquí antes de pasar adelante que este período lluvioso venía ya precedido en la parte central y occidental de Luzón por varios días de lluvias bastante regulares, como puede verse en los datos publicados en nuestro boletín de Agosto, 1914. No hay duda que esto debió de contribuir a facilitar la inundación de los dos primeros días de Septiembre.

Con respecto a la distribución horaria de la lluvia en Manila durante los tres días, 1, 2, y 3 de Septiembre, haremos notar aquí que las horas en que más llovió fueron de 11 p. m. del 31 de Agosto a 6 a. m. del 1 de Septiembre (92.0 mm. en la torre y 103.2 mm. en el parque en 7 horas), de 8 p. m. del 1 a 8 a. m. del 2 (184.8 mm. en la torre y 250.0 mm. en el parque en 12 horas), y de 9 p. m. del 2 a 6 a. m. del 3 (105.5 mm. en la torre y 117.2 mm. en el parque en 9 horas). Con el mayor de estos tres períodos coincidió la mayor marea del mes, y de ahí que todo favoreciese a la extraordinaria inundación que tuvo lugar en Manila la mañana del día 2. Si, aun suponiendo el mismo total diario de lluvia, se hubiese ésta distribuido mejor entre todas las horas del día, creemos que la inundación no hubiese alcanzado tales proporciones.

Para que nuestros lectores se formen ahora alguna idea de lo extraordinarias que fueron para Manila las lluvias de estos días bastará hacer dos ligeras indicaciones:¹

(a) La lluvia normal de Manila para todo el mes de Septiembre, que es uno de los dos meses más lluviosos del año, es 370.3 mm.; de suerte que la cantidad de agua caída en solos los días 1, 2 y 3 de Septiembre último supera la normal de todo el mes en 148.4 mm. Más aún, la lluvia de solos los dos primeros días es ya mayor que la normal en 33.9 mm.

¹ Téngase bien presente que en lo que nos resta de este escrito, al hablar de la lluvia caída en Manila los días 1, 2 y 3 de Septiembre, nos referimos siempre a la cantidad de lluvia medida en los pluviómetros de la torre. Asimismo tomaremos como cantidad de lluvia diaria la recogida de media noche a media noche. Solo de esta suerte podríamos comparar las lluvias de este período lluvioso de 1914 con otros de años anteriores o con los valores normales de Septiembre, que es lo que pretendemos hacer en este lugar.

(b) Durante los últimos 50 años, solo dos veces se ha observado en Manila una cantidad de lluvia caída en tres días consecutivos mayor que la que estamos estudiando. Estas cantidades son 804.7 mm. para los días 24, 25 y 26 de Septiembre 1867, y 571.6 mm. para los días 18, 19 y 20 de Julio, 1899. Las otras dos cantidades que más se parecen a estas son 500.5 mm. para los días 28, 29 y 30 de Julio 1880 y 475.9 mm. para los días 12, 13 y 14 de Julio 1904.

Por creerlo de especial interés tomamos de los registros de este Observatorio los siguientes datos sobre las lluvias más notables ocurridas en Manila en tres días consecutivos desde 1865.

Año.	Mes.	Días.	Lluvia diaria.	Total en tres días.	Año.	Mes.	Días.	Lluvia diaria.	Total en tres días.
			<i>mm.</i>	<i>mm.</i>				<i>mm.</i>	<i>mm.</i>
1867	Septiembre	24	336	804.7	1890	Julio	14	58.7	372.1
		25	306.3				15	124.3	
		26	162.4				16	189.1	
1872	Agosto	2	226.5	383.1	1899	id.	9	209.8	423.2
		3	129.2				10	158.7	
		4	27.4				11	54.7	
1880	Julio	28	44.4	500.5	1904	id.	18	169.3	571.6
		29	166				19	253.5	
		30	290.1				20	148.8	
1883	id.	28	154.6	425.5	1914	id.	12	226.2	475.9
		29	156.9				13	197.5	
		30	114				14	52.2	
1884	id.	20	178.3	420	1914	Septiembre	1	169.5	518.7
		21	179.5				2	234.7	
		22	62.2				3	114.5	

Ocurre ahora preguntar: las inundaciones observadas en estos períodos estuvieron en proporción con las cantidades totales de dos o tres días de lluvia? Por no tener a mano datos bastantes sobre las inundaciones de años anteriores a 1899 nos contentaremos con decir algo sobre las de los años 1899, 1904 y 1914. La más notable de estas tres inundaciones fué la de 1904; sigue en segundo término, aunque diferenciándose muy poco de aquella, la de 1914; y por último la de 1899 fué de muy poca importancia comparada con las otras dos. Ahora bien, contra todo lo que era de esperar, vemos que el total de lluvia de los tres días correspondientes a estas tres inundaciones guarda un orden enteramente opuesto, es decir ocupa el primer lugar el de 1899, siguiendo luego el de 1914 y por fin el de 1904. Si en vez de tres días, consideramos solo los dos días más lluviosos, el resultado obtenido apenas se puede llamar un poco más satisfactorio; pues tenemos 423.7 mm. para 1904, 422.8 mm. para 1899, y 404.2 para 1914. De suerte que la lluvia en dos días para 1904 y 1899 es casi idéntica, y mayor para ambos que para 1914, y, sin embargo, según queda indicado, las inundaciones de 1904 y 1914 fueron muy parecidas, y la de 1899 muy inferior.

Prescindiendo de otras circunstancias que pueden influir más o menos en las inundaciones, queremos fijar únicamente nuestra atención en la manera cómo influye probablemente en ellas la mayor o menor cantidad de lluvia. Creemos, pues, que no tanto la mayor o menor suma total de lluvia en dos o tres días consecutivos, cuanto la mayor o menor cantidad de lluvia acumulada en intervalos de pocas horas es lo que producirá en igualdad de circunstancias mayores o menores inundaciones. Además, aun suponiendo iguales o semejantes cantidades de agua acumuladas en un mismo número de horas, podrá influir en que la inundación sea mayor o menor el hecho de que el período de dos o tres días de lluvias que se considere haya sido precedido de otros días de lluvias bastante regulares, con lo cual se deba suponer el subsuelo bastante empapado ya en agua, o al contrario hayan empezado los tales dos o tres días de lluvia después de varios días secos o sin lluvia.

Esto supuesto, veamos lo ocurrido en los tres años cuyas inundaciones estamos estudiando. Para que mejor resalten las horas en que más se acumuló la cantidad de agua caída, hemos reunido en la lámina IX tres curvas que llamamos de lluvia cu-

mulativa para los tres días de cada uno de los tres años, pues representa la cantidad de agua que se iba acumulando de hora en hora, a partir de 0^h a. m. del primero de aquellos días. La parte de la curva que aparece con más pendiente y su duración nos mostrará bien pronto en cuál de los tres períodos se acumuló más agua en el mismo o semejante número de horas. En 1904, que es el año de la inundación más extraordinaria, cayeron 281.1 mm. de agua en 15 horas solamente (de 1 p. m. del 12 a 4 a. m. del 13 de Julio), mientras que en 1899 y 1914 la mayor cantidad acumulada en 12 horas fué respectivamente 182.0 mm. (de 1 a. m. a 1 p. m. del 19 de Julio) y 184.8 mm. (de 8 p. m. del 1 a 8 a. m. del 2 de Septiembre). Según esto parecería que la inundación de 1899 no debía haber sido inferior a la de 1914, ni la de 1914 tan parecida a la de 1904. Sin embargo, conviene tener presente que mientras los tres días lluviosos de 1899 comenzaron, puede decirse, como de repente después de seis días secos en que la lluvia fué prácticamente nula; las lluvias abundantes de los tres días de Septiembre, 1914, tuvieron lugar, según hemos indicado ya antes, después de una serie de días de lluvia, y sobre todo después de dos días en que las lluvias en Manila habían sido ya bastante regulares, habiéndose recogido en los pluviómetros 43.3 mm. de agua el 30 de Agosto y 57.9 el 31. Por otra parte, aunque es verdad que los tres días de lluvia de 1904 habían sido precedidos de algunos días algo lluviosos, pero estas lluvias fueron de menos importancia que las que precedieron al período lluvioso de 1914. Así, en los dos días inmediatos al 12 de Julio, 1904, hallamos que solo se recogieron en los pluviómetros de Manila 30.5 mm. y 26.7 mm. respectivamente, observándose en ambos días intervalos de varias horas sin lluvia alguna, con más de 5 horas de sol el día 10, y más de 2 horas el día 11. En 1914, las horas de sol registradas por el heliógrafo fueron solamente 2^h 0^m el día 30 de Agosto, y 0^h 0^m el día 31. De donde, aunque la acumulación de agua en un período determinado de horas fué bastante menor en 1914 que en 1904, pero lo empapado que se hallaba ya el terreno al sobrevenir los tres días de lluvia abundantes de Septiembre, 1914, hizo sin duda que fuese la inundación mucho mayor de lo que en otras circunstancias se hubiese podido esperar.

Teníamos terminadas ya estas notas sobre las lluvias e inundaciones de los tres primeros días de Septiembre último, cuando recibimos de Mr. A. Gideon, superintendente del servicio de aguas de Manila, el siguiente informe que, a petición nuestra, ha tenido la bondad de remitirnos, y que tenemos sumo gusto en publicar aquí:

Difícil sería para mí comparar la inundación del 1 al 3 de Septiembre último con otras inundaciones anteriores, aun suponiendo que existiesen datos auténticos, debido parte a las diferentes condiciones en la proporción con que cayó la lluvia en las vertientes del Río Pásig y parte también a los cambios de régimen en el río y terrenos adyacentes. Los datos que poseemos en esta oficina no alcanzan más allá de 1904, en el cual año hice varias observaciones sobre el resultado de las inundaciones que en él tuvieron lugar.

Desde aquella época se ha construído la presa de Montalbán, la cual modifica ligeramente el resultado del desagüe del Río de Mariquina.

El Río Pásig ha sido dragado abajo del Puente de España a una profundidad de 18 pies (5.5 metros) y se han encontrado en otros sitios mayores profundidades.

En el lado sur abajo del Puente de España se ha puesto muro al río y también se ha mejorado el mismo más o menos en otros sitios desde 1904, aumentando así su capacidad de desagüe; de suerte que es muy probable que, a igual altura de agua, pudiese dicho río conducir mayor cantidad que antes. Así es posible que, a pesar de que la lluvia fué mayor este año que en 1904, el agua corriese con mayor velocidad, y por consiguiente el nivel de la inundación no adquiriese mayor altura.

En general se puede decir que las únicas partes de la Ciudad que no se inundaron en Septiembre último fueron las siguientes:

- (1) Santa Mesa, a causa de su elevación;
- (2) Intramuros, debido a su situación relativamente alta y por el gran alcantarillado nuevo en la Calle Cabildo, el cual desemboca en el Pásig, abajo del Puente de España;
- (3) Una porción de la Hacienda de San Lázaro, por su situación relativamente alta;

(4) San Nicolás y parte de Tondo, por su proximidad al mar, a la bocana del río y por el mejoramiento de las alcantarillas;

(5) El Distrito del Puerto, a causa de su posición relativamente alta, proximidad al mar y excelente alcantarillado;

(6) La parte de Ermita y Malate situada entre la bahía y cerca la Calle Nebraska, debido a la proximidad a la bahía y a las alcantarillas recientemente instaladas, que desaguan directamente en la misma bahía.

Puede decirse que las partes de la Ciudad próximas al Río Pásig, abajo del Puente de España, y a la bahía, y cuyas alcantarillas desaguan en los mismos, fueron relativamente libres de agua, aun sin estar el suelo más alto que el de alguna región inundada situada más arriba de dicho río. La elevación del nivel de la inundación creció muy rápidamente hacia arriba del río; así en Santa Ana, Paco, el extremo norte de Ermita, Malate y Santa Mesa el agua alcanzó una altura de varios pies sobre el nivel de la calle, no obstante estar partes de dichos arrabales más altas que San Nicolás, el cual estuvo libre de agua.

La Escolta puede darse como la mejor explicación, pues el agua estuvo próximamente un pie (30 c. m.) más alta en el extremo este, o arriba del Puente de España, que en el oeste, o abajo de dicho puente.

No es difícil hallar la razón de esto. El Puente de España y los otros más arriba forman un obstáculo, que reduce considerablemente la sección transversal del río, disminuyendo la capacidad del mismo. El río arriba del Puente de España no está dragado, ni mejorado, y esto tiende a amontonar el agua para darle la misma capacidad de desagüe que abajo de dicho puente, creciendo así rápidamente el nivel del agua de que resulta la inundación.

En mi opinión la principal causa de las inundaciones es el Río de Mariquina, cuya vertiente es muy montañosa, no tiene depósito natural de ninguna clase, y corre muy rápidamente. Aunque la vertiente de este río es solo una pequeña parte de la vertiente total del Río Pásig, con todo, su desagüe en la presa de Montalbán del 1 al 2 de Septiembre, se calcula haber sido mayor que la cantidad total conducida por el Río Pásig durante el correspondiente período. Las medidas que se han tomado de dicho río de Mariquina varían entre 6 pies cúbicos por segundo en Abril de 1912 y 60,000 pies cúbicos por segundo durante la inundación, mientras que el total conducido por el Río Pásig abajo del Puente de España en Manila, probablemente no era mayor de 50,000 pies cúbicos por segundo. Este excedente, junto con el agua que cayó abajo de la presa y en toda la región del lago, se depositó en la Laguna de Bay y en el área inundada.

Tan pronto como la lluvia amainó en la vertiente del Mariquina, la inundación comenzó a disminuir. Las elevaciones del agua de la inundación fueron aproximadamente las mismas que en 1904, variando algo en diferentes sitios.

Los daños causados a las propiedades de la Ciudad fueron de muy poca importancia, y, si exceptuamos el Puente de España, no excedieron de ₱50,000.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.		Evaporation. ^b			
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).	
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.					
																2.50 meters. ^c
mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per cent.	mm.	°C.	°C.	mm.	mm.		
1	755.68	25.3	27.9	22.9	27.5	27.4	28.3	28.4	29.2	29.2	93.2	22.4	22	37.5	0	0
2	55.66	24.8	26.7	23.1	26.5	26.7	27.8	27.8	27.8	27.8	96.4	22.4	22	27	0	0
3	55.51	24.5	27.1	22.9	26.5	26.7	27.8	27.9	27.9	29	94.6	21.6	22	36.1	0	0
4	55.69	24.7	27	23.2	26.9	27.1	27.3	27.3	27.3	29	92.7	21.4	22.2	41.6	0	1.7
5	54.72	25.2	27.2	23.7	26.6	26.8	27.3	27.3	27.3	29	93.6	22.7	22.5	35.3	0	1.7
6	53.64	26.4	30.9	24.7	26.8	27.3	27.3	27.4	27.4	29	91.4	23.3	22.8	52.2	0	1.7
7	54.81	27	31.5	25	27.4	27.8	27.7	27.7	27.7	29.1	88.8	23.4	23.1	44.7	1.5	1.5
8	55.55	24.6	27.6	23.8	27.5	27.2	27.8	27.7	28.3	28.5	93.7	21.6	23.2	26.3	0	1.6
9	55.49	25.8	30.2	23.9	26.6	27.2	27.2	27.4	28.4	28.8	91.2	22.5	22.6	49	1.5	1.6
10	56.67	27.1	30.5	24.8	27.3	27.4	27.6	27.9	28.5	28.9	88.1	23.5	22.8	53.2	1.7	1.5
11	57.45	27.3	31	24.9	27.8	28.8	27.9	28.2	28.6	29	87.6	23.5	23.1	52.6	2	1.9
12	57.65	25.6	28	24.4	27.4	28.2	28.3	28.4	28.5	29	91.7	22.3	22.1	36.4	2	1.9
13	57.66	24.8	28.6	23.1	27.8	27.8	28.1	28.1	28.4	28.9	92.6	21.5	20.2	51.6	2.5	1.5
14	58.45	26	30.8	23	27.5	27.8	27.9	28.1	28.4	28.6	87.1	21.7	21.3	54.4	2.6	1.5
15	59.07	26.7	31.1	22.9	27.7	28.9	28.1	28.3	28.3	28.4	82	21.2	20.9	51.6	3.6	2.6
16	58.48	27	31.6	24	28.5	29.2	28.6	28.7	28.4	28.2	84	22.1	22	52.3	3.1	2.1
17	58.08	26.8	31.5	23.8	28.7	29.6	28.8	28.9	28.3	28.4	83.9	21.8	21.7	51.5	3.4	2.6
18	58.91	27.4	32.6	23.2	29	29.8	29	29.2	28.5	28.4	79.2	21.3	21.1	55.2	3.9	2.8
19	59.88	27.6	32.9	23.7	29.3	29.9	29.3	29.5	28.6	28.5	78.8	21.3	21.3	52.5	4.1	2.9
20	60.22	26.1	32.6	23.3	29.3	30	29.5	29.6	28.4	28.3	84.6	21.1	21.2	52.5	2.9	2.2
21	59.65	26.3	33.6	22.2	29.2	30	29.5	29.7	28.4	28.5	82.8	20.9	20.4	56.8	2.8	2
22	58.74	26.7	32.9	23	29.3	30	29.6	29.8	28.5	28.4	81.6	21.2	21	55.3	3.3	2.2
23	57.54	27.3	32.9	22.7	29.4	30.3	29.7	29.8	28.5	28.3	78.7	21	20.8	53	4	2.8
24	56.88	27.3	32.5	24.4	29.6	30.8	29.8	30.1	28.6	28.3	82.9	22.3	22.7	54.1	3.2	2.3
25	57.46	26.9	34.1	23.6	29.6	30.9	29.9	30.1	28.8	28.4	83.4	21.7	21.4	56.9	2.8	2.3
26	57.88	26.1	30.8	24.3	29.6	29.9	29.9	30	28.6	28.2	85.2	21.3	22.9	47	2.3	1.9
27	57.62	27	32.3	23.5	29.2	30.3	29.8	29.9	28.7	28.4	82.1	21.5	22	52	3.6	2.6
28	57.88	25.9	31.2	23.8	29.5	30.1	29.8	29.9	28.6	28.3	90.2	22.3	22.8	56.5	1.3	1.2
29	58.23	25.2	31.3	23.5	29.2	29	29.6	29.4	28.8	28.2	91.7	21.7	22.3	48.8	1.7	1
30	59.24	25.9	29.8	23	28	28.8	29	29.1	28.8	28.4	84.4	20.8	22.1	50.2	2.8	1.9
Mean Total	757.35	26.2	30.6	23.6	28.2	28.7	28.6	28.7	28.5	28.6	87.3	21.9	21.9	48.1	2	1.7
Departure from normal	-0.09	-0.7	0	0							+1.6	-0.5		58.7		51.1

Day.	Wind.				Clouds.				Sunshine.	Rain, 24 hours beginning mid-night.	Miscellaneous.	
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.	Amount (mean).	Form and direction.		Upper.				Lower.
						0-10.	10-20.					
Km.	Km.	Km.										
1	SW	378	39	SW	10	Ci.-S.	Fr.-N.	WSW	h. m.	mm.	↑ a. ● 2 a. p. ↓ ° p.	
2	SW quad.	247.5	18.6	SWbyW	10		N.	WSW	0 00	169.5	● 2 ↓ a. p.	
3	W quad.	275	28	SWbyW	10		N.	WSW	0 00	114.5	● 2 ↓ a. p. ● a. p.	
4	WSW	174.5	17	WNW	10	Ci.-S.	N.	WSW	0 00	21.6	● a. p.	
5	WSW	275.5	31	W	10		N.	WSW	0 00	15.9	● a. p. ↑ p.	
6	SW	548.5	41	WSW	9.8	Ci.-S.	Cu.-N.	WSW	1 40	9.4	● a. p.	
7	SW	455.5	32	SW	8.7	Ci.-S.	Cu.	W	3 50	5.1	● a. p. ↓ ° p.	
8	SSW	301	25	SW	10		N.	W	0 00	82.7	● 2 ↓ a. p. ● a. p.	
9	SW	458.5	37	SW	9.1	Ci.-S.	Cu.-N.	W	1 05	19.8	● a. p. ↓ ° p.	
10	SW	457.5	30	WSW	7.8	Ci.-S.	Cu.	W	6 45	2.7	● a. p.	
11	SW	463.5	31.5	SWbyW	7.3	A.-Cu.	Cu.	W	6 30	18.2	● a. p.	
12	SW	366.5	28	SW	10	Ci.-S.	Fr.-N.	W	0 00	15.1	● a. p.	
13	SW, SSW	132.5	29	SW	9.9	Ci.-S.	N	W	1 00	25.9	↑ ° a. ● a. p.	
14	SW	221	29	SW	7.4	A.-Cu.	NE	Cu.	WSW	2 10		
15	SW	180	22	SW	2.7	Ci.	E	Cu.		10 25		
16	WSW	216.5	25	SW	5	Ci., A.-Cu.	Cu.	NE		7 10		
17	SW	201	25	SW	3.9	Ci.-Cu.	Cu.	WSW		8 55	≡ a.	
18	SW	163	20	WSW, SW	4.1	A.-Cu.	E	Cu.	NE	10 25	≡ a. < p.	
19	WSW	130.5	17.5	SW	3.6	Ci.	NNE	Cu.	E	8 30		
20	NE quad.	163.5	15.5	NNW	7	Ci.	SE	S.-Cu.	NNW	7 30	16	
21	WSW	87.5	11	WSW	5.2	Ci.	Cu.-N.	E		7 05	○ ○ ↓ a. p.	
22	W quad.	111	14	WSW	4.5	Ci.-S.	SE	Cu.	N	8 30	↓ a. p.	
23	WSW	189	18.5	WSW	2.8	Ci.	Cu.	NbyE		9 55	1.8	
24	SW	181.5	28	SWbyW	7.8	Ci.	E	Cu. NE, wbyS		5 25	↑ ° a. p.	
25	SE	73	15.5	SW	7.7	Ci.	Cu.	W, SSW		6 00	1.3	
26	Variable	140	18	NNW	9.2	Ci.-S.	Cu.-N.			1 05	8	
27	WSW	134.5	22.5	SW, WSW	4.2	Ci.	Cu.			9 05	3	
28	SW quad.	245	27	WSW	9.3	Ci.-S.	Cu.-N.	W		2 55	82.9	
29	SSW	217.5	36	WSW	10		Cu.-N.	SW		1 35	40.2	
30	NW	152	11.5	NW, N	9	A.-Cu.	W	Cu.	WSW	0 40	9.3	
Mean Total		244.7	24.8		7.5				4 16			
Departure from normal		7,340.5							128 10	887.7		
		-883			-0.2				-8 16	+517.4		

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.
^c This temperature for September 2-7 has been taken from a self-recording instrument.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, SEPTEMBER, 1914.

Station.	Day of month.																
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
Jolo		8.9											18.3				
Isabela, Basilan														3	8.6		
Zamboanga								(a)	(a)		19	1.5			4.3		
Davao													1.5	36.3			
Cotabato							(a)	(a)	(a)	(a)	(a)					8	
Cagayan, Misamis								1				10.7	4.8				
Butuan								1									
Dumaguete													10.4				
Yap, Western Carolines		1.8				1							2.5	3	16.5	6.1	
Tagbilaran																	
Iwahig	.5	4							.9	.9	.3	4.1		3.3			
Surigao																	
Maasin								7.1	19.3					12.2			
Cebu							.5	.5	.3					6.4			
Iloilo	15	56.9	33.5	70.3	8.9	19.6	25	53.5	64.5	13	7.9		23.6				
San Jose, Buenavista	5.1	41.4	7.1	12.4	1.1	1.8	2.3	60.7	15.8	11.4	57.7	15.3	31.7	15.3		6.6	
Cuyo	7.4	20.6	2.5	5.5	27.7	.5	3.5	14.3	20.1	6.6	1.5	1.3	24.9	21.3	.8		
Ormoc			.5		3.3			20	8.2		.3	.8					
Guiuan								10.4	.5	3.3			31.7			.8	
Tacloban				.3	2.5			8.1	17.3	2.3			.5	2			
Capiz		7.5	5.1	.5	.5	3.3	3.3	20.4	16			.5		2.8	21.6		
Borongan		2	.8					1.3	16.3				1.3				
Calbayog		9.9	7	12.8	1.5		.8	5.5					6.1	7.9	.8		
Masbate	2.5	1.5	1	.8		2.8	3.3	9.7	8.1			11.9	8.9	4.8			
Romblon	13.5	25.1	74.9	7.9	18.6	23	9.7	25.1	21.6	15		1.8	9.7	4.6			
Batag		2.5		5.1	33.8			14.2	7.4	6.4				2.3			
Legaspi	12	3.8	6.3	4.4	27.5	8.6	15.3	16.2	19.1	15.5		29	13.7	2.8			
Sumay, Guam	78.7	30.5	2.5	5.1	22.9?	21.6	16.5	41.9			24.2	8.9	1.3	10.2	2.5	1.3	6.4
Calapan	33	24.9	78.5	56.6	11.4	16.8	68.3	43.9	45.3	3.3	2.6	72.4	18.5	.5			
Virac						1.3	1.8	1.1	16.5			9.4	3.8	.5			
Nueva Caceres	5.8	2.1	2.6	4.3	.5	5.9	4	1.6	5.1	1		9.7	10.4	3.3			
Batangas	54.4	25.2	244.9	43.7	14.7	3.1	69.3	72.4	23.6	1	.3	58.1	8.4				
Atimonan	34.6	26.1	33.8	16.3	9	9.8	20.3	22.3	1.8			18.3	1				
Ambulong, Tanauan	97.5	103.4	228.3	102.6	56.8	13.4	68.6	132.2	68.1	3.3	8.3	22.3	9.3				
Silang	101.9	80	102.3	106.9	58.7	28.2	32.5	24.6	10.7	5.3	4.3	53.9	9.7	3			
Paracale	6.4	1.8			11.4	2.8		.3				16	15.7	3.6			
Santa Cruz, Laguna	157.2	92.4	80	27.5	39.1	24.3	36.5	43.7	40.8	.8	.8	18.1	37.6	3.6			
Manila	169.5	234.7	114.5	21.6	15.9	9.4	5.1	82.7	19.8	2.7	18.2	15.1	25.9				
Antipolo	282.9	248.9	63.2	6.6	20.1	13	19.6	98	11.4	10.7	16.3	57.9	51.8				
Iba	59.7	67	296.1	136.9	123.4	47.4	146.3	86.3	6.3	8.8	89.6	36.4	1				
San Isidro	55.1	19.6	11.1	2.1	20.4	11.1	12.2	6.9	13.2	6.6	4.4	2.6	1			11.4	
Tarlac	54	17.8	18.6	3.3	29.9	22.4	3.6	14	1		9.7	10.1			27.9	37.8	
Baler	1.8	6.4		9.7	13	3.5		2.8			3.6	13.5	7.9	1.8			
Dagupan	129.3	96.7	184.6	15	28.4	88.6	60	.5		3.3	9.1	12.9				.5	
Bolinao	15.5	60.5	124.8	30.8	32.1	22.6	2.4		.5	3	34.1	8.9		1.3	2	3.9	
Baguio	259.5	95.6	54.1	75	37.4	129.1	8.8	1.5	4.6	33.6	73	86.1	42.4	.3	25.6	18	
San Fernando, Union	44.2	132.5	51.4	60.2	36.8	21.8			4.5	23.6	40.9	16.5			19.3	1.8	
Echague		8.1	25.1	50.8	3.8							4.3		53.1	4.6	1.3	
Candon	51.4	36.3	59.4	139.4	102.1	63.8		4.6		10.2	39.2	9.9	18		2	.5	
Vigan	61	99.5	65.6	28.2	16.4	14.7	3.3	1.1	32.8	32.2	47.5	22.6		.5			
Tuguegarao	3.8	15.7		2					17.3		1.5	45.8				27.4	
Laoag	78.7	59.4	13	76.7	14	10.2			3.6	3	9.9	18.3		2	9.4	27.9	
Aparri		1	1									10.2			1.8	14.5	
Santo Domingo, Batanes	6.5	1.5	.8			9.4	.2				9.1	62.2	14.2	1.1	7.1	9.1	

* No observation.

Daily rainfall at the stations of the Weather Bureau, September, 1914—Continued.

Station.	Day of month.														Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo	0.3	21.3					9.2	0.3	4.6	12.2					90.6
Isabela, Basilan	10.9	19.3					43.7	.5	11.9	6.1					158.6
Zamboanga					5.4		27.7	1.5	3.8						63.2
Davao			24.1												61.9
Cotabato	6.6				11.9	7.4	11.4	9.2	.3						46.8
Cagayan, Misamis		20.3		4.6	50.8			50.8	21.8	11.7			.3		177.6
Butuan				21.1	120.4				8.6	.3					151.4
Dumaguete						2.3	7.6		.8	10.4	3.3				34.8
Yap, Western Carolines	82.8	3.1	.5	.3	27.9	13	.5	2.6	2.5	3.8	20.8	19.3	.3		205.6
Tagbilaran			82.8		.5					.8					84.1
Iwahig	10					23.1	1.2	22.1	6.2	11	.3	4.8		2.8	91.9
Surigao		19.3		15.5	15.2	13.2	3.3	.8	9.9	1.8	.5				79.5
Maasin	40.6		15		9.7					47.8					151.7
Cebu		.5		7.3	19.3		39.6	.8	14						89.2
Iloilo					44.2		15	15.5	89.1	21.8	34.1	2			616.4
San Jose, Buenavista					2.5		2.3	19.1	63	57.9	7.1	9.7	12.2		459.5
Cuyo	1	.5		3	12.2		3.6	1	14.6	.3					194.7
Ormoc			7.1	19.1	.3	12.5	8.9		6.1		.6				87.7
Guiuan	63.5	.3		2.5	5.3	11.7	2.8	20.8	5.6						159.2
Tacloban			.5	2.8	3.3	25.9	2.5	.5	39.9						145.5
Capiz				2.8	11.4	18.6	10.9		30	.8	.9	26.5	.3		183.7
Borongan			2.5	6.7	7.6	1.3		8.4		2.6	.3			6.9	60.3
Calbayog			.3	10.6	.8	42.7			3.3	2.8		1.3			114.1
Masbate				4.8	3.3	7.9				2.5	1.5	9.2			84.5
Romblon						2.5			.8		1.3	3.3		1.8	265.2
Batag				3.6	13.2	5.1	7.4		10.4				(a)	(a)	111.4
Legaspi			1	7.4		.5	1.5	4.1	16.8	19	3.6				228.1
Sumay, Guam	22.9	5.1	30.5	49.5	22.9	53.3	16.5	3.8	7.6	17.8			2.5		506.9
Calapan								.5				10.7	4		491.2
Virac				12.2	12			2.5	9.1	9.4	.8	.8			81.2
Nueva Caceres			.1		35	13	1		4.6	1.3	.8	58			170.1
Batangas					20.8	5.3			6.9	4.6	9.9	9.7	.5		676.8
Atimonan				2.3	46	18.1			15	1.3	1.8		2.3		280.1
Ambulong, Tanauan					6.4				1.5	87.4	5.3	5.3	2.8		1,022.8
Silang									9.1	19		27.2	3.8		681.1
Paracale						19.4	3.6			2.3	4.6	18.5	4.5	4.1	115.5
Santa Cruz, Laguna				.8	.3				1		1	25.3	1.8		632.6
Manila				16			1.8		1.3	.8	3	82.9	40.2	9.3	887.7
Antipolo	15.2			21.3	14.5	8.1	.8		2.5		21.3	49	67.8		1,100.9
Iba					.3	3.1			2.3		.3	6.6	79.5	155.2	1,407.2
San Isidro	1.5	.3	.8	1.8	1.3	3.3			4.8			10.4	4.1	2.5	208.5
Tarlac	2.5					2.3			17.5			15	1.8	28	317.2
Baler	3		12.7	1.3					(a)	(a)	(a)	(a)	(a)	(a)	81
Dagupan	1.5							6.9				2.5	8.3	17.6	665.7
Bolinao	10.7			3.8	.3			.3	11.4			80.5	7.6	62.7	566.6
Baguio	48.7	.8		16	22.4	19.4	10.7		14.7	21.6	2.8	7.9	19.4	65.2	1,194.2
San Fernando, Union	33.3					11.4			4.1	30.5	7.1	5.8	3.8	46.2	595.7
Echagite	28.4	23.1	9.7	14.7		16.5	2.3	11.2	13		1		2	2.5	280.5
Candon	50.8	5.1							8.9	61				35.6	697.7
Vigan	38.9	3.1					.5	4	2.8		1.8	36.6	35.8	105.6	655
Tuguegarao	1.8		4.1				8.1						11.2	42.9	392.1
Laoag												5.8	50.8	9.4	392.1
Aparri	.8		7.6		10.4	49.6	82.4	.8						28.5	208.6
Santo Domingo, Batanes	18	61.3	43.9	14.3			45.9	38.7	6.2	.3			.3	4.1	354.2

* No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, SEPTEMBER, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Butuan.		Dumaguete.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.5	24.3	33.1	21.7	30.6	23.1	31.7	23	33.4	21.7	35	22.9	32.5	24.1	34.8	25
2	31.7	24.6	32.6	22.6	30.6	25.7	31	23	34.7	22.4	35	22.9	31.8	24.8	33.8	25.8
3	33.4	24.4	32.8	23.1	31.9	23.5	31.2	23.6	34.5	23.7	35.3	24.2	32.8	24.8	33.8	26.7
4	32.6	23.3	33.2	21.7	30	23.5	30.7	22.5	33.2	21.6	34.5	23.7	32.8	24.6	32.8	26.4
5	32	24.3	32.1	22.6	30.1	23.6	30.7	24	32.8	22.9	34.9	24	33.6	24.2	33.8	26.4
6	33.2	24.3	33.4	23.1	31.1	24	31.7	22.4	34.9	22.3	35.4	22.6	33	24.4	34.3	25.3
7	33.4	24.2	33.2	23.1		23.9	31.2	22.6			36.2	23	33.3	24.4	34.3	24.2
8	32.9	24.3	31.6	22.7			30.5	23.6			36.1	23.6	33.1	25	35.5	24.6
9	32.8	23.9	34.1	22.6			28.5	22.8			35.1	24.2	31.8	24.5	33.7	25
10	32.9	24.3	33.2	22.3	31		31.2	22.5			34.5	23.5	32.8	24.9	33	24.5
11	34.3	22.7	34.1	21.9	29.9	23.4	32.2	22.3			33.9	22.8	32.5	24	36.2	22.9
12	32.5	23.4	31.3	21.8	30.3	22.5	31.5	22.7			31.7	23.2	31.1	25	31.3	24.2
13	31.9	23	32.1	21.6	30.4	23.6	30.7	23.3	31.3	21	33.5	22.3	31.5	24.4	32.3	23.5
14	32.1	22.1	32.2	21.1	29.5	22.6	32.2	23.3	35.2	21.5	33.7	22.2	33.7	23.6	31	22.2
15	32.9	20.8	32.4	22.3	29.9	22.7	31.2	21.5	36	22.9	32.9	22.5	33.5	23.3	31.8	22
16	32.4	22.1	31.1	22.1	29.5	22.6	31.2	24.5	32.7	23.8	32.6	22.7	33.3	24.2	33.8	22.3
17	33.2	22	31.3	20.6	30.4	23.5	32.2	24	34.2	22.5	32.9	23	33.5	24.3	32	23.4
18	30.9	21.9	31.6	22.1	30.8	23.6	32.2	23.8	33.7	21.1	33	22.5	33.3	24.1	32.4	22.4
19	32.9	19.8	32.2	22.1	30.5	22.5	32.5	21.5	34.2	22.9	32	21.4	32	23.4	31.8	22.7
20	31.4	20.7	32.1	21.1	30.5	22.6	32.2	21.9	33	21.7	32.4	21.7	31.8	23.7	32.2	23.5
21	33.4	21.9	31.2	23.6	31.1	22.5	33.2	21.1	31.8	22.2	31.9	23.1	26.8	22.1	32.8	22.8
22	30.6	23.3	29.8	23.6	30	23.6	32.2	21.3	31.6	22.1	31	22	29.3	22.2	32.2	23.1
23	31.9	22.4	30.8	23.4	30	22.4	32.2	21.3	31.6	22.3	31.4	22.5	30.7	23.6	31.5	23.2
24	31.4	22.4	29.8	22.1	28.5	23.6	32.7	23	30.8	22.5	32.2	22.6	31	24.1	32.4	23.2
25	30.2	22.3	31.6	21.6	30	23	31.7	22	32.2	21.8	32	22.4	31.3	23.4	33	23.7
26	31.2	20.8	31.8	22.6	30.4	21.9	30.8	22.8	31.6	21.8	31.7	22.3	30.5	23	30.5	22.9
27	31.2	22.9	29.9	22.1	29.9	24.1	31.2	21.6	31	22.8	30.7	23.5	29.6	24.2	31.8	22.8
28	32.5	22	32.6	21.6	30.5	22.5	31.2	22.5	33.1	20.4	30.8	22.5	29.9	24.1	32.7	22.3
29	33.4	21.7	33.1	21.3	30.1	22.3	30.9	22.9	34.1	21.3	33	21	31.5	23.6	33.8	20.9
30	34	21.8	34.1	21.4	30.5	23.4	31.7	23	34.2	21	31.7	22.8	31.5	23.5	32.2	21.8
Mean	32.4	22.7	32.1	22.2	30.3	23.2	31.5	22.7	33.2	22.1	33.2	22.8	31.9	24	32.9	23.7

Day.	Yap, Western Carolines.		Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San José Buenavista.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.2	26.1	33.3	26.6	36.1	22.2	33.5	27	31.1	26.6	31.6	26.9	28.9	22.6	29.9	26
2	31.9	26	32.4	26.5	36.1	22.3	34.2	27.4	31	25	30.1	27.5	30.4	25.7	31.8	24.5
3	32.1	24.1	32.4	26.6	35.5	21.6	34.3	27.6	29.8	26.4	31	27.4	28.6	23.3	29.8	24
4	32.2	25.5	32.3	26.5	35	20.8	33	27.6	29.2	27	30	27.5	28.8	23.5	30.7	26.5
5	32	25.1	33	25.9	35.6	21.4	34.7	26.5	29.5	25.6	30.2	26.6	29.5	23.2	30	25
6	31	25.8	33.4	25.8	36	22.2	34.8	25.3	29.8	25.8	30.2	26.5	29.9	25.5	30.7	27.3
7	32.4	25	34	25.6	35.8	22.9	34	26.6	29.6	26.8	31.9	26.2	29.7	24.9	31.2	26
8	33	26	33.6	26.1	34.7	23.8	35.6	26.2	29.9	24.7	30.1	25.5	28	23.3	28.6	24.5
9	32.7	25	34.1	25.9	35.5	24.3	35.5	27.5	29.4	26	30	26.5	28.5	23.2	32.6	22.6
10	32	24.7	33.1	26.2	32.8	22.2	34.4	27.5	30.5	25.2	32.5	26.5	28.8	22.8	29.2	22.6
11	32.6	25.8	34.5	25.9	35	21.1	33.8	26.8	29.5	25	30.6	26.2	29.8	24.8	31.7	25.5
12	31.2	26.3	32.3	25.7	31.6	23	33	26.8	29.3	26	32.2	26.9	29.6	22.9	31.3	22.5
13	32.7	25.3	32.2	24.7	30	22.4	34.2	25.5	29.4	24.5	29.6	24.1	28.9	22.7	29.7	21.5
14	33.9	23.8	31.6	24.2	34	21.4	34.9	24.6	30	23.4	30.5	25	29	21.8	31.7	21.5
15	33.2	25.3	33.5	23.7	33.5	20.9	33	24.2	30.2	23.6	31.6	24.5	30.4	23.6	32.7	23
16	33.2	24	34.1	24.5	34.8	20.4	33	24.1	30.4	25	32	25.3	30.3	22.9	33.3	22.1
17	31.7	23.2	33	23.4	33.8	21.2	33.2	25.1	30.5	24.8	31.5	25	30.9	22.9	32.8	22.7
18	32.2		33.2	23.7	33.8	21.9	33.4	23.5	30.6	24.5	31.5	24.7	30.5	24	33.1	23.1
19	31.8	24.1	30.1	24	34.1	21.4	32.4	22.3	30.5	24.2	31.1	26	31.9	23.5	34.1	23.3
20	32	24.6	32.5	22.8	34.9	21.4	33	23.3	32	24	31.8	24	30.5	23.8	32.8	23.1
21	32.8	24.2	33	23.3	34.8	20.1	30.6	23	30.6	23.5	30.5	22.7	31.1	22.5	32.2	23
22	29.9	24.7	29.9	24	30.3	21.4	31	24	29.5	23	30	24	29.6	23.6	31.7	23.1
23	30.2	23.5	31.3	23	33.5	22.1	31	24.5	30	23.8	31.9	22.7	31.1	23.4	31.1	22.6
24	30.1	25	32.2	25.5	33.2	22.3	32.1	23.8	29.2	24.6	30.7	24.9	30.2	23.5	31.2	22.5
25	31.7	24.5	31.9	25.3	32.3	22.6	32.2	24.2	30.5	24.5	29.8	23	29.5	22.4	30.3	23.5
26	31	23.5	31.3	24.8	31.8	21.7	32.2	24.6	29.6	24	29.3	23.8	27.5	22.5	26.8	22.4
27	32.2	24.6	31.3	24.7	32.8	23	31.5	23.8	29.8	24.2	30	25.7	27.8	22.6	28.2	23
28	31.3	22.2	31.4	23.2	32.8	21.4	34.3	23	30.1	24.3	30.1	26.3	29	23.5	29.6	24.3
29	32.6	23.5	30.7	22.7	32.5	21.5	33.9	23	30	23.7	30.5	25.6	30.1	25.9	31.8	23.4
30	32.7	23	31.6	22.5	33	22.6	32.9	23.3	30.2	24.4	31.8	24.4	30.6	24.6	32.2	23
Mean	31.8	24.6	32.4	24.8	33.9	21.9	33.3	25.1	30.1	24.8	30.8	25.4	29.6	23.5	31.1	23.6

Maximum and minimum temperature at the stations of the Weather Bureau, September, 1914—Contd.

Day.	Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.7	27.3	32.1	25.6	31.8	28.1	35.1	23.6	32.8	25	36.6	22.7	30.6	27	31.6	27.2
2	33	24.4	31.3	25.4	32.8	28.2	34.3	24.1	34.3	24.3	37.4	24.2	30.6	24.2	33.6	24.6
3	31.4	24.2	31.8	27.6	30.6	28.2	34	26	32	23.5	34.3	23.9	29.2	26.2	32	25.8
4	31.7	24.4	31.2	27.8	32.4	28.2	35.2	25.7	32.3	23.8	37.5	24.4	29	25	32.2	27.2
5	32.4?	25.4	31.6	25.5	30.3	27.4	34.1	25.4	33.8	23.8	37.4	23.6	29.7	26.4	33	26.5
6	32.3	25.4	32	25.3	30.2	26.9	35.7	23.5	34.4	25.2	38.6	24.7	30.9	26.3	30.8	27
7	30.7	26.4	31.6	26.5	30.9	27.9	32.7	24.1	32.5	23.6	33.4	23.7	30.6	26.3	31.8	26.2
8	29.2	25.1	29.9	23	31.3	25.8	32.2	23.4	28.8	23	35.6	23.7	29.3	24.3	30.6	25
9	29.4	24.4	31.4	24.2	31.4	25.4	34.2	23.5	30.1	23	36	23.5	30.7	24.4	30.8	25.5
10	27.7	23.4	31.8	24.1	31.5	24.5	34.2	23.2	31.7	22.9	35.5	24.4	31.9	26.5	31.5	25.5
11	31.7	25.4	31.2	25.4	31.5	27.4	34	24.9	32.1	24.1	36	24	30.6	26.5	31.4	26.5
12	31.5	23.4	32.3	24.9	32.3	23.5	33.5	24.5	31.4	24	35.2	23.6	31.4	26.1	31	25.4
13	28.1	23.9	30.8	23.9	30.5	27.2	32.6	23.9	32	22.8	34.6	24.5	30	23.8	31	
14	31.4	22	31	23.7	31.9	26.8	32.3	23.2	31.5	22.5	31.1	22.7	30.6	23.6	31.6	25.2
15	31.4	23.6	32.2	22.9	31.8	25.3	33.2	23	31.9	22.5	33.9	22	32.2	23.6	33.4	25.4
16	31	24.2	32.2	22.5	32.2	24.2	33.9	22.9	32	22.3	34.5	22	33.1	22.4	31.8	25.2
17	31.6	24.1	31.6	22.4	32.2	26.2	34.3	24.6	32.1	23.3	37.8?	22.4	32.5	23	34	25.5
18	32.2	24	31.8	23.9	31.2	22.6	34.2	24.6	32.8	23.7	33.5	23.5	33.7	22.5	33	25.5
19	32.4	24.1	33	22.3	33.2	24.3	33.7	24.4	33.1	22.2	34.1	22.5	33.1	23.1	32.5	25.4
20	32.1	24.4	31.6	22.2	31.5	24.4	34.4	23.4	33.2	22.5	33.6	22	32.1	22.8	31.5	25.2
21	31.6	23.8	30.6	21.4	30.3	24.2	29.7	23.2	32	24.2	31.6	22.7	28.6	22.8	31.6	26.2
22	32	26.2	31.9	22.7	31.5	23.2	32.7	23.7	32	25.1	33.6	21.9	31.2	21.9	33.6	25
23	30.9	23.8	29.6	24	30.8	24.9	32.5	24.2	29	22.9	35	21.7	30.8	22.2	32.2	25.5
24	31.7	25.6	30.8	23.6	31.7	24.3	33.3	23.8	32.8	22.2	36.1?	24.2	31.5	24.8	32.5	26.4
25	30.7	24.7	31.2	23.9	30.9	22.5	32.3	23.9	33.3	23.5	33.6	22.4	32.7	24.4	31.4	25.2
26	27.7	23.2	30.9	23.8	30.9	23.5	31.6	23.3	31.2	23.2	34.5	22.6	30.8	23.8	32.2	26.5
27	29.7	24	31.7	24.3	32	26.4	32.8	22.6	32.1	23	35	22.7	30.8	26.7	31.6	26.4
28	28.9	25.4	32	24	31.5	28	34.7	24.6	30.8	23.3	36.1?	24	31.4	24.6	30.6	25.2
29	31.2	25.9	30.9	23.2	31.5	25.7	32.7	23.5	32.2	23.3	38?	22.7	33.4	23.9	31.4	26.2
30	31.4	26.1	30.8	22.6	32.2	27.3	33.3	24.4	32.4	22.9	33.2	22.7	34.2	23.1	32.2	26.5
Mean	31	24.6	31.4	24.1	31.5	25.8	33.4	24	32.1	23.4	35.1	23.2	31.2	24.4	32	25.8

Day.	Romblon.		Batag.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.7	23.7	33.3	24	31.9	24.8	28.2	22.2?	29.8	23.5	32.2	24.1	31.9	24.7	29.3	23.8
2	33.6	23.2	32.5	24	30.7	24.2	28	22.8	28.1	22.5	31.1	24.4	29.1	22.6	27	23.4
3	29.1	23.7	32	24	28.4	25.2	29.4	23.4	26	22.6	30.5	24.2	30.2	23.7	25.4	24
4	30	23.2	31?	24.2	30.4	25.1	29	24.4	26.5	22.1	32.3	23.4	31.3	22.2	26.3	22.5
5	32.6	24.6	32	22.8	29.1	24.2	27.8	24.4	28.6	22.2	30	23.2	31.4	23.2	28.2	22.8
6	33.4	23.8	32	23.5	31.4	24.7	27.2	23.3	28.5	23	30.6	23.6	30.2	24.3	28.3	24.4
7	31.4	23.8	32.5	25.2	30.8	25	29.6	23.8?	27.1	22.8	31.6	24	31.4	24.4	28.1	24.7
8	30.2	22.7	30.4	23	28.4	24	27	23.8	27.8	21.9	28.5	23.3	30.3	21.9	27.5	23
9	31	23.8	32	23.2	29.5	23.7	28.6	23.6	27.5	21.8	29.8	23.5	31.3	23.6	26.3	23.5
10	30.6	23.8	31.5	23.7	30.1	24.6	28.6	24.4	30.5	21.8	30.9	23.2	31.1	23.1	29.8	24
11	33.6	25	31.5	24	31.4	25.2	29.4	22.8	31	23	33.4	23.4	32.8	24	31.3	25.6
12	31.4	24.8	31.4	23.6	30.1	23.7	30	23.4	30.8	23.3	31.4	24.1	31.5	24	29.6	25.4
13	31.7	23.8	30.5	23.6	29.3	23.5	30.2	24.4	30.9	22	30.3	22	30.8	22.5	30.8	22.5
14	33	22.9	30	22	31.1	22.7	30.6	23.8	31.5	22	29.5	22.3	31.1	22	30.6	23.1
15	33.2	22.7	30.9	23	33	23.7	30	25	30.5	21.1	33.2	21.8	32.6	22.7	31.3	22.2
16	34	22.5	31.5	22.3	34.3	22.8	30	24.4	30.5	21	34.4	21.2	32.6	22	30.9	22
17	33.4	23	32.4	23	33.6	24.5	29.4	24.4	30.7	21.1	33.5	21.4	33.5	22	31.3	21.7
18	33.5	23.6	32.9	23	33.9	23.7	30	24	30.7	21.4	33.4	22.2	33.4	21.5	31.3	21.4
19	34	22.9	33	22.6	34.7	22.9	30.4	23.4	33.4	21.7	30.5	22.8	34.7	22	32.2	22.9
20	33.5	22.9	32.5	23	33.8	21.9	29	23.6	30.5	21.4	30	21.1	33.5	20.7	32.3	23
21	33.2	23	28.5	22.5	34.1	21.6	30	23.4	33	21.5	28.6	22	32.1	21.5	32.8	21.5
22	32.6	25.4	30.6	23.7	32.6	22.3	26.8	22.8	32	22.2	31.6	21.5	31.6	22	31.6	22.4
23	33.3	24.8	29.5	23.4	33.4	22.8	29.2	23.9	31.6	22	31.9	22.4	31.2	21.5	31.7	22.1
24	34.5	24	30.8	23.8	32	23.3	30.8	23.4	32.7	21.1	33.6	22.5	32	22.1	31.8	22.9
25	34.9	23.6	31.5	23	34	22.4	30.8	24.4	32.7	22	33.5	23	33.7	22	33.5	22.7
26	34.5	24.2	30.4	22.4	32.2	23.7	29	23.4?	31.5	23.5	31.7	22.9	33.6	21.8	31.4	23.3
27	33	24.4	30.5	23.5	30.3	23.7	30.2	23.4?	32	21.7	32.1	22.3	31.3	22.5	31.9	22.5
28	34.6	24.4		23	31.3	23.9	30.8	23?	32.1	23	31	23.6	31.2	23	30.8	23.9
29	32.5	23.8			32.7	24.4	29.8	23?	31.8	23	32.9	23.1	32	22.8	31.7	21.7
30	33.6	25.5			33.2	24.2	29.4	23.4?	31.9	22.3	33.7	22.4	32.4	21.9	32.3	23.5
Mean	32.8	23.8	31.4	23.3	31.7	23.7	29.3	23.6	30.4	22.2	31.6	22.8	31.9	22.6	30.2	23.1

Maximum and minimum temperatures at the stations of the Weather Bureau, September, 1914.—Contd.

Day.	Atimonan.		Ambulong, Tanauan.		Silang.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.		Iba.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.6	23.6	27.7	23.6	28.4	17.6	31.6	24.4	28.1	23.5	27.9	22.9	27.3	22.3	30	24.7
2	26	23.1	27.3	24.5	28	17.3	28.8	24	26.7	24	26.7	23.1	24.9	21.6	30.5	24
3	26	23.4	26	23.6	27.7	17.5	30.5	24.4	26.7	23.8	27.1	22.9	25.6	21.3	27.4	23.5
4	26.6	23.5	26.6	23.3	27.5	17.4	31	25	27.1	23.2	27	23.2	26.2	21.6	25.5	22.4
5	27.3	23.2	28.2	24.3	27.7	17.5	31.6	24.3	27.5	22.3	27.2	23.7	25.7	22.3	26	22.9
6	29.2	24.4	28.1	25	27.9	17.2	32	24	29.7	22.7	30.9	24.7	27.7	22.3	29.5	23
7	29.8	24.6	28.9	24.7	28.2	17.9	31.2	25.4	29.8	23.7	31.5	25	29	23.2	28.5	23.9
8	26.9	23.5	25.2	23	28.5	17	30.2	24.9	29.8	23.7	27.6	23.8	24.2	21.8	27	23.5
9	28.3	24.4	26.5	23.5	28	17.3	31.8	24.7	29.2	23.9	30.2	23.9	27.4	21.8	29	22.8
10	30.5	25	28.7	24	27.6	18	33	24.8	31.1	23.8	30.5	24.8	28.2	22.5	30.5	23.8
11	32.8	26	29.7	25	28.8	18.7	34	24.7	30.9	22.6	31	24.9	29.4	23.3	30.4	24.1
12	29.7	24	27.2	23.9	29.5	18.2	31.8	24.5	28.1	23.7	28	24.4	26	22.3	25	23
13	30.6	23.4	30.5	23.8	29.1	18.4	31.8	23	30.1	22.6	28.6	23.1	27.3	21.5	29.5	22.1
14	28.9	23.6	28.2	22.5	29.4	18.3	31.6	23.3	30.8	22.2	30.8	23	28.5	21.4	30.5	21.5
15	31.3	21.6	31.5	22.5	29.1	18.9	32.8	24	30.9	21.2	31.1	22.9	30.1	21.7	30.7	22
16	31.7	21.6	30.4	22.1	30	18.1	34	23.1	31.3	21.9	31.6	24	30.3	22.2	31.1	22.1
17	32.2	21.6	30.6	21.7	30.8	18	33.8	24.2	31.5	22	31.5	23.8	30.5	22	31	22.5
18	32.7	21.8	30.7	21.5	31.3	18.3	32	23.2	32.5	22	32.6	23.2	31.8	21.7	31.5	21.5
19	32	25	31.6	22.5	31.2	17.9	32.8	24	32.2	22.5	32.9	23.7	31.7	22	32	22
20	32.3	23.1	31.7	22.2	32	18.8	32.8	24	32.3	23	32.6	23.3	31.5	21.8	32.1	22.1
21	29	23.9	33.1	22	32.1	19.3	32.6	23	31.7	21.6	33.6	22.2	30.7	20.8	31.9	21.5
22	28.7	23.5	33.2	23	32	19	30.5	24.5	32.4	22.5	32.9	23	30.5	21.4	32	21.5
23	31.5	23.6	31.7	22.7	32.3	19.2	31.5	24.5	32.1	22.5	32.9	22.7	31.3	20.9	31.6	21
24	31.5	22.9	33.1	22.9	32.1	18.7	32.3	23.8	32.4	23	32.5	24.4	31	22.7	31.7	21.9
25	30.6	23.2	32	23	31.8	19.1	32.4	23.5	32.1	22.2	34.1	23.6	32.2	22.4	31.7	23.5
26	29.8	23.2	29.3	23	32.1	19	31.2	23.5	31.1	22.1	30.8	24.3	30.6	22.8	30.5	23.7
27	31.5	22.6	31.7	21.6	31.7	18.8	32.5	23.5	31.5	22.1	32.3	23.5	30.7	21.9	30.5	22
28	31	23.5	30.8	24.3	30.4	18.4	32.2	24	30.5	23	31.2	23.8	29	22.8	28	22.5
29	31.9	24.4	29.8	24.2	30	18.5	32.8	23.5	31.7	22.7	31.3	23.5	29.4	21.3	28.4	22.5
30	32.7	23.4	32.8	23.3	29.3	18.8	32.6	23.5	30.1	23.5	29.8	23	29.8	21.3	28.5	22.3
Mean	30.1	23.4	29.8	23.2	29.8	18.2	32	24	30.4	22.8	30.6	23.6	29	22	29.8	22.7

Day.	San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernando, Union.		Echague.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.2	23.4	30	23.4	31.7	23.9	31.7	24.1	30.5	25.1	17.8	16.2	29.4	24.8	35.3	23.5
2	27	23.3	28.8	23.4	30.6	24.1	26.8	23.7	30.8	24.6	18.5	16.2	28.6	24.5	34.1	23.9
3	28.5	23.9	29.9	23.6	31.4	25.1	29.8	23.5	28.3	24.1	18.3	15.8	30.4	23.8	34.4	23.9
4	28.9	23.4	31	22.5	30.5	25.2	29	23.4	28.6	23.1	19.1	15	30.9	23.1	33	23
5	27.4	23.5	27	23	30.5	24.6	27.1	24.4	27.5	23.9	18.5	15.9	30	23.9	32.6	22.8
6	31.1	24	31.1	23.7	31.7	24.1	27.8	24.4	27.4	23.9	18.8	16.1	30.2	24.3	34.1	24.4
7	29.5	24.6	28.2	24	29.9	24.6	28.2	24	29.5	24.9	18.3	14.6	30.8	24.6	33.6	23.3
8	26.2	24	28.5	24.1	31.1	24.4	32.9	23.6	31.9	24.1	23.4	14.8	32.4	23.2	34.8	21
9	29	23.6	30.4	22.9	31.5	24.8	32.3	24.1	32.2	23.7	20.5	14.5	32.2	23.9	34.9	21.5
10	31.4	23.6	32.4	23	32.4	24	32.2	24.3	32.3	24	22.6	13.9	32.9	24.8	35.1	21.3
11	31.2	24.4	33.3	23.8	32.5	24.7	33.3	24.6	30.9	24.4	20.1	15.5	32.2	24.4	36.8	22.6
12	26.9	24.3	27	24.2	29.7	24.2	29.5	24.6	31	23.5	20.1	15	30.1	23.6	31.8	24.3
13	30.5	23.3	32.8	23.5	32.4	22.5	31.8	23.6	30.6	23.4	22.8	14.7	31.5	22.8	33.1	22.5
14	31.3	23.5	33.5	23.4	32.9	23.2	32.7	24.3	30.7	23.5	21.5	14.9	31.4	24.2	33.8	22.6
15	31.8	23.7	33.2	22.1	32.9	24	32.6	24.3	30.7	23.5	22.8	15.3	32.4	23.8	33	22.5
16	31.9	23.6	33	22.4	33.5	24	31.7	24.5	31.9	23.5	21.7	15.3	29.4	23.6	34.4	23.9
17	32	24.4	33.6	23	33.5	23.2	31.9	24.5	28.9	23.4	23	15.4	30.6	23.5	33.4	23.1
18	32.1	23.7	33.5	23	35.5	22.6	32.4	24.1	31.1	23.7	23.9	14.8	31.9	23.9	33	22.7
19	32.8	23.4	33.5	23	35.1	24	33.4	24.2	32.5	22.9	24.3	15	31.7	23.5	33.3	22.4
20	32.9	23	34	22.1	30.5	22.7	32.5	23.5	32.2	23	24.5	14.8	32.1	23.3	32.8	21.8
21	33	22.1	34	22.3	32.9	22.2	32.7	23.5	32.6	23	22.9	14.6	32.5	23.4	32.6	21.8
22	33.2	22.6	34.7	22.4	32.7	22.8	33.3	23.7	32.4	23.4	23.8	14.5	32.7	22.7	30	23.6
23	32.4	22.5	34.8	21.6	33.6	22.1	31.9	23	32.5	22.6	23.9	14.3	32.6	22.5	31.2	21.3
24	32.8	23.4	33.5	22.1	-----	-----	33.8	24.6	31.8	24.9	23.4	15.4	32.7	23.9	31.1	22.3
25	33.7	24.3	34	23.5	-----	-----	34.5	24.5	33.5	24.4	24.7	16.4	32.8	25.1	33.1	23.2
26	32.2	23.7	33.2	23.6	-----	-----	34.3	24.4	31.7	23.9	24.8	14.8	32.4	24.4	33.3	22
27	31.6	23	33.4	23.4	-----	-----	32.8	24.4	30.7	24.1	23.7	15	32.2	23.6	32.2	23.5
28	30.9	23.5	31	23.6	-----	-----	33	24.1	31	23.1	23.4	14.7	31.7	23.4	31.9?	23.4
29	31	23.4	30.6	22.4	-----	-----	31.3	24	27.3	23.3	20.5	15.3	30.9	24.2	33.6	22.9
30	32.8	22.8	29.4	22.6	-----	-----	27.8	23.3	27.5	22.9	19.9	14.7	29.4	24.2	33.4	23
Mean	30.7	23.5	31.8	23.1	32.1	23.7	31.5	24	30.7	23.7	21.7	15.1	31.4	23.8	33.3	22.8

Maximum and minimum temperatures at the stations of the Weather Bureau, September, 1914.—Contd.

Day.	Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.5	25	28.5	24.7	37	24.3	30.5	24	31.8	24.1	31.4	24.2
2	29.5	25	26.7	24.3	34	24.1	31.3	24.3	31.9	24.2	30.1	24.6
3	30	24.6	30.6	23.4	35.6	24.5	32.6	24.2	31.2	23.8	29.7	24.5
4	29.5	24.5	29	23.3	33.1	23.7	30.9	23.7	30.6	24.4	30.4	25.1
5	28.5	24.1	28	23.2	34.5	23.6	31.7	23.4	30.6	23.6	29.2	25.2
6	29	24.1	28.8	23.8	35.4	24.2	31.3	24.1	31.8	24.2	29.1	24.1
7	30.4	25.5	31	24.9	37.2	24	31.8	23.8	31.6	24.6	29.8	24.4
8	30.5	24	30.2	24.5	37	23	32.5	23.5	31.8	24.3	29.9	26.2
9	30.5	25.1	30.5	24.4	36.1?	24	31.6	23	32.6	23.1	29.6	24.6
10	30.5	25	30.3	22.7	36.7	23	30.4	23.8	31.8	23.9	29.4	25.7
11	31.5	25.7	28.9	24	37.8	22.8	31.9	22.4	31.9	22.6	30	25.7
12	28.5	24.9	29.7	23	32.1	22.8	28.9	24	29.1	23.1	29.9	24.6
13	30.9	25	30	23.8	34.5	22.4	32.2	22.5	31.4	22.5	30.4	24.2
14	29.5	25	29.6	24.2	35	23.8	32.5	23.6	31.7	23.1	30.7	25
15	30	24	31	23.7	34.6	24	32.4	23	30.3	22.7	28.3	23.4
16	30	24.5	30.5	23.7	33.5	23.2	32.2	22.6	29.6	23.6	29.3	24.6
17	30	24.5	31.6	24	33.2	23.4	31.7	23.5	29.9	23.3	29.1	24.4
18	30.5	25	31.2	23.5	34.6	23.2	31.8	22	30.2	25	29	23.3
19	30.7	24.2	31	23.8	34.2	23	32.4	23	33	22.8	26.5	23.6
20	31.4	24.5	32.5	23.9	35	22	32.5	23.9	31.2	22.5	29.6	22.8
21	31.6	24	31.5	23.3	33.7	23.4	33.7	22.3	31	23.1	30.7	22.5
22	31.6	24	32.5	24.1	32.3	23.1	35.3	23.4	28.5	23.3	29.4	24.1
23	31.5	24	31.3	23.6	31	22	33.2	23.1	27.1	22.4	27.5	23.9
24	31.9	25	31.6	23.5	29.4	23.2	33.4	23.1	27.4	23.1	27.2	23.3
25	31	26.7	31.7	25	34.6	24.6	32.2	23.4	30.8	24.1	30.4	24.2
26	30.5	24	31.3	23.9	32.5	23	33.1	23.3	30	24.2	29.4	24.2
27	31	24	31.5	24.2	34	22.3	32.7	23	29.6	23	29.9	25.5
28	31	24.9	31.3	23.2	35.4	22.5	33.8	22.8	29.6	23.4	29.5	24.1
29	30	25.6	28.5	23.7	36.8	22.3	30.7	24.1	30.6	23.8	29	26
30	30	25	29	22.7	35.7	23.2	32.2	23.1	32	23.3	30.8	25.2
Mean	30.4	24.7	30.3	23.8	34.6	23.3	32.1	23.3	30.7	23.4	29.5	24.4

SEISMOLOGICAL BULLETIN FOR SEPTEMBER, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

3, 19^h 15^m [4, 3^h 15^m]. Surigao (NE Mindanao). Oscillatory earthquake direction SE-NW, intensity IV, duration 5 seconds.

4, 1^h 36^m [4, 11^h 06^m]. Guam (Mariana Islands). Earthquake of intensity I-II. There was a repetition of the same intensity at 1^h 54^m [11^h 24^m].

4, 12^h 07^m [4, 20^h 07^m]. Legaspi (SE Luzon). Oscillatory earthquake, direction ESE-WNW, intensity III, duration 4 seconds.

5, 15^h 30^m [5, 23^h 30^m]. Cotabato (SW Mindanao). Earthquake of intensity III-IV, duration 3 seconds.

11, 2^h 49^m 35^{s*} [11, 10^h 49^m 35^s]. Butuan (N Mindanao). Oscillatory earthquake, direction WNW-ESE, intensity III, duration very short.

12, 10^h 03^m 28^{s*} [12, 18^h 03^m 28^s]. Butuan (N Mindanao). Oscillatory earthquake, direction NNE-SSW, intensity V-VI, duration 12 seconds. The point of origin of this earthquake and the previous one was probably in Butuan Bay. They were recorded by the seismographs of the Observatory and the seismograms place the epicenter at a distance of 670 kilometers from Manila.

16, 2^h 51^m [16, 12^h 21^m]. Guam (Mariana Islands). Earthquake of intensity III.

17, 12^h 46^m 31^{s*} [17, 20^h 46^m 31^s]. Island of Masbate. Earthquake of intensity V-VI; it seems to have originated close to the south of the western spur of Masbate Island, about 400 kilometers from Manila, according to the indications of the seismographs. It was felt with much intensity throughout the island; and after the main shock there were three repetitions or aftershocks in less than half an hour. The earthquake was also perceptible in the NW of Samar, SE of Luzon, N of Panay, and N of Mindanao. The reports received from the different stations indicate that the meizoseismic area was greatly prolonged in the NNW-SSE direction; for the limiting stations in this direction, viz, Nueva Caceres and Butuan which are more than 600 kilometers apart, felt the shock, while the limiting stations in the direction WSW-ENE, viz, Calbayog and Antique, are only 300 kilometers apart. Moreover if the respective intensities of the shock in the different stations be taken into account, it would appear that not only the nature of the ground but also the seismic stability of each island had a good deal of influence.

By admitting this influence which has been recognized by seismologists, we may explain how it was that the shock was perceptible in Butuan, which is very unstable and with an alluvial subsoil, while scarcely any one noticed it in Cebu and Bohol, both of which islands are considered as stable. The same may be said of the NW of Samar and W of Leyte, regions generally affected by earthquakes of very local and

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance was registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), In-sular time being added in brackets for the convenience of Philippine readers.

superficial characteristics, but where this earthquake was scarcely perceptible; it was not felt in Romblon; but it was intense in the N of Panay and very perceptible in Camarines and Albay, which are very unstable regions and all with subsoils of alluvium and tuff. From northern Negros, which according to its relative distance would be within the isoseism IV, no notice has been received.

The repetitions in Masbate were at 13^h 02^m [21^h 02^m], 13^h 09^m [21^h 09^m], and at 13^h 16^m [21^h 16^m]. Only the first had an intensity of III-IV and it was also perceptible in Capiz, the others did not pass intensity III.

22, 15^h 37^m 15^s* [22, 23^h 37^m 15^s]. Batangas (S Luzon). Oscillatory earthquake, direction SE-NW, intensity III, duration 8 seconds.

23, 16^h 45^m [24, 0^h 45^m]. Borongan (E Samar). Earthquake of intensity III.

27, 19^h 27^m [28, 3^h 27^m]. Baguio (W Luzon). Oscillatory earthquake, direction N-S, intensity II-III, duration 10 seconds.

28, 20^h 49^m [29, 6^h 19^m]. Guam (Mariana Islands). Earthquake of intensity I-II; there was a repetition at 22^h 50^m [8^h 20^m of the 29th] with intensity II-III.

30, 22^h 21^m 29^s* [October 1, 6^h 21^m 29^s]. Catanduanes and N Samar. Earthquake of intensity IV-V; its origin was to the E of the San Bernardino Strait in the great Philippine Deep. It was felt principally in the stations of NE Samar and Catanduanes; its duration was about 20 seconds.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T₀=9.0, ε=3.31, r=0.039; A_E: T₀=6.2, ε=2.58, r=0.082. Alluvium. 2.40 meters above sea level.] T₀²

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
228	2	Iv	eP	h. m. s.	13	16		
			L	20 21 55				
			M _N	25 26				
229	5	Ir	F	21 30	7	14		
			eP	23 21 00				
			S	24 27				
			L	27 54				
230	7	I	M _E	0 06				
			F	22 10 23				
			e	22 10 23				
231	8	Iv	F	9 47 39				
			L	47 58				
			eP	51				
232	11	Iv	F	2 49 35	5	27		Butuan (N of Mindanao).
			L	50 44				
			M _E	50 54				
			F	57				
233	12	Iv	F	10 03 29	7	13		Butuan (N of Mindanao).
			L	05 55				
			M _N	06 10				
			F	20				
234	14	Iv	F	5 56 53				
			iP	59				
235	14	Ir	e	23 51 39				
			L	53 42				
			M _N	0 02 31				
236	17	IIv	F	0 02 31	9	27		
			L	1 02				
			eP	12 46 31				
			M _E	47 15				
			M _N	49 19	7	248		Masbate Island.
			L	50 33				
			M _N	50 33				
			F	13 28				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
237	17	Iv	eP	h. m. s.	5	26		
			L	15 30 57				
			M _E	33 39				
238	19	Iv	eP	7 57 33	1	28		
			L	57 49				
			M _E	57 51				
239	20	I	e	8 35 20				
			F	47				
240	21	Iv	eP	9 07 00				
			L	10				
			F					
241	22	Iv	eP	15 37 15	2	52	36	Batangas (S of Luzon).
			L	37 30				
			M _N	37 32				
242	23	Iv	eP	1 51 26	5	30		
			L	52 00				
			M _E	52 04				
243	23	Iv	eP	2 12	6	23		
			L	4 17 57				
			F	21				
244	27	Iv	eP	10 20 06				
			L	20 21				
			F	22				
245	27	Iv	eP	22 35 40				
			L	37				
			F					
246	27	Iv	eP	22 47 00				
			L	49				
			F					
247	28	Iv	eP	0 07 02				
			L	09				
			F					
248	30	Iv	eP	18 20 34				
			L	23				
			F					
249	30	Iv	eP	22 21 29	5	22		Catanduanes Island and north of Samar.
			L	22 38				
			M _E	22 43				
			F	36				

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

3, 19^h 15^m [4, 3^h 15^m]. Surigao (NE de Mindanao). Temblor oscilatorio, dirección SE-NW, intensidad IV, duración 5^s.

4, 1^h 36^m [4, 11^h 06^m]. Guam (Islas Marianas). Temblor de tierra de intensidad I-II. Repitió con la misma intensidad 1^h 54^m [11^h 24^m].

4, 12^h 07^m [4, 20^h 07^m]. Legaspi (SE de Luzón). Temblor oscilatorio, dirección ESE-WNW, intensidad III, duración 4^s.

5, 15^h 30^m [5, 23^h 30^m]. Cotabato (SW de Mindanao). Temblor de tierra de intensidad III-IV, duración 3^s.

11, 2^h 49^m 35^{s*} [11, 10^h 49^m 35^s]. Butuan (N de Mindanao). Temblor oscilatorio, dirección WNW-ESE intensidad III, duración corta.

12, 10^h 03^m 28^{s*} [12, 18^h 03^m 28^s]. Butuan (N de Mindanao). Temblor oscilatorio, dirección NNE-SSW, intensidad V-VI, duración 12^s. El origen de este temblor probablemente se hallaba en la bahía de Butuan, así como el del precedente. Fueron registrados por los sismógrafos del Observatorio y los sismogramas colocan su epicentro a una distancia de 670 kilómetros de Manila.

16, 2^h 51^m [16, 12^h 21^m]. Guam (Islas Marianas). Temblor de tierra de intensidad III.

17, 12^h 46^m 31^{s*} [17, 20^h 46^m 31^s]. Isla de Masbate. Temblor de tierra de intensidad V-VI; su origen parece se hallaba cerca del S del espolon occidental de la isla de Masbate, a unos 400 kilómetros de Manila, según indican los registros de los sismógrafos. Fué sentido con mucha intensidad en toda la expresada isla, y le siguieron tres repeticiones o offershocks en el espacio menos de media hora. Además fué perceptible en la parte NW de Sámar, SE de Luzón, N de Panay y N de Mindanao. Las notas recibidas de diferentes estaciones indican que su área meizosísmica, así como las demás cosísmicas, tenía una forma exageradamente prolongada en la dirección NNW-SSE; puesto que las estaciones extremas que en esta dirección lo sintieron, Nueva Cáceres y Butuan, distan entre sí, más de 600 kilómetros; en la dirección WSW-ENE las estaciones extremas, Calbayog y Antique, solo distan unos 300 kilómetros. Además, si se tienen en cuenta las intensidades respectivas en cada estación parece que debió influir mucho no solo la naturaleza del terreno pero aún la estabilidad sísmica de cada isla. Solamente admitiendo esta influencia, ya reconocida por los Sismólogos, se explica como pudo ser perceptible en Butuan región sumamente inestable y con subsuelo de aluvión, mientras que casi nadie se dió cuenta de él, ni en Cebú ni en Bohol, islas consideradas como muy estables. Lo mismo puede decirse de la parte NW de Sámar y W de Leyte, generalmente afectadas por terremotos de carácter muy local y superficial, donde este terremoto apenas fué perceptible; tampoco lo fué en Romblón. Por el contrario fué intenso en el N de Panay y muy perceptible en Camarines y Albay, regiones todas muy inestables y con subsuelos de aluviones y tobas. De la parte N de Negros, situado por su distancia relativa dentro de la línea cosísmica IV, no hemos recibido noticia ninguna.

Las repeticiones antes indicadas de Masbate tuvieron lugar a 13^h 02^m [21^h 02^m], 13^h 09^m [21^h 09^m], y 13^h 16^m [21^h 16^m]. Tan solo la primera tuvo intensidad III-IV y fué también perceptible en Cápiz, las demás no pasaron de intensidad III.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

22, 15^h 37^m 15^s* [22, 23^h 37^m 15^s]. **Batangas** (S de Luzón). Temblor oscilatorio, dirección SE-NW intensidad III, duración 8^s.

23, 16^h 45^m [24, 0^h 45^m]. **Borongan** (E de Sámar). Temblor de tierra de intensidad III.

27, 19^h 27^m [28, 3^h 27^m]. **Baguio** (W de Luzón). Temblor oscilatorio, dirección N-S, intensidad II-III, duración 10^s.

28, 20^h 49^m [29, 6^h 19^m]. **Guam** (Islas Marianas). Temblor de tierra de intensidad I-II: repitió a 22^h 50^m [8^h 20^m del día 29] con intensidad II-III.

30, 22^h 21^m 29^s* [Octubre 1, 6^h 21^m 29^s]. **Catanduanes y N de Sámar**. Temblor de tierra de intensidad IV-V: su origen estaba al E del Estrecho de San Bernardino en el grande *Abismo de Filipinas*. Se sintió principalmente en las estaciones más vecinas del NE de Sámar y de la isla de Catanduanes, su duración fué de unos 20^s.



BULLETIN FOR OCTOBER, 1914.

METEOROLOGICAL BULLETIN FOR OCTOBER, 1914.

By REV. JOSÉ CORONAS, S. J.,
Chief, Meteorological Division, Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure of the month was much greater than that of the preceding year and than the October normal in all the stations of the Philippines. In Manila it was 2.39 mm. above the normal for the month and 2.62 mm. above the mean for October, 1913. The highest pressures were recorded on the 21st, 24th, and 25th; the lowest on the 1st and 2d, 11th and 12th.

The mean monthly temperature was almost identical with that of last year in some stations, and slightly higher in others. In Manila it was 0.8° C. below the normal for the month, and 0.2° C. below the mean of October, 1913. The absolute monthly maximum in Manila was 33.4° C. on the 3d, and the absolute minimum, 20.0° C. on the 23d. In Baguio the extreme values were 27.0° C. and 13.2° C. on Mirador, and 26.5° C. and 11.5° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR OCTOBER, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from October, 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Oct., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran ^a	760.08		760.93	21	759.11	11	26.3		32.8	1	21.4?	22?
Surigao	60.28	+1.88	61.27	21	59.09	1	26.4	-0.6	33.2	5		
Cebu	60.21	+1.64	60.99	21	59.14	11	27.9	+1	33.5	5	23.3	26
Iloilo	60.08	+1.71	60.95	21	59.08	11	27.1	+ .6	32.7	4	22.5	12
Ormoc	60.46	+1.79	61.74	21	59.20	11	26.1	- .1	33.1	28	19.5	28
Tacloban ^b	61.09	+2.83?	62.32	21	59.64	11	26.5	- .2	34.1	1	21.8	28
Capiz	60.53	+2.01	61.43	31	59.36	1	27.1	+1	33.2	3	22.2	1, 26
Calbayog	60.57	+2.38	61.53	21	59.13	11	25.9	- .4	34.6	10	20.6	14
Legaspi	60.59	+2.67	61.69	21	59.07	1	27.6	+1.2	34.1	1, 2	21.3	12
Atimonan	60.79	+2.47	62.09	24	58.82	1	27	+ .8	32.5	1	21.5	27
Ambulong, Tanauan	60.56	+2.53	61.65	24	59.08	2	26.5	+ .2	34	2	21	16, 30
Paracale	61.18	+2.82	62.58	24	59.18	1	27	+ .9	32.8	1	22.4	10, 16
Manila	61.13	+2.62	62.24	24	59.62	2	25.9	- .2	33.4	3	20	23
San Isidro	61.37	+2.80	62.62	24	59.81	2	26.4	+ .2	33.4	8	20.2	31
Dagupan	60.25	+2.49	61.47	24	58.79	2	27.4	+ .2	35.2	9	20.6	30
Bolinao	60.63	+2.57	61.89	25	59.23	12	27.5	+ .2	33.6	9, 24	21.9	22
Baguio ^c	638.45	+2.31	639.48	24	637.20	12	18.1	+ .5	27	29	13.2	25, 31
Vigan	760.60	+2.50	761.76	24	759.16	12	27.4	+ .8	33.7	16	22.2	2
Tuguegarao	61.97	+2.94	63.92	25	59.69	1	25.8	+ .7	36.6	21	18.9	30
Aparri	61.94	+2.78	63.84	24	59.74	1	26	+ .4	31.7	4	20.6	30

^a 26 days of observation.

^b The barometric readings of this station seem to be too high by about 0.50 mm.

^c The barometric readings of this station are not reduced to sea level.

Rainfall.—The natural effect of the absence of atmospheric disturbances during the month in the vicinity of the Philippines was the scarcity of rain that was noted in almost all the stations of the Archipelago. With the exception of the four stations of Davao, Surigao, Tacloban, and Dagupan, all the rest had totals which are among the smallest ever registered in the Philippines for the month of October. In Manila there was only 40.2 mm. of rain, which is 162.0 mm. below the normal for the month, and 79.5 mm. less than that of October, 1913. During the fifty years of the existence of the Observatory there have been two occasions only when the October rainfall was less than during this year, namely 39.5 mm. in October, 1891, and 9.7 mm. in October, 1911. Moreover, during the past fifty years,

the rainfall in October has been below 100 mm. eleven times only. In Baguio the rainfall was 63.2 mm., which is 363.3 mm. less than the normal.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF OCTOBER, 1914.

Station.	Total.	Departure from October, 1913.	Departure from normal.	Rainy days.	Departure from October, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from October, 1913.	Departure from normal.	Rainy days.	Departure from October, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	144.4	-15.7	-62.5	16	-2	23.6	28	Sumay, Guam	333.3	+38.8	-----	20	-1	132.1	8
Isabela, Basilan	72.2	-208.1	-173.7	10	-5	25.4	27	Calapan	163.5	-198.6	-----	16	-2	45.7	28
Zamboanga	58.3	-96.9	-51.7	7	-5	24.9	30	Virac	158	-231.4	-----	19	-9	24.9	5
Davao	309.8	+145.9	+63.2	18	+7	53.3	14	Nueva Cáceres	41.5	-597.8	-206.7	9	-13	15.2	4
Cotabato ^a	112.7	-----	-----	-----	-----	31.7	3	Batangas	63.7	-144.1	-----	10	-7	16.5	9
Cagayan, Misamis	29.1	-265.5	-----	8	-11	14.2	9	Atimonan	204.4	-159.6	-162.4	20	-1	34.3	3
Butuan	54.2	-81.6	-99.7	15	0	19.3	24	Ambulong, Tan- auan	47.7	-139.8	-----	5	-8	23.7	4
Dumaguete	92.1	-134.9	-----	14	-1	26.4	25	Paracale	251.4	-531.5	-----	26	+3	50.5	31
Tagbilaran ^b	106.6	-----	-----	-----	-----	82.6	25	Sta. Cruz, Laguna	42.4	-135.3	-----	14	+2	14	4
Iwahig	353.8	-----	-----	22	-----	44.7	24	Manila	40.2	-79.5	-162	12	-1	18	18
Surigao	250.9	+50.9	+11.5	18	0	21.6	25	Antipolo	41.4	-138	-----	8	-9	27.7	11
Maasin	105	-207.7	-120.6	10	-3	26.4	9	Iba	50.3	-57.2	-----	6	-7	25.1	9
Cebu ^a	73.7	-----	-----	-----	-----	21.3	8	San Isidro	13.6	-163.9	-162.8	8	-5	5.1	2
Iloilo	50	-331.9	-195.6	6	-12	26.9	8	Tarlac	50.3	-64	-130.2	7	-5	17	20
San Jose, Buenavista	41.4	-318.6	-254	6	-8	20.8	5	Dagupan	201.5	+89.4	+2.5	8	0	93.2	4
Cuyo	22.6	-225	-188.1	3	-18	22.6	7	Bolinao	41.8	-25.5	-136.4	11	+4	16.3	5
Ormoc	155.7	-180	-94	19	-3	91.7	9	Baguio	63.2	-76	-363.3	12	-9	22.6	12
Guiuan	350.2	-----	-----	20	-----	41.2	25	San Fernando, Union	22.4	-21.6	-109.4	3	-2	14	27
Tacloban	211.7	-41.1	+5	22	+3	38.1	3	Echague	60	-88.5	-----	11	-7	15	10
Capiz	102.2	-84.9	-374.3	15	-6	53.3	24	Candon	0	29.3	-170.7	0	-6	0	0
Borongan	203.7	-84.5	-124.3	26	+8	35.8	17	Vigan	18.1	-27.5	-142.2	3	-2	12	1
Calbayog	97	-123.1	-145.3	18	-2	43.2	14	Tuguegarao	101.5	-200.2	-152.2	8	-5	43.9	1
Masbate	13.5	-160.8	-107.2	7	-10	45.2	31	Laoag	17.1	-56.1	-----	2	-2	12.5	1
Romblon	199.5	-202.5	-92.9	21	-2	43.1	31	Aparri	176.7	-345	-116.1	10	-7	87.9	2
Batag	147.7	-226.9	-----	17	+1	-----	-----								
Legaspi	150.5	-344.9	-177.4	17	+1	-----	-----								

^a 30 days of observation.

^b 26 days of observation.

DEPRESSIONS AND TYPHOONS.

As was indicated above, not a single atmospheric disturbance of any moment was observed in the vicinity of the Philippines during the whole of the month. We have to mention only one typhoon which affected the Ladrone or Mariana Islands for six days. The track of this storm will be published in the November Bulletin, together with those of the November and December typhoons and depressions.

In the following table we give the observations made in Guam from the 7th to the 13th:

METEOROLOGICAL OBSERVATIONS AT SUMAY, GUAM, LADRONE ISLANDS, OCTOBER 7 TO 13, 1914.

Date and hour.	Pres- sure.	Wind.		Rain, 24 hours begin- ning 6 a. m.	Date and hour.	Pres- sure.	Wind.		Rain, 24 hours begin- ning 6 a. m.
		Dirrec- tion.	Force.				Dirrec- tion.	Force.	
October 7:	mm.		0-12.	mm.	October 10:	mm.		0-12.	mm.
6 a. m.	756.43	ENE	5	-----	6 a. m.	754.15	SSW	5	-----
2 p. m.	54.83	ENE	6	-----	10 a. m.	54.70	SSW	5	-----
6 p. m.	55.60	N	5	88.9	Noon	54.03	SSW	5	-----
October 8:					2 p. m.	52.93	SSW	6	-----
6 a. m.	53.65	NNW	7	-----	4 p. m.	52.83	SSW	5	-----
10 a. m.	53.02	NWbyN	7	-----	6 p. m.	53.35	SW	6	-----
11 a. m.	51.77	NW	7	-----	8 p. m.	54.05	SW	7	1.3
Noon	50.44	NW	7	-----	October 11:				
1 p. m.	49.12	WNW	8	-----	6 a. m.	52.45	SW	6	-----
2 p. m.	48.12	W	8	-----	10 a. m.	52.63	SW	5	-----
3 p. m.	47.12	W	8	-----	Noon	51	SW	7	-----
4 p. m.	47.27	W	8	-----	2 p. m.	50.48	SW	7	-----
5 p. m.	47.24	WSW	8	-----	10 p. m.	53	-----	-----	-----
6 p. m.	47.19	SW	8	-----	October 12:				
7 p. m.	46.87	SW	8	-----	7 a. m.	53.65	WSW	6	-----
8 p. m.	47.39	SW	8	-----	10 a. m.	54.18	WSW	6	-----
10 p. m.	50.57	SW	8	132.1	2 p. m.	53.08	WSW	6	-----
October 9:					6 p. m.	54.63	W	5	-----
6 a. m.	52.97	SSE	8	-----	October 13:				
9 a. m.	54.15	SSW	7	-----	6 a. m.	56.95	WSW	5	-----
11 a. m.	53.95	SSW	7	-----	2 p. m.	56.30	WSW	4	-----
2 p. m.	53.30	S	7	-----					
6 p. m.	54.55	SSW	5	17.7					

According to these observations, it would seem that the track of this typhoon was quite abnormal; coming from the SE of Guam, it moved first to the NNW, passing on the afternoon of the 8th at its least distance from that island. The barometric minimum was 746.87 mm. at 7 p. m. of the same day and the winds had backed from ENE to N, NW, W, and SW. On the 9th, the typhoon moved to the WNW after having passed by the N of Guam, the winds backing more to the S and SSE; on the 10th, when the vortex had advanced to about 141° Long. E, a very acute recurve took place as is shown by the fact that the winds in Guam veered from the SSW to SW, WSW and even W, and especially that a second barometric minimum took place at 2 p. m. of the 11th. During the afternoon of the 11th and the whole of the 12th and 13th the typhoon moved to the NE.¹

¹This Bulletin for October was in the hands of the printer when we learned of another typhoon which struck the coast of Indo-China in the early morning of October 3. The cyclonic center was probably formed on October 1 in about 114° long. E and 14° lat. N.; on October 2 it appeared to the SW of the Paracels moving WbyN; and on October 3 it entered Indo-China in about $108^{\circ} 20'$ long. E. and $16^{\circ} 15'$ lat. N. The barometer at Tourane was as low as 744.3 mm. at 6 a. m. of the 3d, and the winds were blowing there with hurricane force from SSW.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es para todas las estaciones de Filipinas bastante mayor que la del año anterior y que la normal de Octubre. La de Manila se diferencia de la normal en +2.39 mm. y de la media mensual de Octubre, 1913, en +2.62 mm. Las presiones más altas se registraron el 21, 24 ó 25: las más bajas el 1 y 2, 11 y 12.

La temperatura media mensual es en unas estaciones casi idéntica a la del año pasado, y en otras ligeramente mayor. La de Manila es inferior a la normal de este mes y a la media de Octubre, 1913, en 0.8° C. y 0.2° C. respectivamente. La máxima absoluta mensual para Manila fué 33.4° C. y se registró el día 3: la mínima absoluta fué 20.0° C., y se observó el 23. Para Baguio los valores extremos fueron: 27.0° C., 13.2° C. en la cumbre de Mirador, y 26.5° C., 11.5° C. en el valle.

Precipitación acuosa.—Efecto natural de la ausencia de perturbaciones atmosféricas en las cercanías de Filipinas fué la escasez de lluvia observada este mes en casi todas las estaciones del Archipiélago. Si se exceptúan las cuatro estaciones de Dávao, Surigao, Tacloban y Dagupan, todas las demás dan unos totales de lluvia que con razón merecen figurar entre los menores registrados en Filipinas en el mes de Octubre. En los pluviómetros de Manila no se recogieron en todo el mes más de 40.2 mm. de agua, cantidad que se diferencia en —162.0 mm. de la normal de Octubre, y en —79.5 mm. de la del año anterior. En 50 años que lleva de existencia este Observatorio solamente dos veces hallamos una lluvia total de Octubre menor que la de este año, y fueron: 39.5 mm. en Octubre de 1891, y 9.7 mm. en Octubre de 1911. Más aun: en los 50 años solo once veces ha sido la lluvia de Octubre menor de 100 mm. En Baguio cayeron este mes 63.2 mm. de lluvia, cantidad que difiere de la normal de Octubre para dicha estación, en —363.3 mm.

DEPRESIONES Y TIFONES.

Ya queda indicado arriba que no se observó este mes perturbación alguna atmosférica en las cercanías de Filipinas. Solamente hemos de mencionar un tifón que influyó por unos 6 días en las Islas Ladrones o Marianas, y cuya trayectoria publicaremos en el boletín de Noviembre, lámina X, juntamente con las trayectorias de los tifones o depresiones de Noviembre y Diciembre.

En una tabla que acompaña el texto inglés damos las observaciones hechas en Guam desde el 7 hasta el 13, ambos inclusive. Según estas observaciones, siguió este tifón una trayectoria bastante anormal. Procedente del SE de Guam, se movió primero al NNW, pasando a la menor distancia de aquella Isla la tarde del día 8. La mínima barométrica fué 746.87 mm., a 7 p. m. de dicho día, y los vientos habían rolando del ENE al N, NW, W y SW. El día 9 se dirigió el tifón al WNW, después de haber pasado por el N de Guam: de ahí que los vientos llegasen a rolar al S y SSE. El día 10, cuando el vórtice había avanzado hasta los alrededores de 141° longitud E, verificó una recurva muy aguda al N, NE y E, como lo prueba el haber rolando los vientos en Guam en sentido opuesto del SSW al SW, WSW y aun W, y sobre todo el haberse observado una segunda mínima barométrica a 2 p. m. del día 11. Durante la tarde del 11 y los días 12 y 13 se movió el tifón en dirección al NE.¹

¹ Se estaba ya imprimiendo este Boletín de Octubre cuando tuvimos noticia de otro tifón que desfogó en Indochina la madrugada del día 3. El centro ciclónico se formó probablemente el día 1 en los alrededores de 114° longitud E y 14° latitud N; el día 2 apareció situado al SW de Paracels; y el 3 penetró en Indochina cerca de 108° 20' longitud E y 16° 15' latitud N. El barómetro de Tourane se hallaba a 6 a. m. de dicho día a 744.3 mm., soplando vientos huracanados del SSW.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pres- sure (mean)	Air temperature. ^b			Underground temperature.				Relative humid- ity (mean)	Vapor pres- sure (mean)	Radiation.		Evaporation. ^b			
		Mean.	Maxi- mum.	Mini- mum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Mini- mum on grass	Maxi- mum in sun. Black bulb in vacuo.	Free ex- posure (total)	Shelte (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a. m.	8 a. m.				
1	759.65	26.5	32.2	23	28.1	29.2	28.9	29.1	28.9	28.3	80.6	20.5	21.2	53	3.1	2.3
2	59.62	26.9	31.8	22.7	28.6	29.7	29.2	29.2	28.9	28.4	80	20.9	20.6	52.7	3.8	2.6
3	60.20	27.1	33.4	24.1	29.1	30	29.4	29.6	29	28.3	84.9	22.4	22.9	56.3	2.8	2
4	60.30	26.8	31.7	23.4	29.2	30.5	29.4	29.6	28.8	28.4	84.9	22.1	22	54.5	5.4	4
5	60.57	26.6	32.1	23	29.3	30.2	29.7	29.8	28.9	28.4	81.3	20.8	22.7	54.8	3	2.2
6	60.82	25.2	31.2	21.4	28.9	29.9	29.7	29.8	28.8	28.3	84.7	20.1	19.4	49.8	2.1	1.8
7	60.66	25.3	31.6	21.6	28.6	29.5	29.6	29.7	28.9	28.3	86.8	20.7	19.9	53	2.3	1.5
8	61.19	26.3	31.8	21.5	28.4	29.6	29.5	29.6	28.8	28.2	83.5	21.1	19.7	54.3	2.9	2
9	61.08	26	30.8	22.3	28.9	29.5	29.6	29.6	28.8	28.3	83.6	20.8	20.2	54.2	2.5	2
10	60.84	26.4	32.7	22.2	28.8	29.7	29.5	29.8	28.9	28.3	77.8	19.6	19.8	53.7	3.7	2.9
11	59.95	25.5	31.8	21.1	28.6	29.5	29.6	29.8	28.9	28.2	83.3	20.2	18.2	50.8	2.4	2.1
12	59.86	26.3	31.7	23.7	29.1	30.1	29.6	29.8	28.9	28.3	80.9	20.6	22.2	54.1	3.5	2.2
13	60.70	26.5	31.9	23.1	29.1	30	29.7	29.8	28.9	28.3	74.5	19	20.4	53.4	4.1	2.8
14	61.35	26	31.2	21.8	29.2	30	29.8	29.9	28.8	28.3	75.2	18.7	20	55.7	3.4	2.7
15	61.06	25	31.2	21	28.9	29.6	29.8	29.8	28.9	28.3	81.1	18.9	18.8	52.3	2.7	2.3
16	61.21	26	31.5	22.2	28.6	29.6	29.6	29.6	28.9	28.2	78.8	19.6	20.1	55.1	3.6	2.8
17	61.90	25.4	30.4	22	28.8	29.5	29.5	29.6	28.8	28.3	84.5	20.3	19.8	52.1	4.3	4.1
18	61.68	25.2	31.2	21.4	29.2	29.2	29.6	29.4	29	28.4	86.6	20.4	19.4	54.4	2	1.8
19	61.18	25.8	30.4	22.8	28.3	29.1	29.2	29.3	29	28.4	84.6	20.7	20.7	49.4	2.3	1.8
20	61.13	26.7	31.9	22.7	28.5	29.5	29.2	29.4	29	28.3	81.3	21.1	21	54.8	2.8	2.2
21	62.12	25.5	31.2	21.7	28.6	29.3	29.3	29.3	28.9	28	80.6	19.5	19.5	51.3	2.7	2
22	62.09	24.5	30.6	20.9	28.2	29	29.2	29.3	28.9	28.3	83.5	19	18.5	53.6	1.9	1.6
23	62	25.9	33	20	27.7	29.1	29	29.2	28.8	28.2	72.9	17.7	17.8	55.3	4.7	3.7
24	62.24	26.4	33.3	21.3	28.1	29.3	29	29.1	29	28.2	69.1	17.2	18.8	55.1	6	4.6
25	62.11	25.2	31.4	20.7	28.2	28.8	29.1	29.1	28.9	28.2	72.9	17.3	18.2	51.7	4.1	3.3
26	61.51	25.8	32.8	20.4	27.7	29.1	28.8	29.1	28.9	28.2	73.4	17.9	17.8	52	4.1	3.1
27	61.11	25.9	32.4	20.5	27.8	29.3	29	29.1	28.8	28.2	77.2	19	17.8	54.7	4	2.9
28	61.83	25.9	32	22.9	28.4	29.2	29	29.1	28.8	28.2	78.4	19.4	20.4	56.1	3	2.4
29	61.71	25.9	32.6	21.2	28.2	29.2	29	29.1	28.8	28.2	74.8	18.4	19	52.4	3.6	2.8
30	61.31	25.7	32.7	20.5	28	29.5	29	29.2	28.8	28.2	72.5	17.6	17.4	53.2	4.8	3.7
31	62.12	25.4	32	20.3	28	29.1	29.1	29.1	28.9	28.2	75.3	18.1	18.4	52.2	3.8	2.8
Mean Total	761.13	25.9	31.8	21.9	28.6	29.5	29.3	29.4	28.9	28.3	79.7	19.7	19.8	53.4	3.4	2.6
Departure from normal	+2.39	-0.8	+0.7	-1.1							-3.8	-1.9		105.4		81

Day.	Wind.				Clouds.			Sun- shine.	Rain, 24 hours begin- ning mid- night.	Miscellaneous.
	Prevailing direction.	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	Amount (mean).	Form and direction.				
						Upper.	Lower.			
1	NW quad.	121.5	13.5	NW	6.2	Ci.	Cu.	h. m.		
2	WSW	160	18	WSW	2.2	Ci.-S.	Cu.	6 20		
3	WSW	83	12.5	NE	6	Ci.	Cu.	8 45		☽ ☽ p.
4	NE quad.	119.5	15	SE	6.8	A.-Cu.	Cu.	6 35		☽ ☽ p.
5	NE quad.	126	14	WbyN	2.9	Ci.-S.	Cu.	4 55		
6	E quad.	85	14	WNW	7.2	Ci.-S.	Cu.	8 35		☽ ☽ p.
7	E quad.	67	9	SW, E	7.1	A.-Cu.	Cu.	3 50	0.3	☽ ☽ p.
8	E quad.	90	10	WSW	3.8	Ci.	Cu.	3 40	1.3	☽ ☽ p.
9	E quad.	98	14	WSW	5.2	A.-Cu.	Cu.	8 40		
10	WSW	118	9	WSW, SE	3	Ci.	Cu.	6 50	3.3	☽ a. ● p.
11	N quad.	141	15	EbyN	6.7	Ci.	Cu.	8 40		
12	E quad.	115	11	EbyS	4.2	Ci.-S.	Cu.	6 10	1.3	● a. ☽ ☽ p.
13	ESE	135.5	11.5	W, WSW	4.4	A.-Cu.	Cu.	7 35		☽ ☽ p.
14	E	99.5	11	W	5	Ci., A.-Cu.	Cu.	6 55		
15	E quad.	102.5	10.5	SE, NNW	8.1	Ci.	Cu.	7 00		● p.
16	E quad.	144.5	17	ESE	7.7	Ci., Ci.-S.	Cu.	5 00	1.5	● p.
17	WSW, E	92.5	9	SW	7.8	A.-Cu.	Cu.	6 00	3	d p.
18	NE, ESE	84	11	NW	6	Ci.-S.	Cu.	3 35	3	d a. ● p.
19	NE	186.5	22	N, NNE	8.1	Ci.-S.	Cu.-N.	6 25	18	● p.
20	SE	101	12	SE	6.4	A.-Cu.	Cu.	4 10	1	d a. p.
21	W, ENE	109.5	12	WNW	5.8	A.-Cu., Ci.	Cu.	4 10		
22	N quad.	125.5	14.5	NNW	6	Ci.-S.	Cu.	9 35		d a.
23	E quad.	160.5	17.5	ESE	3.6	Ci.	Cu.	6 30	1	☽ ☽ ☽ p.
24	NE, ENE	210	21.5	ENE	2.1	A.-Cu.	Cu.	4 35		
25	NNE, ENE	161.5	21	EbyN	4.9	A.-Cu.	Cu.	8 50		
26	SE	151.5	16.5	ESE, SE	5.9	Ci.-S.	Cu.	10 05		
27	ESE	136	16	ESE	5.5	Ci.	Cu.	6 30		
28	ESE	131	16	WSW	6.8	A.-Cu.	Cu.	8 55		
29	ENE	102	13.5	E	4.4		Cu.	7 55	8.9	● ☽ p.
30	NE	172	20	NE	4.4	Ci.	Cu.	5 35		☽ p.
31	NNE	143	14	WSW	4.3	Ci.	Cu.	7 15		d p.
Mean Total		124.6	14.2		5.4			6 55		
Departure from normal		3,862.5			-1.2			214 30	40.2	
		-1,415.1						+42 32	-162	

^a All the mean values given in this table are deduced from hourly observations.

^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pres- sure ^b (mean).	Air temperature at Mirador (on the top of the mountain).				Air temperature in the valley (near the city hall).				Rela- tive hu- midity (mean).	Vapor pres- sure (mean).	Radiation.		Evaporation.		
		Mean.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Maxi- mum.	Hour.	Mini- mum.			Hour.	Mini- mum on grass.	Maxi- mum in sun. Black bulb in va- cuo. ^c	Free exposure (to- tal).	Shel- ter (to- tal).
	mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	P.ct.	mm.	°C.	°C.	mm.	mm.	
1	637.28	17.4	22.5	1.55p.	14.4	4.50a.	21.7	1.35p.	14.9	4.50a.	91.5	13.5	13.2	43	2.2	1.2
2	37.32	18.8	23.8	1.00p.	15.2	2.40a.	23.5	1.30p.	14.2	2.20a.	82.2	13.3	12.5	47.8	2.7	1.6
3	37.90	17.9	23	9.50a.	15.6	1.55a.	23.6	9.30a.	15.2	4.20a.	91.2	13.8	13.4	35.7	.6	.9
4	37.73	18	22.4	3.00p.	15.1	5.15a.	22.5	9.00a.	14.5	5.00a.	92.5	14.2	11.7	43.7	.8	.9
5	38.11	18.1	25.2	11.55a.	15.5	5.55a.	24.7	0.15p.	15.3	5.05a.	92.2	14.2	14.2	49	1.6	.7
6	38.24	18.2	23.7	2.05p.	14.7	5.25a.	23.7	1.25p.	14.7	5.50a.	90.8	14	11.5	49.2	1.5	1.1
7	38.10	18.8	24	10.20a.	14.7	3.25a.	24.6	11.15a.	14	6.00a.	85.5	13.6	12	45.2	2.2	1.3
8	38.82	18.4	25.2	1.40p.	15	5.00a.	23.7	0.55p.	14.7	4.20a.	91.2	14.3	13.5	46.2	1.8	1.1
9	38.56	18.6	24.3	1.10p.	16	4.35a.	24.2	2.00p.	14	4.50a.	92	14.7	14.5	49	1.3	.7
10	38.22	17.4	22.8	1.40p.	15	5.55a.	23.6	1.40p.	14.7	6.00a.	92	13.6	14	42.1	1.1	1
11	37.52	17.4	23.4	1.00p.	14.2	6.05a.	23	0.15p.	13.5	5.30a.	94.2	13.9	12.2	48	1.1	.6
12	37.20	18	24.2	0.50p.	15	6.15a.	24.4	1.50p.	14.6	6.15a.	93	14.3	12.6	47.3	1.5	1.3
13	37.91	17.3	23	1.45p.	15	5.10a.	23.2	2.15p.	15	5.05a.	94.7	13.9	13.7	44.5	1.2	.6
14	38.40	17.8	23.7	11.40a.	14.8	5.50a.	23	11.00a.	14.8	6.00a.	90.5	13.7	14.7	47	1.2	1.2
15	38.16	17.3	22.2	10.10a.	14.4	5.00a.	23.7	10.55a.	13.7	6.00a.	90.7	13.4	13	43.5	1.2	1
16	38.20	17.7	23.3	1.50p.	14.4	4.05a.	23.7	11.55a.	13.5	5.50a.	89.2	13.4	12.4	49.7	2.7	1.6
17	38.96	18.5	24.6	10.40a.	14.3	4.35a.	24.6	11.30a.	13.4	6.15a.	80.2	12.6	12.3	52.2	3.5	1.8
18	38.82	18.3	24.9	0.35p.	14.5	5.55a.	25.2	0.50p.	14.7	6.15a.	80	12.5	11.5	46.8	4.8	2.3
19	38.61	18.8	24.9	0.45p.	16	0.40a.	25	10.50a.	15.7	6.00a.	78.3	12.6	14.5	49.6	2.8	1.6
20	38.59	18.9	24.8	10.40a.	15.8	-----	24.9	10.50a.	15.7	2.50a.	88.2	14.3	13.7	43.7	2.3	1.9
21	39.33	18.4	25.4	11.45a.	15.1	5.30a.	25.4	1.10p.	13.9	5.30a.	84.5	13.1	13.1	43	4.7	2.2
22	39.23	18.1	24.8	11.15a.	14.7	5.10a.	25.1	0.25p.	12.6	5.10a.	80.3	12.4	10.5	51.1	5.6	2.8
23	39.23	18.6	25.4	0.45p.	14.5	5.55a.	25	2.15p.	12	5.55a.	50.8	7.8	10.2	46.7	9.6	5.2
24	39.48	18	23.8	11.30a.	14.2	0.55a.	24.5	11.15a.	12.4	5.30a.	56.8	8.7	11.7	45.8	12.9	6.2
25	39.18	17.3	23.7	11.55a.	13.2	6.05a.	25.2	0.15p.	12.7	0.30a.	56.7	8.4	12.1	45.3	10.7	4.9
26	38.79	18.1	24.2	11.05a.	13.7	2.35a.	25.5	Noon.	13	5.00a.	72.2	11.5	11.7	43	3.5	1.7
27	38.40	18.4	24.2	9.45a.	15.7	4.45a.	25.5	0.30p.	14.7	5.35a.	84.2	13.2	13.7	49	2.6	1.4
28	39.10	19.1	24.2	11.20a.	15.3	5.15a.	25.1	2.20p.	14.2	11.05p.	85.3	13.8	14.5	49	5.3	2.7
29	38.85	18.9	27	11.50a.	14.4	12 m n.	26.5	1.00p.	13.2	5.35a.	72.3	11.2	12.3	48	6.2	3.1
30	38.52	17.2	25.1	10.40a.	13.5	3.50a.	24.5	11.25a.	11.5	6.20a.	75.8	10.9	10.2	48.2	4.8	2.5
31	39.14	17.8	24.1	1.55p.	13.2	4.30a.	24.5	1.00p.	13.5	6.00a.	78	11.8	12.1	45.5	7.6	5.3
Mean	638.45	18.1	24.1	-----	14.7	-----	24.3	-----	14	-----	83.1	12.8	12.7	46.4	3.6	2
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	111.6	62.1

Day.	Wind.				Amount (mean).	Clouds.		Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.
	Prevailing direction. ^d	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.		Form and direction.	Upper.			
		Km.	Km.		0-10.			h. m.	mm.	
1	W, NW	562.7	43	W	8.7	A.-Cu.	Cu. NW	9 30	-----	° a. ≡ 2 p.
2	W	373.4	26.8	W	5	Ci.	Cu. WSW	10 55	-----	-----
3	W quad.	248.3	20.3	W	6.3	Ci.	Cu. SE	7 25	9.9	● □ a. p. ≡ 2 p.
4	W quad.	275.5	22.3	W, SE	7.9	Ci.	Cu.-N.	8 55	8.9	□ a. ≡ 2 p. ≡ 2 p.
5	E, SE	313	23.5	W	6.6	Ci.	Cu. SSE, SE	9 20	1	● ≡ p.
6	W	275.3	22.5	NW	6.1	A.-Cu.	Cu. NNW, W	9 25	-----	d 2 ≡ 2 p.
7	W	211.9	19	W	4.9	Ci.	Cu. W, SW	9 25	-----	□ a. ≡ 2 p.
8	W	250.1	23	W	6.6	Ci.	Cu. ESE	8 40	2	□ a. ≡ a. p. ● □ a. p.
9	W	238.5	20.7	W	7.4	Ci.	Cu., Cu.-N.	8 15	6.3	□ a. ≡ 2 p. ● □ a. p.
10	W, SE	231.6	18.5	W	6.1	Ci.	Cu.-N. W	8 35	-----	□ a. d ≡ 2 p.
11	W	247.1	19.6	W	6.3	Ci.	Cu.	7 35	5	□ a. ≡ 2 a. p. ● □ a. p.
12	W	252.4	21.5	W	6.7	Ci.	Cu.	8 20	22.6	□ a. ≡ 2 a. p. ≡ 2 p.
13	W, E	245.2	19.8	W	8.1	Ci., A.-Cu.	Cu.-N. NW	8 00	-----	≡ 2 d p.
14	E, W	293.5	21.1	W	6.4	Ci., A.-Cu.	Cu.	9 05	3.8	□ a. ≡ 2 d p.
15	E, W	268.3	18.8	E	6.3	Ci.	Cu. WSW	8 35	8	□ a. ≡ 2 d p.
16	E	255.3	18.3	SW	4.4	Ci.	Cu. SE	9 10	-----	□ a. ≡ p.
17	E	336.4	21.7	SW	4.1	Ci.	Cu. SE	9 50	-----	□ a. ≡ 2 d p.
18	E	271.4	24.9	E	4.4	-----	S.-Cu. SE	10 10	-----	□ a. ≡ p.
19	W, E	279	21.2	E	8	A.-Cu. SE	Cu. SE	8 25	8	□ a. ≡ 2 p.
20	SE quad.	298.1	18.3	SE	7.4	A.-Cu. SE	S.-Cu. SE	7 25	3.3	□ a. ≡ 2 p. ≡ 2 p.
21	E	311.8	26	E	3.7	Ci.	Cu. NEbyE	10 10	-----	≡ p.
22	E, SE	258	26	E	5.4	A.-Cu. ENE	Cu. ENE	6 30	-----	□ a. ≡ □ a. p.
23	SE, E	268.7	23.3	E	.4	Ci.	Cu.	10 55	-----	-----
24	E	488.1	40.5	E	1.3	Ci.	Cu. SE	8 20	-----	□ a. p.
25	E	583	37	SE	.9	-----	Cu.	7 50	-----	□ a. p.
26	E quad.	274.2	26	E	6.1	Ci.	Cu. SE	4 50	-----	□ a. ≡ p.
27	SE	429.6	30	E	8.6	Ci.-S.	Cu. SE	1 45	3.3	□ a. ● □ a. p.
28	E	284.8	26	E	6.4	-----	Cu. SSW	4 25	-----	d a. ≡ a. p.
29	E, SE	308.9	23	E	2.9	-----	Cu. WSW	7 25	-----	≡ 2 p.
30	E, SE	314.2	22	W	6	Ci.	Cu.	5 30	-----	□ a. ≡ p.
31	E, SE	524	34.8	SE	2	Ci.	Cu. SE	8 25	-----	-----
Mean	-----	315.2	24.5	-----	5.5	-----	-----	8 10	-----	-----
Total	-----	9,772.3	-----	-----	-----	-----	-----	253 05	63.2	-----

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
^b The barometric readings of this station are not reduced to sea level.
^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, OCTOBER, 1914.

Station.	Day of month.																
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	
Jolo	mm. 13.5		mm. 0.8						mm. 0.5	mm. 0.5	mm.	mm.	mm.	mm.	mm. 0.8	mm. 6.6	
Isabela, Basilan				6.4	15.7										mm. 0.8		
Zamboanga						7.1											
Davao			8.1	16.2		24.6			21.1	2.5	6.4	10.7	47	23.6	53.3	8.4	2.5
Cotabato	8.1	0.8	31.7	2.8	6.6	3.3			8		(a)	13.7	1	2.8	5.6	1.8	
Cagayan, Misamis	6.1								2.5	14.2							
Butuan			.3			.8			1.8	1.5	1.3	.5					
Dumaguete		.8				7.7	4.7		3.3	.8						1.5	1.1
Tagbilaran		1.8	20.8				4.1	7.4	5.1	18.7		1				1.8	
Iwahig						7.6	4.9	2	33.8	2.5	53.8	3.6	3.8	.3			
Surigao		2.3	4.8		10.7	1.8	7.2	2.8	6.4	1.3	8.1						
Maasin					7.1		2.8	3									
Cebu	7.9						6.1	3.6	26.4								
Iloilo		.3				3			21.3	1.8							
San José, Buenavista			2.5		7.4		1.3		26.9								
Cuyo					20.8				1.3								
Ormoc		3.3	1.3		10.9	15.3	22.6	9.1	.5				1	4.1	10.4	13.2	
Guiuan		2.8		1	1.5		30	8.4				.3					
Tacloban						2.3	25.4	27.9	91.7	.3	42.7						
Capiz			38.1	1.8	.5	5	2	5	10.7	3.1	23.1	5.1	17.5	4.8	.3	.6	
Borongan			8	1.3	.3	18.3	9.1	5.6	5.8						.5	.5	
Calbayog	.8	2.8	9.7	2.5	2.3	1			32.5	.8	1.3		.3		1.5	.5	
Masbate												6.1			1	3.1	
Romblon			8.9		3.3		10.4	.5		1	7.6	4.1	.5	43.2		9.1	
Batag		3		3.3	13.7	1.8	3.6	10.7			14.2			2.5	1.3		
Legaspi					3.3	2.3	1.8					1.5			4.4	12.8	
Sumay, Guam		3.8	6.3	8.9	8.9		88.9	132.1	17.7	1.3				3.8			
Calapan			2.5	13.5	23.1	12.5					2.8			.8	21.9	.3	
Virac			1.8	3.6	24.9	7.4					5.9	.8	.8			6.9	
Nueva Caceres			.2	15.2	12.7						.5						
Batangas						10.7	6.8		16.5	6.1	4.3	7.4					
Atimonan			34.3	25.6		4.6	13.5					3.5	3.5	.8	5.1	5.6	
Ambulong, Tanauan			2.3	28.7													
Paracale		16.8	5.1		.5	20.1	8.8			3.3	10.7	2	1		4.1	21	
Santa Cruz, Laguna				14		.8	11.9			1.8					.3	.3	
Manila						.3	1.3			3.3		1.3			1.5	.3	
Antipolo					.8		2			1.8	27.7	4.6					
Iba			4.6	9.5					25.1				4				
San Isidro		5.1	.3	1.8				.5			3.6						
Tarlac		8.4	6.9						16		.5			.5			
Dagupan				93.2	.5				50.8	5.6		21.8	10.4		1		
Bolinao				3.8	16.3		11.4		3.6		.3	.5		2.3			
Baguio			9.9	8.9	1			2	6.3		.5	22.6		3.8	.8		
San Fernando, Union												8.4					
Echague		6.3	10.7	3.3							15						
Candon																	
Vigan	12																
Tuguegarao	43.9	34.7		3.3													
Laogag	12.5										4.6						
Aparri	41.5	87.9	8.9							17	1.1						

* No observation.

Daily rainfall at the stations of the Weather Bureau, October, 1914—Continued.

Station.	Day of month.															Total.	
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.		
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
Jolo	1.3	0.8	0.3			5.8			22.8	9.4	21.8	17.8	23.6	0.8	17.3		144.4
Isabela, Basilan			1.5						6.1		.8	25.4		1	13.7		72.2
Zamboanga	4.3	13.5						1.8	1.8				1.8	2.3	24.9		58.3
Davao	6.1			14		22.1					17			21.6	4.6		309.8
Cotabato	.5						2	4.6				5.1	14.7	6.8			112.7
Cagayan, Misamis								1	2.5		1	1					29.1
Butuan					1.5		3.8	19.3	3.6	2.5	1.3	.5			15	0.5	54.2
Dumaguete								4.6	26.4	5	3			1	12.2	19	92.1
Tagbilaran					5.7		15	2.8		23.4	(a)	(a)	(a)	(a)	(a)	(*)	106.6
Iwahig	.1	2.3	1.3	1	1.3		1	10.9	82.6	57.9	1.6	9.7	2.5			70.5	353.8
Surigao					5.8	.3	22.4	44.7	13.2	21.8	30.3	24.9	8.4		31.4	2.3	250.9
Maasin								14	21.6	10.2	11.2				17.3		105
Cebu	5.1						3.3	.5	1.8	11.9	4.1	3			5.6	2	73.7
Iloilo	10.4							3.6		2						7.9	50
San José, Buenavista					3			3									41.4
Cuyo				.5													22.6
Ormoc		6.6			13.5		14	8.6	15.2						2.8	3.3	155.7
Guiuan		7.1	1.8	37.6	.8	3.3	5.3	46.5	35	23.9		4.6			.5	5.1	350.2
Tacloban	3.6	20.3	.8	1.5	.8		5.7	5.3	41.2	.5			.8	3.3	7.1		211.7
Capiz	3	.8	12.2	2.8		5.8	1.1	6.6	17.1						1.8	.8	102.2
Borongan	3.6		1.3	3.8	2.5	10.7	4.1	53.3	7.9	.3			1.5	2.5	14.5	17.3	203.7
Calbayog	35.8	2.5		4.3	2.5	8.9	6.4	4.5							.5	2.3	97
Masbate	5.6						2.5	.5					5.8	1.8	.3	2	18.5
Romblon	2.3	1	2.3			42.4	9.9	37.8	1.5	1			2.3	1		9.4	199.5
Batag	4.1				1.3		18.3				1.8	12.7	8.9		1.3	45.2	147.7
Legaspi	1.8	2.3		5.6	8.4	31.4	12.4	2			.3	2.8	9.4	4.9	43.1		150.5
Sumay, Guam			2.5	10.2	1.3	1.3	2.5			12.7	5		48.2	2.5	24.1	1.3	383.3
Calapan	10.2	1			1	5.6	4.9	10.5					45.7	6.7	.5		163.5
Virac	.5	7.1		11.9	7.3	19.8	5.6	3.3	.3			10.2	15.3			24.6	158
Nueva Caceres	6.9		2		.9	2.3							.8				41.5
Batangas			3.3									5.6	2.5				63.7
Atimonan	10.2		32.2		25.4	2.5	13.5	4.3					9.2	7.6	3		204.4
Ambulong, Tanauan		2.5					2						3.3			8.9	47.7
Paracale	10.2	1.8	14.7	5.8	3.8	2	23.1	5.1	10	1.3			16.7	8.4	4.6	50.5	251.4
Santa Cruz, Laguna	1.8	3.6	.3		1.3	.6			.5			.1	5.1				42.4
Manila	3	18	1		1								8.9			3	40.2
Antipolo		1	1	1.5	1												41.4
Iba			.2	6.9													50.3
San Isidro			1			.8							.5				13.6
Tarlac			1	17													59.3
Dagupan				2.5								15.7					201.5
Bolinao		.8			.8							2					41.8
Baguio			.8	3.3								3.3					63.2
San Fernando, Union												14					22.4
Echagüe								1.3	8.6	3.6	5.6			1	3.8		60
Candon																	0.0
Vigan												6.1					18.1
Tuguegarao									7.1	5.4	4.8					2.3	101.5
Laoag																	17.1
Aparri										2.5	7.6	4.6				5.6	176.7

* No observation.

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, OCTOBER, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Butuan.		Dumaguete.	
	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	31.1	21.7	34	19.4	29.8	21.5	31.9	23.3	35.4	23.5	32.1	22	31.5	23.2	31.3	23
2	31.4	21.8	32.6	22.8	29.4	24	31.7	21.5	33.8	21.3	32.1	22.5	31.6	23.4	30.6	24.2
3	31.9	21.4	32.1	22.7	30.8	24	31.7	23	33.2	22.7	31.1	23.2	30.5	23.8	31.3	24.3
4	33.4	21.6	32	22.8	30.3	23.1	32.2	22.9	33.6	21	30.9	22.5	32	23.5	29.7	24.6
5	33.4	21.9	33.6	22.1	30.4	23	30.8	22	30.7	22.5	31.5	21.5	31.6	22.6	30.2	23.3
6	31.9	21.3	33.1	22.1	30.2	22.9	32.2	22.1	33.9	21.6	31.4	22	31	22.6	30	23.7
7	32.9	21.5	32.6	22.1	29.9	22.7	31.5	22.5	32.8	22.7	31.6	21.9	31	22.4	30.4	23.5
8	32.5	22.7	32.1	22.1	29.1	22.5	31.8	22.6	32.5	22.2	31.7	22.3	29.6	24.5	30.2	24.6
9	32	22.3	32.1	22.6	30.4	22.5	31.7	22.4	-----	-----	31.2	22.2	30.1	23.3	31	23.7
10	32.9	21.8	32.8	22.5	30.4	22.4	32.7	21.9	-----	-----	31.1	21.9	30	22.5	32.3	23.1
11	33.7	22.1	33.1	22.1	30.5	23	31.9	21.8	-----	-----	31.5	22.5	30.3	23.9	31.2	22.9
12	33.5	22.4	33.1	22.9	30.6	22.9	32.2	21.8	32.4	-----	31.6	22.5	29.9	22.8	32.5	24
13	31.4	22.4	33.1	22.6	30.5	22.9	32.2	22.5	34.3	-----	23.1	31.5	21.7	30.9	21.6	30.5
14	32.6	21.4	33.8	22.1	30.4	23	30.9	21.8	34.4	-----	32	22.5	30.5	22.6	31.1	24.4
15	32.6	22.1	33.8	21.6	30.3	23	32.2	21.5	34.8	-----	22.9	31.5	22.8	31.5	23.1	29.8
16	30.9	21.9	31.6	21.6	30.4	22.7	31.2	22.3	34.3	-----	31.5	22	32	23.3	29.5	24.1
17	31.8	21.3	32.6	21.5	29.8	22.5	32.2	22.3	36.3	-----	22.5	31.7	21.9	31.7	22.4	29.6
18	32.5	22.3	34.1	22.5	30.4	22.9	32.2	22	35.4	-----	23.6	31.7	21.5	32.1	23.4	29.9
19	33.5	22.4	31.1	22.3	31.1	22.7	31.7	21.5	35.9	-----	24.1	32.3	21.5	33	22.7	30.5
20	33	22.4	32.6	21.1	30.9	23.9	32.2	21.5	35.7	-----	24.6	32.8	24.8	33.2	24.4	30.6
21	31.6	21.4	32.2	22.6	30.9	23.2	30.7	22.4	36.4	-----	23.6	31.6	22.5	32	23.7	29.9
22	30.4	22.1	30.8	22.5	31.9	22.9	32.3	21.1	35.5	-----	22.3	32.3	21.4	31.6	22	30
23	32.4	20.9	32.2	22.6	30.7	23	31.2	21.5	35.8	-----	22.5	32.5	21.6	31.1	23.3	30.5
24	30.3	22	30.6	23.1	30	23.5	31.2	21.5	33.2	-----	23.4	32.1	23.3	28.1	23.1	30.2
25	29.8	22.9	31.6	24.1	30	23	31.2	22.5	32.1	-----	23.3	30.5	23.5	30.6	23.5	23.3
26	30.7	21.4	30.6	22.5	30.1	23	31.2	22	33.4	-----	23.1	30.3	23.1	28.6	23.4	23.8
27	31	20.9	34.1	22.1	30.9	23.5	31.2	21.9	35.5	-----	23	32.2	22.5	27.7	23.2	23.9
28	30	21.5	32.1	22.1	30.9	22.9	31.2	22.2	34.9	-----	22.5	31	22.1	26.3	23.8	23.2
29	30.9	21.3	31.6	21.7	30.6	23.5	29.2	22.1	33.4	-----	22.3	32.3	22.1	30.3	23.2	30.2
30	31.4	21.5	32.6	21.5	29.1	23	29.2	22.2	31.1	-----	22.8	31.7	22.1	29.1	23.6	31.2
31	33.5	21.8	33.1	22.6	31.5	23.9	31.2	21.5	34.5	-----	-----	31.4	21.7	29.6	21.1	29.6
Mean	32	21.8	32.5	22.2	30.4	23	31.5	22.1	34.1	22.8	31.6	22.3	30.6	23.1	30.4	23.8

Day.	Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San José, Buenavista.		Cuyo.	
	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.	Maxi-mum.	Mini-mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.8	23	33.1	21.7	31.7	-----	30.5	24.1	33.1	24.5	31.6	23	32.9	22.7	32.3	24.1
2	31.4	23.9	33.6	20.8	31.5	-----	30.5	23.4	32.4	24.8	32.6	23.8	32.7	23	31.4	23.3
3	32	22.7	34	20.7	31	-----	31.4	24.1	32.2	24.9	32.1	24.5	33.2	22.1	31.7	25.1
4	30.9	22.2	34.5	21.4	32.3	-----	29.9	22.8	32	25.5	32.7	24.3	33.3	22.4	32.6	26.1
5	30.6	21.6	33.3	21.4	33.2	-----	31	22.6	33.5	25	31.9	23.7	32.6	22.5	31.2	24
6	31	22.5	34.1	21.4	30	-----	31.5	22.8	31.4	24	31.4	23.4	32.1	21.6	31.6	23.6
7	31.4	22.6	33.1	21.4	30.8	-----	30.3	23.4	32.1	23.4	31.2	24	32.3	22	31.4	26.1
8	29.7	23.6	33.1	21.1	30.1	-----	30	23.6	32.5	24.9	31.2	23.9	32.6	22.6	30.7	26.7
9	30.4	22.7	31.1	22.8	28.3	-----	29.2	23.6	32	24	31.1	24.1	32.8	22.6	31.6	24.7
10	29.6	22	32.6	20.5	29.9	-----	24.5	30	23.2	31.9	23.7	30.9	22.9	33.3	30.8	24.8
11	30.5	22.7	33.1	22.1	31	-----	23.2	30.1	23.6	32	24.4	32	22.9	33.7	31.1	25.6
12	32.4	22.8	32	21.4	30.5	-----	23.4	31.5	23.7	31.7	23.6	31.1	22.5	33.2	31.2	26.4
13	30.9	22.8	32.7	21.7	31	-----	22.4	30.5	23	31.2	24.5	30.5	24	33.7	22.5	31.4
14	32.2	22.7	32.2	22.4	30.8	-----	23.3	32	24.2	31	24.6	30.6	23.8	33.3	21.6	30.8
15	31.1	22.5	32.6	22.2	31.4	-----	22.1	30.6	24.6	31.5	23.5	31.3	23	33.7	21.4	31.2
16	30.9	22.7	32.3	22.1	31.9	-----	23.1	30	23	32.5	25	30.9	24	33.5	21.5	30.9
17	31.4	21.5	32.6	22.1	32.7	-----	21.5	31.1	22.7	32	24.8	30.9	23.4	33.7	22	31.2
18	31.2	21.9	32.9	21.4	31.7	-----	23.3	30.5	23	31.4	24.5	30.6	22.8	33.2	22.1	30.7
19	32	21.8	32.8	22.8	32	-----	22.8	31.6	23.1	32.6	24.9	31.9	24	34.6	21.5	31.4
20	31.9	22.9	33	22.4	32.2	-----	23.1	33.1	24.4	30.8	24.8	31.2	24.3	34.2	23	31.5
21	31.5	22.8	33.1	21.8	32.1	-----	23.5	31	23.2	31.1	25.4	32.4	23.6	33.1	22	31.1
22	31.4	21.4	32.6	22.4	32.1	-----	22	31.5	22	31	24	31.4	24	33.9	20.5	31.4
23	31.9	22.6	33.2	21.5	31.5	-----	22.9	31.2	22.6	31.5	23.7	31.4	23.6	33.6	22	31.3
24	31.5	22.1	28	21.9	29.5	-----	22.7	29.5	23.4	31.1	24	30.8	23.9	33.2	21.6	30.7
25	29.5	23.6	25.5	22.4	28	-----	24.1	28	23.4	28.5	24	29.6	23.2	33.8	22.6	30.6
26	31.3	23.2	28.1	22.3	26.6	-----	23	27.5	23.4	30.5	23.3	29.5	23	33.4	23	31.1
27	-----	-----	29.3	21.4	25.2	-----	22.9	29	23.3	29	23.5	30.6	23.3	33.4	22.5	31.3
28	-----	-----	29	21.6	28.9	-----	22.5	30.6	22.8	31	23.9	31.4	23.1	33.7	20.5	33
29	-----	-----	31.3	22.6	30.5	-----	23	31	22.8	31	24.3	31.4	24.3	33.1	21.9	31.2
30	-----	-----	32.6	21.8	31.6	-----	22.1	29.2	23.5	31	23.8	31	23.3	34.1	21.5	30.9
31	-----	-----	27.8	21.1	31.2	-----	21.9	31	22.7	30.9	23.8	31	24.3	34.6	23.5	31.8
Mean	31.2	22.5	31.9	21.8	30.7	22.9	30.5	23.3	31.5	24.3	31.2	23.6	33.4	22.1	31.3	25.5

Maximum and minimum temperatures at the stations of the Weather Bureau, October, 1914—Contd.

Day.	Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.		Romblon.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.2	21.8	32.3	24.3	34.1	24	32.3	22.2	32.5	22.5	33.3	22.1	33.5	25.2	33.9	23.4
2	32.3	22.7	33	22.8	33.4	23.5	32.8	23	33.2	23.2	33.4	22	34.5	26	33.6	22.8
3	32.3	22.3	32.5	23.6	32.8	24.3	33.2	24.2	33.5	22.9	31.8	22.7	35.8	26.5	34.3	24.2
4	31.8	21.5	32.4	23.2	32.4	23	32.4	23.8	33	22	32.2	21.9	35.8		33.2	23.2
5	30.8	21.3	30.9	22.6	32.4	23.2	31.9	23.2	32.1	22.7	29.7	22.5	35.6	26.2	33.6	24.5
6	30.6	21.2	31.9	22.9	32.7	23	32	23.7	32.5	21.8	30.6	22.3	33.4	26.6	33.7	22.9
7	32.2	21.6	32.5	25.4	31.8	24.3	32.2	24.8	33	23	33.4	22.4	33.2	26	33.7	24.3
8	31.2	22.9	31.9	24.8	29.8	24	31.7	24.8	33.4	23.6	31.9	22.8	33.4	27.4	33.8	23.9
9	30.8	22.3	28.8	23.7	31	24	32.2	23.2	32.1	23.5	34.2	22.2	34.2	25.8	34	24.8
10	31.4	22	30.6	23.6	31.7	23.5	31.7	24.3	33.1	22.7	34.6	21.5	33.6	25.4	33.7	22.5
11	31.6	20.8	31.6	22.5	33	23.5	32.3	23.3	33.1	21.6	32.5	21.6	33.6	25.5	33	22.3
12	31.5	23.4	31.4	23.4	33	23	32.4	23.7	32.3	22.5	31.5	22.2	30	24.6	32.7	22.8
13	32.5	21.2	31.7	23.4	32.7	22.7	32.1	24.3	31.6	21.5	32.8	21.8	34.5	26.6	33.2	23.8
14	32.2	20.5	31.1	23.3	32.8	23.2	31.8	24	32.1	21.3	34.3	20.6	33.5	26.5	33.8	23.2
15	32.2	22.6	31.3	25	32.4	23.7	31.9	23.8	32.3	21.9	33.5	22	32.2	26.8	33	22.7
16	31.4	20.6	31.9	22.7	31.3	23.2	31.9	23.7	31.9	21.3	31.8	20.7	32.6	25.4	32.7	23.7
17	32.2	20.9	32.3	22.5	32.4	23	32.2	23.4	32.1	21.2	30.4	21.4	32.2	24.8	33.1	23.2
18	31.2	22.4	31.8	24.9	30.8	23.6	32.7	25.4	31.8	22.7	33.1	21.6	34.4		33.6	23.9
19	31.5	21.4	30.8	22.9	32.2	23.2	32.3	23.4	32.3	22.2	32.4	22.2	34.6	25	32	23.8
20	32	21.9	29.8	23.4	31.7	23.2	31.4	23.5	28.1	22.9	32.8	23.5	33	25.6	33.1	23.3
21	32	20.9	31.5	22.6	32.3	23	31.5	24.2	32.1	21.3	31.7	21.7	34	25.8	33.3	23.8
22	32.2	21	31.9	22.3	31.8	22.8	32.3	24.2	32.6	21.2	32.1	21.7	31.8	26.2	32.7	23.9
23	30.4	21.9	32.2	25.1	30.1	23.7	31.7	24.3	32.1	26.2	33.6	22.4	32	25.5	32.7	23
24	31.6	22.6	32.3	23.6	30.8	24	31.7	24.8	31	23.1	31.1	22.8	32.5	25.6	32.2	22.7
25	26	23.4	28.4	23.8	26.1	23.6	31.4	22.5	30.1	26.2	32.7	23.1	32.8	27.2	32.7	23.2
26	28.8	23.3	30.7	23.7	30.7	23.1	30.3	22.2	31	22.9	33.6	22	33.6	25.8	33.6	24.4
27	32	23.3	31.3	23.5	31.9	23.8	31.4	24.4	32.6	24.9	32.6	20.9	34.2	25.5	32.1	24.5
28	33.1	19.5	31.7	24	31.8	21.8	31.8	23	32.1	22.3	31.4	21.4	34.2	25.4	32.8	24.1
29	32.6	23.4	31	24.8	32.3	22.9	31.7	25.2	31.8	24.9	33.4	22	32.4	23.6	33.3	25
30	31.4	21.8	31.8	25.6	30.8	23.5	31.8	24.5	31.1	22.3	30.7	20.7	32.6	24.8	33	22.5
31	30.5	21.4	31.2	24.2	31.2	23.2	32	24.4	31.6	22.7	32.8	21.5	33.2	24.8	32.8	25.5
Mean	31.4	21.9	31.4	23.7	31.7	23.4	32	23.9	32.1	22.7	32.4	21.9	33.4	25.7	33.2	23.6

Day.	Batag.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.		Atimonan.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32	22.9	34.1	22.8	30.8		32.6	22.5	32.4	22.2	34.2	22.2	31.9	23.7	32.5	23
2	31.7	23.2	34.1	22.9	30.2		32.6	21.1	33.5	22.3	34.1	21.5	32.6	22.5	30.6	22.9
3	31.2	23.3	34	23.2	29.8		32	22	34	21.8	33.5	21.6	33.1	23.3	29.7	23.5
4	31.5	23.4	33.2	24.1	29	24.2	32.5	22.1	31.5	23	33.5	21.3	32.9	23.4	29.8	23
5	29.9	22.3	33	23.5	30	23.8	32	22	32.1	20.4	32.4	19.6	34.3	23.4	31	22.4
6	30	23	31.4	24.6	30	24.6	32.2	22.6	29.6	23.2	31	21.2	32.1	22	29.7	25
7	30.5	23	33.6	25.6	29.8	26.1	32	23	33.3	21.3	32.4	20.1	30.9	22	28.9	24
8	31	24	33.6	26.3	28	23.4	32.5	23.1	32.9	22.9	31.5	20.3	32.3	21.6	30	24.9
9	30.5	22.6	33.8	23.8	29.4		33	22.4	32	21	32.3	20	31.7	21.3	30.4	26.4
10	31	23.9	33.1	22.3	30.4	24.8	32	22.9	31.6	20.2	32.1	19.8	31.6	21.6	30.7	26
11	31.4	24	33.2	21.7	29.8	26.1	32.6	22.2	28.6	20.3	31.7	19.6	31.8	20.6	30.4	24.8
12	31	23	29.2	21.3	30	26.3	31.6	22.5	29.4	22.4	31.5	20.6	31.2	23.4	29.9	23.4
13	31	24	33.2	25.1	30	25.8	32.5	22.5	29.7	20	32	20.5	32	21.6	29.2	24.5
14	30.5	23	32.9	25.2	29.8	25	31.6	22.2	29.6	20.1	31.9	19.5	31.9	21.8	30	26
15	30.4	22.5	31.1	24.6	29.4	24.6?	31.4	22.6	30.2	20.5	31.8	19.8	31.8	21	29.5	23.3
16	31.5	22.5	32.8	23.5	29.4	25	31	22.3	31.6	21.5	32.4	19.4	32.7	20.6	27.2	22.1
17	29	23.3	31.2	23.9	29.8	25	32.5	23	32.9	21.9	32.6	20.8	32	22.6	29.5	24.1
18	31	23.4	32.9	24.7	30	25.6	32	22.4	31.9	22	32.7	20	32.8	22	30.1	26.2
19	31	23.2	33.6	23.7	31.2	24.4	31.2	23.1	32.3	23.1	32.4	22.1	31	23	28.9	25.1
20	31	23	33.1	25.9	28.8	23.6	32	23.6	31.8	20.5	32.5	20.3	32.5	23.7	30.1	25
21	31	23.7	33.6	23.9	30.2	24	31.8	22	32.7	21	33.5	19.6	34	22.3	30	22.1
22	30.9	22.9	28.4	24.1	31	24.8	31.4	23.2	28	22.5	31.7	20	33.3	22.3	30.5	23.8
23	30	24	31.2	23.5	30	24.4	31.7	22.7	32	22.5	32.5	21.8	33.4	20.1	30	25
24	30	23	31.6	23.7	29.2	22.8	31.4	22.5	31.9	22.6	33.6	21.1	32.5	21.1	30	23.3
25	30.9	24.9	32.4	24.7	29.6	24.4	31.6	23.5	29.5	23.5	34.1	20.3	32.5	21.9	30	23.7
26	31.2	24.1	32.6	25.7	30.2	24.1	32	24.5	32.4	20.9	31.5	18.3	32.8	22.1	30	25.5
27	31.3	24.3	32.9	24.6	28.6	23	32	22.2	32.5	22.4	32.1	17.4	33.4	20.8	30	21.5
28	29	22.6	31.1	25	28.8	23.9	31.6	22.5	31.7	22.2	31.8	20.4	33.2	23.6	30.4	24
29	29.9	22.6	31.4	24.5	30.2	22.6	32	22.6	32.6	23	32	18.8	32.3	22.8	28.5	24.4
30	28.9	22.6	29.6	24.6	28.8	23.3	31.7	22	31.8	22.6	32	17	33.2	20.4	30.3	25.2
31	29	23	32.4	24.8	31	23.9	32	22.6	32.6	20.8	33	18.4	32.9	22	30.6	25.8
Mean	30.6	23.3	32.4	24.1	29.8	24.4	32	22.6	31.6	21.8	32.5	20.1	32.5	22.1	29.9	24.2

Maximum and minimum temperatures at the stations of the Weather Bureau, October, 1914—Contd.

Day.	Ambulong, Tanauan.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.		Iba.		San Isidro.		Tarlac.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.....	33.5	23.2	32.8	23.7	31.6	23	32.2	23	31.2	22	31.1	21.7	31.2	22.9	32.5	22.5
2.....	34	22.4	32	24	32.1	22.2	31.8	22.7	32	21.5	31.2	21	32.4	22.6	33.3	22.5
3.....	32.8	24.2	30.8	23.4	32.7	23.2	33.4	24.1	32.9	22.5	32.4	23	32.7	23.9	34.2	23.3
4.....	32	23.4	32	23.6	29.1	23.4	31.7	23.4	31.3	21.7	32	22.8	30.6	23	33.2	22.8
5.....	31.8	22.9	31.5	23.2	32	23.2	32.1	23	31.8	20.8	32	22.1	33	22.5	34	23.8
6.....	31	23	30.2	23.9	31.8	22.5	31.2	21.4	30.8	19.8	31.8	21.8	32	21.8	33.5	21.5
7.....	30.5	23.6	30.6	23.7	30.1	22.2	31.6	21.6	30.5	20.6	32.3	21.7	32	21.6	35.5	21.5
8.....	31.8	23.1	31.7	24.7	31.5	21.9	31.8	21.5	31.1	20.8	32.3	21.8	33.4	21.4	34.6	22
9.....	31.5	22.5	32	23.5	31.4	21.5	30.8	22.3	30.5	20.8	32.6	22.2	33.2	23.6	34.5	23.4
10.....	31	22.5	31.7	22.4	31.1	21.9	32.7	22.2	32.2	20.1	32.7	22.7	32.4	22	33.5	22.3
11.....	32.1	23	30.2	23	31.4	20.8	31.8	21.1	31	20	31.3	20.5	32.1	21.6	33.1	21
12.....	31.4	24.1	30.6	22.8	31.2	22.5	31.7	23.7	30.3	20	31.6	23	32.8	23.6	33.5	23.4
13.....	31.6	21.2	30.8	24.5	31.6	21.1	31.9	23.1	30.5	22.4	32	23.3	31.8	22.6	33.3	22.2
14.....	31.9	22.5	30.6	24	31.1	22.7	31.2	21.8	30.4	22	31.7	23	32	23.2	33.2	23.5
15.....	31	21.5	30.2	23.2	31	21.6	31.2	21	31	20.2	32.1	21.9	32.4	22.4	34	22
16.....	29.8	21	31.4	22.4	29.1	21.2	31.5	22.2	31	20.5	32.4	21.4	32.9	21.8	33.5	22.5
17.....	29.8	22.6	30.2	23.4	29.6	21.7	30.4	22	29.7	20.3	32.5	20.7	32.5	22	34.5	21.4
18.....	32.1	23.1	30.3	25.6	30.5	21.9	31.2	21.4	31.2	19.8	33.7	21	32.5	21.1	33.5	20.6
19.....	30.5	23.5	30.3	24.4	29.8	23	30.4	22.8	30.1	21.5	32.5	22.7	31.9	23.4	32	22.8
20.....	32.5	23.5	30.6	24.7	31.7	23	31.9	22.7	32.1	21.7	32.7	22.5	33.1	23.2	33.8	22.5
21.....	32	22.7	30.8	23.8	31.3	22.9	31.2	21.7	31.6	20.3	33.5	21.4	31.5	21.4	32.8	21
22.....	32.1	23.5	30.2	25.5	31.3	21.4	30.6	20.9	31.4	20.2	32.6	20.6	31.1	20.5	32.2	21
23.....	32.3	22.5	30.8	24.6	31.4	21.4	33	20	32.5	19.2	32.7	21	32.5	20.5	33	20
24.....	32.3	22.4	30.6	23.3	31.6	21.4	33.3	21.3	31.8	19.3	33	21.1	33	21.5	33	21
25.....	29	22.5	30.2	24.1	29.7	22.7	31.4	20.7	30.3	20.1	32.8	20.9	33	20.5	33.6	20.9
26.....	31.9	23.5	30.3	24.7	31.6	23	32.8	20.4	32.6	20.6	32.7	18.8	32.5	20.3	33	20
27.....	32.5	21.5	30.4	23	31.8	21.7	32.4	20.5	31.6	20.3	32.3	19.2	30.5	21	33	20.5
28.....	33	23.7	29.6	23	31.1	23.1	32	22.9	31.6	21.6	32.5	21.7	32.9	23.3	33.6	22.5
29.....	31.2	22.1	30.4	24.6	30.9	21.2	32.6	21.2	31.9	21	34.5	20.2	33.1	20.4	33.4	20.2
30.....	31.7	21	29.8	25	31.3	21.5	32.7	20.5	32.4	19.6	33	18.3	31.2	20.4	34	20.4
31.....	32	23.5	30.6	23.8	31.3	21.9	32	20.3	32.5	19.6	32	18.5	33.2	20.2	34	20
Mean.....	31.7	22.7	30.8	23.9	31.1	22.1	31.8	21.9	31.3	20.7	32.4	21.4	32.3	21.9	33.4	21.8

Day.	Dagupan.		Bolinao.		Baguio.		San Fernando, Union.		Echague.		Candon.		Vigan.		Tuguegarao.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.....	31.9	23	32	22.5	22.5	14.4	33.2	22.6	30.6	22.9	29.5	23.8	29.3	22.5	32	22.5
2.....	31.7	23.5	31.9	22.9	23.8	15.2	32.1	22.5	29.5	22.8	30.2	24	32	22.2	25.2	22.7
3.....	34.8	24	32.3	23.3	23	15.6	32.6	23.4	31.4	23.3	30.5	24.4	32	23.3	30.4	23.2
4.....	34.3	23	32.1	24.5	22.4	15.1	32.3	23.3	30	22.9	30.6	25	31.2	22.8	33.1	22.4
5.....	34.8	24	32.2	23.5	25.2	15.5	32	23.5	32.8	21.4	31	24.7	31.2	24.4	35.1	22.7
6.....	34.4	23	32.6	23	23.7	14.7	32.2	23.2	33	20.1	31	24.7	31.5	24	34.6	22.4
7.....	34.4	23	33.1	23.5	24	14.7	32.9	22.4	32.6	19.9	31.5	24.5	31.7	23.3	35	21.4
8.....	34.3	23.6	33.5	24.1	25.2	15	33.2	23.4	33.8	21.4	31	25	31.5	23.8	34.5	22.4
9.....	35.2	22.6	33.6	23.4	24.3	16	33	23.7	33.7	23.3	32.3	24.8	32	24.1	33.5	21.9
10.....	34.3	23.6	32.5	24.1	22.8	15	33.1	23.4	32.1	20.4	31.5	25	32	24.3	33.1	21.3
11.....	32.5	23	32.6	22.7	23.4	14.2	32.1	22.8	30	22.6	31	24.6	32	24.1	33.3	21.9
12.....	34.2	23.8	32.5	23.9	24.2	15	33.1	23.9	28.1	20.9	31.5	24	32.5	22.7	31	20.5
13.....	33.5	23.5	32.1	23.8	23	15	32.5	23.8	30.7	21.7	31	24.6	32.8	24.3	31.6	20.7
14.....	33.2	23.5	32.7	23.9	23.7	14.8	32.9	23.4	30.9	21.2	31	23.5	33.5	22.9	32.5	19.8
15.....	34	23.1	32.6	23.1	22.2	14.4	32.2	22.8	29.9	22	31.6	24.1	33.2	23.2	30.5	21.8
16.....	34.4	22.6	32.5	24	23.3	14.4	32	22.7	30.3	20.3	30.5	24.2	33.7	23.7	31.2	20
17.....	33.3	22.5	32.8	22.1	24.6	14.3	32.4	22.4	30.4	20.6	30.9	24	32.5	23.5	34.2	19.6
18.....	35	22.5	32.5	23.2	24.9	14.5	32.7	22	30.3	21.2	31	23.5	32.8	23.2	33.5	21
19.....	32.3	24	31.5	23.5	24.9	16	32.6	22.6	31.3	21.3	31.4	24.5	32.2	23.1	34.5	20.5
20.....	34.8	23.6	33	24.1	24.8	15.8	32.5	22.5	31.2	22.8	32	25	32	24	35.1	23.5
21.....	34.2	22.5	33	24	25.4	15.1	32.2	23.1	33.3	20.4	31.5	25.5	31.8	24.4	36.6	23.2
22.....	34.4	22.5	33.2	21.9	24.8	14.7	32.7	22	31.8	21.3	32	24.5	31.6	24.3	34.4	21.5
23.....	34.3	22	33.5	23.4	25.4	14.5	32.7	22.4	32.1	19.7	31.5	23	32.8	23.3	36	20.2
24.....	34.2	21.9	33.6	22.8	23.8	14.2	33.1	20.8	30.5	20.3	31.5	22.5	32.9	22.5	35.5	21.4
25.....	33.2	21.4	33.5	22.8	23.7	13.2	32.2	20.7	30.5	18.5	31	22	33.5	22.7	30.6	21.3
26.....	34.7	22.2	33	22.9	24.2	13.7	32.1	21	29.3	18.7	31	24.5	32	23.7	29.5	22.5
27.....	33.5	22.8	33.5	23.6	24.2	15.7	33.3	22.8	27.9	22.2	31.5	25.5	32.5	24.5	29	21.7
28.....	34.2	23.5	32.9	24.1	24.2	15.3	32.6	22.7	31.5	22.2	31.5	24.5	31.3	23.3	32.4	20
29.....	34.7	21.4	32.9	23.6	27	14.4	33.1	22.9	31.7	18.8	31.5	23.1	33	23.2	34	19
30.....	34.2	20.6	33.1	22.5	25.1	13.5	31.9	21.3	30.3	18.8	30.5	23	31.6	22.8	32	18.9
31.....	34.4	22.1	32.7	22.8	24.1	13.2	32.1	21	30	21.2	30.7	23	33	23.3	33.5	20.4
Mean.....	34	22.8	32.8	23.3	24.1	14.7	32.6	22.6	31	21.1	31.1	24.2	32.2	23.4	32.8	21.4

Maximum and minimum temperatures at the stations of the Weather Bureau, October, 1914—Contd.

Day.	Laoag.		Aparri.		Day.	Laoag.		Aparri.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.		Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.		°C.	°C.	°C.	°C.
1.....	31	23	26.6	23	18.....	33.6	20.1	30.8	22
2.....	31.9	22	27.5	23.7	19.....	33.7	21.3	30.4	22
3.....	32.5	23.8	28.7	23.4	20.....	33.2	22.5	30.6	23
4.....	33.2	22.7	31.7	23.5	21.....	34.5	23	30.8	25
5.....	32.7	23.9	31.5	23.7	22.....	36.2	22.7	30.7	23.6
6.....	33.6	22.9	31.2	23.7	23.....	35	19.4	31.2	22
7.....	33	22.5	31.4	23	24.....	35.8	20.5	31	22.1
8.....	33.1	23.4	30.9	23.8	25.....	36	20.6	29.9	22.5
9.....	34.2	23.3	30.6	24.4	26.....	35.9	23	30.1	22.6
10.....	34.6	23	29.8	24	27.....	36.5	23.2	26.2	22.6
11.....	33.7	23.2	29.9	23.5	28.....	33.1	21.9	28.2	21.2
12.....	33.6	21.1	29.5	24.2	29.....	34.6	21.3	30.9	21.4
13.....	32.8	20.5	29.6	23.4	30.....	34.5	20.5	29.8	20.6
14.....	32.9	20.2	29.9	21.8	31.....	36.1	20.3	29.4	21.6
15.....	33	20.1	29.5	22.6					
16.....	33.4	21	30	22					
17.....	34.2	20.4	30.2	22	Mean.....	33.9	21.8	30	22.8

SEISMOLOGICAL BULLETIN FOR OCTOBER, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

6, 8^h 30^m 30^{s*} [6, 16^h 30^m 30^s]. Legaspi (SE Luzon). Subsultory and oscillatory earthquake, direction SE-NW, intensity IV, duration 6 seconds.

13, 15^h 50^m [13, 23^h 50^m]. Butuan (N Mindanao). Oscillatory earthquake, direction NE-SW, intensity IV, duration 5 seconds.

15, 1^h 09^m [15, 9^h 09^m]. Romblon Island. Oscillatory earthquake, direction N-S, intensity III, duration 2 seconds.

19, 4^h 15^m [19, 12^h 15^m]. Candon (NW Luzon). Earthquake of intensity III.

21, 22^h 03^m [22, 6^h 03^m]. Butuan (N Mindanao). Subsultory earthquake of intensity III.

23, 6^h 21^m 50^{s*} [23, 14^h 21^m 50^s]. Island of Mindanao. Earthquake of intensity IV-V, which was felt throughout the whole of the island, except in the district of Dapitan, which lies to the NW, and also perhaps in the northern part of the Province of Misamis. The place of origin and the epicenter of this earthquake was at some distance from the SE end of Mindanao: the records of the seismographs of the Observatory place it at less than 1,500 kilometers from Manila, while those of the Wiechert seismograph recently installed on the Island of Guam place it at 2,300 kilometers from that station; those at Taihoku in Formosa some 2,100 from the station: so that it is very probable that it originated in the district of the Talaut Islands or perhaps a little more to the NE in the southern part of the Great Deep of the Philippines.

All the reports received from Mindanao assign to the earthquake the same purely oscillatory character with large slow undulations. The report from the observer at Butuan is worth recording, for after noting the slowness of the undulations he adds: "I may say that this class of earthquakes, which are severe but with slow regular undulations are called here *Mabug-at* and are taken as foretelling rainy weather, whereas those earthquakes with rapid movements are called *Maga-an* and predict hot dry weather. Notwithstanding the large amplitude of the undulations, as may be seen from the curves of the seismometer (0.22 meter with a pendulum 1 meter long), people who were outside did not notice it unless they were standing still; it certainly lasted more than a minute and I calculated it as lasting one minute thirty seconds."

In other stations, although the seismometers recorded movements of large amplitude, few persons noticed the phenomenon.

Similar large slow oscillations was also the characteristic note of the great earthquake which occurred in the same region March 14, 1913. In spite of its great violence throughout the whole of the SE part of Mindanao, not much damage was done, owing in great part

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observers who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), insular time being added in brackets for the convenience of Philippine readers.

to the rhythmic slowness of its movements. In treating of the earthquake of 1913 we said: "The large duration of the earthquake is well worth consideration, in the whole Island of Mindanao, within the isoseism V; in none of the reports is this duration given as less than two minutes. The same is true of the character of the undulations which were large and slow, not sudden or violent, even in Davao and Sarangani, where the intensity was VIII-IX."¹ The same may be said proportionally, of the present earthquake: we suppose that this shock, like the one in 1913, was registered by all the seismographs of the world.

26, 12^h 58^m 40^s* [26, 20^h 58^m 40^s]. Eastern Mindanao. Earthquake of intensity III-IV. It originated very probably in the SW part of the Agusan valley and was perceptible throughout the whole of the Agusan valley and province and in the district of Cotabato.

27, 13^h 40^m [27, 21^h 40^m]. Butuan (N Mindanao). Oscillatory earthquake, direction SSW-NNE, intensity IV, duration 4 seconds.

28, 20^h 34^m [29, 4^h 34^m]. Ormoc (W Leyte). Oscillatory earthquake, direction W-E, intensity IV, duration 10 seconds.

31, 13^h 01^m 00^s* [31, 21^h 01^m 00^s]. Vigan (NW Luzon). Oscillatory earthquake, direction NW-SE, intensity III-IV, duration very short.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T₀=9.0, ε=3.31, $\frac{r}{T_0^2}$ =0.039; A_E: T₀=6.2, ε=2.58, $\frac{r}{T_0^2}$ =0.082. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _E μ	A _N μ	
250	3	Iv	eP	h. m. s.				
			F	3 16 07				
251	3	Iv	eP	7 14 08				
			L	14 39				
			M _E	14 53	3		11	
			F	19				
252	3	IIu	eP	17 42 02				
			S?	54 22				
			M _E	18 38 18	28		4	
			F	19 07				
253	3	IIu	eP	22 19 33				Turkey.
			S	29 53				
			L	41 16				
			M _N	59 00	18		3	
			M _E	59 58	20		11	
254	4	Iv	eP	9 29 09				
			L	32 18				
			M _E	32 23	5		18	
			M _N	33 15	6		13	
255	5	Iv	eP	7 24 54				
			L	25 11				
			F	28				
256	6	I	e	2 54 49				
			F	3 16				
257	6	Iv	eP	8 30 30				Legaspi (SE of Luzon).
			L	31 12				
			M _E	31 50	3		9	
			F	38				
258	6	I	e	19 27 42				
			F	33				
259	9	Ir	eP	2 47 52				
			eS	56 04				
			eL	3 05 18				
			M _N	08 00	12		6	
			F	56				

¹ Monthly Bulletin for March, 1913, page 78.

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _E μ	A _N μ	
260	11	Iv	eP L F	h. m. s. 16 22 36 23 48 40				
261	13	Iv	eP F	20 12 15 14				
262	14	Iv	eP L F	14 02 00 05 09 36				
263	16	Iv	eP L M _E F	13 37 39 37 52 38 08 41	1		15	
264	17	Iv	eP L M _N F	11 16 46 17 05 17 15 20	2		12	
265	18	Iv	eP F	14 29 23 31				
266	20	Iv	eP L F	15 52 26 53 16 16 01				
267	23	IIr	eP iS iL M _E F	6 21 50 24 38 28 00 36 20 8 12	9		308	Mindanao Island.
268	25	Iv	eP F	18 38 34 41				
269	25	Iv	eP F	18 46 45 49				
270	25	Iv	eP L F	20 15 23 16 13 21				
271	25	Iv	eP F	20 50 19 53				
272	26	Iv	eP L F	10 21 30 21 46 24				
273	26	Iv	eP L M _N F	12 58 40 13 00 24 02 27 21	6		2	E of Mindanao.
274	28	Ir	eP F	0 28 19 1 07				
275	31	Iv	eP F	13 01 00 04				Vigan (NW of Luzon).

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

6, 8^h 30^m 30^{s*} [6, 16^h 30^m 30^s]. Legaspi (SE de Luzón). Temblor de tierra subsultorio y oscilatorio, dirección SE-NW, intensidad IV, duración 6^s.

13, 15^h 50^m [13, 23^h 50^m]. Butuan (N de Mindanao). Temblor oscilatorio, dirección NE-SW, intensidad IV, duración 5^s.

15, 1^h 09^m [15, 9^h 09^m]. Isla de Romblón. Temblor oscilatorio, dirección N-S, intensidad III, duración 2^s.

19, 4^h 15^m [19, 12^h 15^m]. Candón (NW de Luzón). Temblor de tierra de intensidad III.

21, 22^h 03^m [22, 6^h 03^m]. Butuan (N de Mindanao). Temblor de tierra subsultorio, intensidad III.

23, 6^h 21^m 50^{s*} [23, 14^h 21^m 50^s]. Isla de Mindanao. Temblor de tierra de intensidad IV-V sentido en toda la extensión de la isla, excepto en el distrito de Dapitan, que cae al NW, y tal vez en la parte N de la Provincia de Misamis. El origen y epicentro de este terremoto se hallaba algo distante hacia el SE de Mindanao: los registros de los sismógrafos de nuestro Observatorio lo colocan a menos de 1,500 kilómetros de distancia de Manila, los del sismógrafo Wiechert recientemente montado en la isla de Guam a 2,300 de aquella estación; los de Taihoku en Formosa a 2,100: por consiguiente es muy probable que se originó en la región de las islas Talaut, o tal vez un poco más al NE en el extremo meridional del abismo de Filipinas. Todas las notas recibidas de la isla de Mindanao asignan a este terremoto el mismo carácter puramente oscilatorio, con ondulaciones amplias pero de muchísima lentitud. Es digna de copiarse en parte la del observador de Butuan, quien después de hacer notar lo lento de las ondulaciones añade: "He de decir que esta clase de temblores de tierra, fuertes y acompasados con movimientos perezosos o tardos, se llaman en la localidad *Mabug-at* y son presagio de tiempo lluvioso, por el contrario los temblores de movimientos rápidos aunque sean fuertes se llaman *Maga-an* y presagian tiempo caluroso y sequía. Apesar de la grande amplitud de los movimientos, como se ve en las curvas del sismómetro (0.22 metros con un péndulo de 1 metro de longitud), la gente que andaba fuera no lo notaba sino parándose: duró ciertamente más de un minuto y yo calculo que llegó a 1^m 30^s".

En otras estaciones, con haber registrado el sismómetro movimientos de mucha amplitud, muy pocas personas se dieron cuenta del fenómeno.

Semejante amplitud exagerada con lentitud de movimientos fué también la nota característica del gran terremoto originado en la misma región, el 14 de Marzo de 1913. A pesar de su gran violencia en toda la parte SE de Mindanao no causó ruinas, siendo esto atribuido a la lentitud rítmica de los movimientos. Al tratar de este terremoto de 1913 decíamos: "Son dignos de consideración en primer término la gran duración de este terremoto en toda la isla de Mindanao dentro de la isosisma V; ningún report le da menos de dos minutos. En segundo lugar el carácter amplio pero no súbito y violento de las ondulaciones, aun en Dávao y Sarangani donde pueden calificarse de intensidad VIII-IX."² Lo mismo puede decirse proporcionalmente del presente terremoto: suponemos que como aquél habrá sido también resgistrado por todos los sismógrafos del orbe.

26, 12^h 58^m 40^{s*} [26, 20^h 58^m 40^s]. E de Mindanao. Temblor de tierra de intensidad III-IV. Su origen se hallaba probablemente en la parte SW del valle del Agusan y fué perceptible en todo el valle y provincia de Agusan y en el distrito de Cotabato.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

² Monthly Bulletin for March, 1913.

27, 13^h 40^m [27, 21^h 40^m]. Butuan (N de Mindanao). Temblor oscilatorio, dirección SSW-NNE, intensidad III, duración 4^s.

28, 20^h 34^m [29, 4^h 34^m]. Ormoc (W de Leyte). Temblor oscilatorio, dirección W-E, intensidad IV, duración 10^s.

31, 13^h 01^m 00^s* [31, 21^h 01^m 00^s]. Vigan (NW de Luzón). Temblor oscilatorio, dirección NW-SE, intensidad III-IV, duración muy corta.

BULLETIN FOR NOVEMBER, 1914.

METEOROLOGICAL BULLETIN FOR NOVEMBER, 1914.

By Rev. JOSÉ CORONAS, S. J.

Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure for the month was greater than the November normal, but less than the mean of the corresponding month of last year. Thus in Manila it was 0.86 mm. above the normal, but 0.73 mm. less than the preceding November. The highest pressures were recorded on the 1st and the lowest on the 16th to 18th and the 26th.

The mean monthly temperature was greater than that of last year in all parts of the Islands, the difference in some stations being greater than one degree. In Manila it was 0.1° C. greater than the normal for the month, and 0.9° C. greater than the mean of November, 1913. The absolute temperatures in Manila were 33.7° C. on the 26th, and 19.7° C. on the 18th; and in Baguio: 26.4° C. and 13.9° C. at Mirador, and 26.7° C. and 12.6° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR NOVEMBER, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from Nov., 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Nov., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	759.12	-0.57	760.98	1	758.13	16	26.3	+0.7	32.6	14	21	13
Surigao	59.37	-.29	61.32	1	58.24	26	26.4	+.4	31.8	13,30	21.8	13
Cebu	59.33	-.44	61.07	1	57.94	26	27.8	+.7	32.5	21	22.8	11
Iloilo	59.07	-.61	60.82	1	58.02	17	27.3	+.8	32.1	21,24	22.4	5
Ormoc	59.63	-.35	61.46	1	58.58	16	26.3	+.5	33.3	8	20.4	8
Tacloban	59.79	-.21	61.74	1	58.66	16	26.6	+.5	33.6	23	22.5	18
Capiz	59.64	-.59	61.39	1	58.54	17	27.4	+.8	32.8	23	23.2	9
Calbayog	59.82	-.23	61.79	1	58.76	16	25.8	+.5	34.6	2	20.8	3
Legaspi	59.89	-.45	62.02	1	58.80	16	27.5	+1	33.1	3,24	22.4	17
Atimonan	60.03	-.92	62.29	1	58.88	17	27.4	+1.1	31.1	13	22.6	9
Ambulong, Tanauan	59.72	-.76	61.79	1	58.60	17	27.1	+1.2	34.8	24	21.6	19
Paracale	60.51	-.65	62.58	1	59.35	17	26.7	+.3	31	15,24	22.1	2
Manila	60.31	-.73	62.42	1	59.24	17	26	+.9	33.7	26	19.7	18
San Isidro	60.57	-.65	62.74	1	59.44	17	26.6	+1.4	34.1	5,26	19.5	19
Dagupan	59.50	-.80	61.52	1	58.39	18	27.4	+.6	35.5	23	20.6	19
Bolinao	59.97	-.60	61.94	1	58.97	17,18	27.6	+.5	34.5	8	21.4	1,30
Baguio ^a	637.84	-.40	639.44	1	636.92	17,18	18.3	+.6	26.4	26	13.9	5
Vigan	759.90	-.72	761.86	1	758.89	18	27.1	+.2	33.5	1	21.7	21,29
Tuguegarao	61.23	-1.28	63.76	1	59.46	18	25.9	+1.3	36.1	20	19	16
Aparri	61.22	-1.40	63.72	1	59.48	17	25.6	+.6	32.1	14	20.6	2,10

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—What was said concerning the rainfall of last month may be said of that of this month. The drought which began then continued during the whole of the month throughout the Archipelago. In the following table it will be seen that every single station without exception has a considerably less rainfall than the November normal.

After comparing the rainfall of this month in the different stations with the records for the past twelve years we find that in ten stations this year's fall is the minimum for the period and for the other stations that only on one or two occasions has the quantity of rain been less than during this November.

In Manila 41 mm. of rain fell, which is 86.1 mm. less than the November normal. During the last fifty years there has only been five times when the total rainfall in November was less than that of this year. In Baguio the rainfall was 29.4 mm. which is 56 mm. less than the normal.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF NOVEMBER, 1914.

Station.	Total.	Departure from November, 1913.	Departure from normal.	Rainy days.	Departure from November, 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from November, 1913.	Departure from normal.	Rainy days.	Departure from November, 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.		mm.	mm.			mm.	mm.	mm.		mm.	mm.	
Jolo	164.2	+ 53	- 14.8	18	+ 9	31.3	5	Sumay, Guam	114.4			14	- 5	22.9	13
Isabela, Basilan	68.6	- 50.1	- 91.5	11	+ 2	15.7	3	Calapan	201.9	+ 47.8		20	- 5	50.8	19
Zamboanga	39.7	+ 8	- 57.5	7	+ 1	21.1	21	Virac	173.6	- 262.7		24	0	56.1	28
Davao	48.9	- 158.2	- 110.5	10	- 2	14.2	8	Nueva Caceres	41.3	- 298.2	- 202.4	8	- 10	17.3	30
Cotabato	139.1	+ 68.6	- 82.3	16	+ 5	43.9	12	Batangas	8.4	- 39.9		5	- 9	2.3	27
Cagayan, Misamis	24.9			2		21.3	4	Atimonan	94.5	- 349.7	- 345.7	11	- 12	33.8	27
Dapitan	258.9		- 74.2	19		92	18	Ambulong, Tana-							
Butuan	74.7	- 83.4	- 193.8	14	- 2	26.4	25	uan	71.4	+ 46.7		5	- 6	52.1	27
Dumaguete	81.7	+ 17.1		6	- 7	34.8	26	Paracale	214.5	- 267.5		24	- 4	29.7	28
Tagbilaran	97.1	- 33.7	- 87.4	6	- 6	87.1	26	Santa Cruz, La-							
Iwahig	162.8			10		85.2	26	guna	123.5	+ 22.5		11	- 14	57.4	27
Surigao	289.8	+ 7	- 119.8	22	+ 2	73.2	25	Manila	41	+ 9.9	- 86.1	7	- 5	29.3	27
Maasin	103.6	- 31.6	- 195.9	7	+ 1	30.7	25	Antipolo	60.4	+ 38.9		6	- 3	47.5	27
Cebu	43.6	+ 15.3	- 104.8	7	0	11.7	26	Iba	6.4	+ 4		1	0	6.4	7
Iloilo	2.8	- 103	- 174.1	3	- 5	2.8	26	San Isidro	6.4	- 33.2	- 83	4	- 2	4.6	27
San Jose Buena-								Tarlac	1.8	- 8.1	- 73.7	2	- 1	1.5	7
vista	16.9	- 30.5	- 151.2	4	- 3	7.1	2	Baler	157.3	- 60.6	- 171.1	20	+ 6	23.1	12
Cuyo	42.1	+ 40.6	- 85.6	2	+ 1	41.1	26	Dagupan	5.8	+ 3	- 51.5	2	+ 1	3.8	3
Ormoc	89.1	- 67.8	- 120.4	16	- 5	24.8	26	Bolinao	21.6	+ 16.8	- 20	3	- 1	12.7	12
Guiuan	178			25		32.7	13	Baguio	29.4	- 31.3	- 56	2	- 4	26.9	2
Tacloban	137	- 110.6	- 139.2	21	- 4	17.6	4	San Fernando,							
Capiz	33.3	- 57.3	- 234	11	- 9	10.4	26	Union	5.1	+ 4.3	- 34.9	2	+ 1	3.8	7
Borongan	376.1	- 33.9	- 123.7	28	+ 2	56.6	24	Echagüe	61.2	- 30.4		8	- 6	37.6	7
Calbayog	156.5	- 50.8	- 101.5	23	- 4	35.5	3	Candon	1	- 18.3	- 47.8	1	- 2	1	14
Masbate	74.2	+ 15.5	- 114.5	10	- 3	17.8	26	Vigan	0	- 1.6	- 38.2	0	- 1	0	0
Romblon	72.9	- 26.4	- 201.4	17	- 2	14.7	4	Tuguegarao	82.1	+ 41.4	- 169.1	7	- 1	27.2	27
Batag	174	- 275.3		16	- 11	50.8	28	Laoag	9.4	- 13.3		1	- 1	9.4	13
Gubat	207	+ 13.1	- 183.4	20	+ 2	28.7	3	Aparri	186.7	+ 91.8	- 92.2	10	- 8	141.4	28
Legaspi	211	- 108.1	- 127.1	24	0	23.6	20								

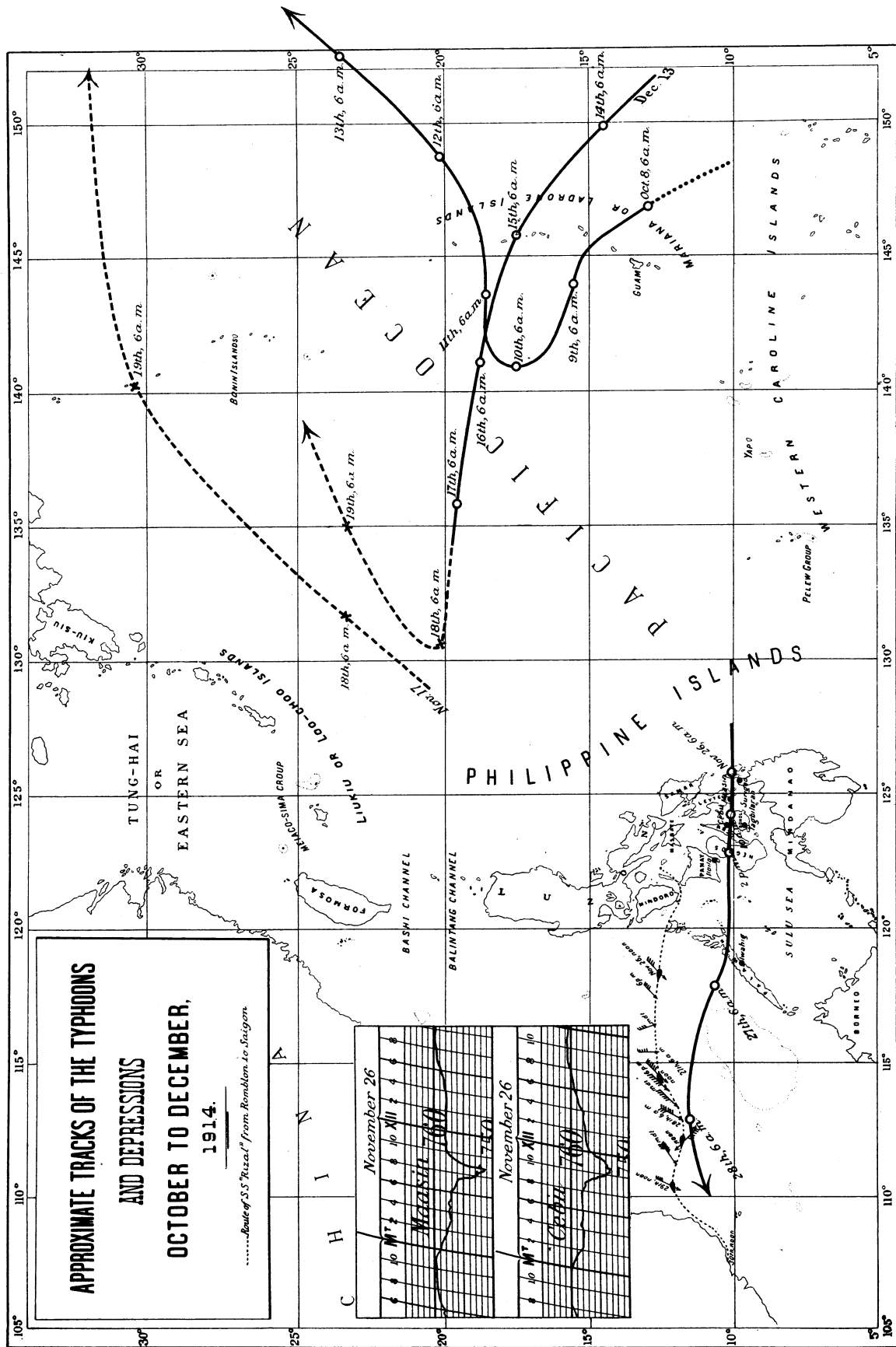
DEPRESSIONS AND TYPHOONS.

Prescinding from a depression of small importance, which as was mentioned in the weather note of the 19th, moved to the NE between the Loochoos and the Bonins on the 18th, there was only one typhoon in the whole of the Far East during the month.

This typhoon belonged to the type of those which allow of a prediction of only a few hours, on account of their small diameter and extreme velocity of translation. In Plate X we give the barographic curves of Maasin and Cebu, stations but a few miles to the N of the vortex. From them it will be seen how small the diameter of this typhoon really was; it passed by the N of Surigao at daybreak of the 26th, and by the S of Cebu a little before 11 a. m. of the same day, in a westerly direction.

From 6 a. m. of the 26th to 6 a. m. of the 27th, this typhoon moved with an approximate mean velocity of 19.3 miles per hour, and from 6 a. m. to 10 a. m. of the 26th the velocity of translation reached 23.5 miles per hour, which is very extraordinary for the Philippines. Once in the China Sea it moved much more slowly, for from 6 a. m. of the 27th to 6 a. m. of the 28th it went only 298 miles, or at the rate of 12.4 miles per hour.

Plate X



N. E.—The track of a typhoon for October 1 to 4 is missing in this plate.
 The 10 a. m. position of the typhoon for each of these days was as follows: October 1, 114° 30' long. E, 14° 15' lat. N; October 2, 111° 20' long. E, 15° 35' lat. N; October 3, 107° 50' long. E, 16° 25' lat. N; October 4, 104° 20' long. E, 17° 00' lat. N.

Below we give the barometric minima and the maximum force of the wind observed in several stations of the Philippines during the passage of the storm across the Visayan Islands and Palawan:

Station.	Barometric minimum.	Day and hour.	Difference in 24 hours.	Wind.	
				Maximum force.	Direction.
	<i>mm.</i>		<i>mm.</i>	<i>0-12</i>	
Surigao.....	755.0	26, 6.05 a. m.....	-3.8	5	WSW
Maasin.....	751.2	26, 8.40 a. m.....	-8.1	9	E
Cebu.....	753.2	26, 10.40 a. m.....	-6.2	10	NE
Tagbilaran.....	756.1	26, 11.20 a. m.....	-2.3	7	SW
Iloilo.....	755.5	26, 2.50 p. m.....	-2.4	6	N
Iwahig.....	755.7	27, 3.00 a. m.....	-3.0		

The steamship *Rizal*, which had left Romblon on the 25th for Saigon, was very near the vortex to the N of the track on the morning of the 28th. The barometer fell to 752.32 mm. at 7 a. m. of that day, and the winds veered from NE to E and SE. Below are given the observations made on board and furnished to us by Captain Mr. Wetherell.

METEOROLOGICAL OBSERVATIONS MADE ON BOARD THE STEAMER "RIZAL" NOVEMBER 26 TO 28, 1914.

Capt. W. de C. Wetherell.

Date and hour.	Position.		Pressure (reduced to sea level).	Wind.		Remarks.
	Latitude north.	Longitude east.		Direction.	Force.	
Nov. 26:			<i>mm.</i>		<i>0-12</i>	
Noon.....	12 34	118 21	759.94	NE	4	Moderate swell.
Nov. 27:						
6 a. m.....			59.18	N	5	
Noon.....	12 35	114 35	59.18	NE	6	Heavy seas.
2 p. m.....			58.68	NE	6	Do.
4 p. m.....			57.65	NE	6	Heavy seas; heavy rain squalls.
6 p. m.....			58.41	NE	6	
8 p. m.....			57.91	NE	6	Weather condition the same.
10 p. m.....			57.91	NE	6	
Midnight.....			57.40	NE	6	Heavy seas and rain squalls.
Nov. 28:						
2 a. m.....			55.37	NNE	7	Heavy northeasterly seas; lightning and rain.
3 a. m.....			54.86	NNE	7	
4 a. m.....			53.59	NNE	8	
5 a. m.....			53.08	NNE	9	
6 a. m.....			52.83	NNE	9	
7 a. m.....			52.32	NNE	9	
8 a. m.....			54.35	ENE	9	Heavy seas.
9 a. m.....			54.86	E	9	Do.
10 a. m.....			55.87	E	9	
11 a. m.....			57.91	ESE	9	
Noon.....	11 45	112 05	57.40	SE	9	Do.
2 p. m.....			56.64	ESE	9	
4 p. m.....			56.64	ESE	9	Heavy seas, rain squalls.
6 p. m.....			57.40	ESE	9	
8 p. m.....			58.92	NEbyE	8	Do.
10 p. m.....			60.19	NEbyE	9	
Midnight.....			59.68	NEbyE	9	Weather clearing up.

From the observations made along the coast of Indochina, it appears quite certain that the storm filled up before reaching the continent near 110° long. E and 11° lat. N.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes en Filipinas es mayor que la normal de Noviembre, pero menor que la media mensual de Noviembre, 1913. Así la de Manila se diferencia de la normal en +0.86 mm., pero es menor que la del año anterior en 0.73 mm. Las presiones más altas se observaron el día 1, y las más bajas del 16 al 18 ó el 26.

La temperatura media mensual supera en todas partes la del año anterior, siendo la diferencia en varias estaciones mayor de 1 °C. La de Manila difiere en +0.1 °C. de la normal de este mes, y en +0.9 °C. de la media de Noviembre, 1913. La máxima y mínima absolutas para Manila fueron 33.7 °C. y 19.7 °C., registradas los días 26 y 18 respectivamente. Las temperaturas extremas para Baguio fueron: 26.4 °C., 13.9 °C. en la cumbre de Mirador, y 26.7 °C., 12.6 °C. en el valle.

Precipitación acuosa.—Podríamos decir sobre la lluvia de este mes casi exactamente lo mismo que dijimos el mes de Octubre. La escasez de lluvia empezada entonces ha continuado durante todo el mes de Noviembre en todo el Archipiélago. Examínese la tabla que acompaña el texto inglés, y se verá que todas las estaciones sin excepción alguna nos dan un total de lluvia bastante menor que la normal de Noviembre. Después de haber comparado la cantidad de lluvia recogida este mes en nuestras estaciones con la recogida en igual mes durante los 12 últimos años, hemos hallado que para 10 estaciones la de este año es la mínima de todo el período, y en todas las demás sólo aparecen por término medio uno o dos años con una cantidad de lluvia menor que la de este año.

En Manila han caído este mes 41 mm. de agua, cantidad que se diferencia de la normal de Noviembre en —86.1 mm. En los últimos 50 años solamente ha habido 5 con una lluvia total de Noviembre menor que la presente. La lluvia mensual de Baguio fué 29.4 mm., menor que la normal en 56 mm.

DEPRESIONES Y TIFONES.

Prescindiendo de una depresión de poca importancia que, según se dijo en la nota del tiempo del día 19, se había movido al NE desde la mañana del 18 por entre las Islas Loochoos y Bonins, solamente hubo este mes un tifón en todo el Extremo Oriente. Véase su trayectoria en la lámina X juntamente con las de los tifones de Octubre y Diciembre.

Pertenece este tifón al tipo de los que apenas dan tiempo de ser anunciados con unas pocas horas de anticipación, así por ser de muy pequeño diámetro, como por llevar una extraordinaria velocidad de traslación. En la citada lámina X incluimos las curvas barográficas de Maasín y Cebú, estaciones que se hallaron a muy pocas millas al norte del vórtice. Por ellas se ve claramente de cuán pequeñas dimensiones era este tifón de Noviembre, el cual pasó por el N de Surigao la madrugada del 26, y por el S de Cebú poco antes de 11 a. m. del mismo día, moviéndose al W.

Desde 6 a. m. del 26 hasta 6 a. m. del 27 se movió este tifón con una velocidad media aproximada de 19.3 millas por hora, y aun de 6 a. m. a 10 a. m. del 26 llegó a ser esta velocidad de traslación de unas 23.5 millas por hora, la cual es en verdad muy extraordinaria para Filipinas. En el Mar de China se movió con una velocidad muchísimo menor, pues desde 6 a. m. del 27 hasta 6 a. m. del 28 solamente anduvo 298 millas, o sea a razón de 12.4 millas por hora.

Damos a continuación la mínima barométrica y máxima fuerza del viento observada en varias estaciones de Filipinas durante el paso de este tifón a través de las Islas Visayas y de la Isla Palawan.

Estación.	Mínima barométrica.	Día y hora.	Diferencia en 24 horas.	Viento.	
				Máxima fuerza.	Dirección.
	<i>mm.</i>		<i>mm.</i>	<i>0-12</i>	
Surigao.....	755.0	26, 6.05 a. m.....	-3.8	5	WSW
Maasin.....	751.2	26, 8.40 a. m.....	-8.1	9	E
Cebú.....	753.2	26, 10.40 a. m.....	-6.2	10	NE
Tagbilaran.....	756.1	26, 11.20 a. m.....	-2.3	7	SW
Iloilo.....	755.5	26, 2.50 p. m.....	-2.4	6	N
Iwahig.....	755.7	27, 3.00 a. m.....	-3.0		

El vapor *Rizal* que había salido el 25 de Romblón en viaje para Saigón se halló muy cerca del vórtice al N de la trayectoria, la mañana del 28. El barómetro bajó a 752.32 mm. a 7 a. m. de dicho día, y los vientos rolaron del NE al E y SE. En el texto inglés publicamos en una tabla las observaciones hechas a bordo de este vapor y que agradecemos a su Capitán Mr. Wetherell.

Según las observaciones hechas a lo largo de la costa de Indochina, parece cierto que este tifón se deshizo antes de llegar al Continente cerca de 110° long. E y 11° lat. N.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.^a

[$\phi=14^{\circ} 34' 41''$ N; $\lambda=120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, $-1/2$ mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean).	Vapor pressure (mean).	Radiation.			Evaporation. ^b		
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.	2.50 meters.	Minimum on grass.	Maximum in sun. Black bulb in vacuo.	Free exposure (total).	Shelter (total).
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.	8 a.m.				
1	762.42	26.2	32.5	22	28.2	29.3	29.1	29.3	28.4	78.6	19.5	19.6	55.9	3.5	2.8	
2	61.86	26.1	32.4	22	28.3	29.4	29.1	29.2	28.9	77.2	19.1	19.2	53.6	3.6	2.7	
3	60.57	25.7	32	20.7	28.1	29.2	29.1	29.2	28.8	76.4	18.6	18.9	50	3.7	2.7	
4	60.72	25.7	32.7	20.3	27.7	29.2	28.9	29.2	28.8	79	19.2	17.1	51.3	3.5	2.7	
5	60.72	26	31.5	21.1	28	29.4	28.9	29.2	28.8	80.3	19.8	18.6	49.2	3.5	2.6	
6	60	25.8	32.5	21.5	28.3	29.3	29.1	29.2	28.8	79.5	19.4	19.4	56.1	3.4	2.6	
7	59.92	26	31.9	21.2	27.8	29	28.9	29.1	28.7	81	20.1	19.2	50.7	2.4	2.1	
8	59.60	25.8	31.8	21.6	28	29.2	29	29	28.8	82.7	20.3	19.5	48.8	2.3	2	
9	60.01	26.2	33.2	20.7	27.8	29.1	28.9	29	28.8	77.7	19.4	18.4	53.6	3.7	2.7	
10	60.02	26.4	32.4	22.2	28.3	29.5	28.9	29.2	28.8	75.7	19.1	20.1	52.1	4.1	2.8	
11	59.66	26.7	33.1	22.4	28.2	29.7	29	29.2	28.8	70.3	17.9	20.2	57.5	5.4	4.2	
12	59.69	26.3	32.6	21.7	28.2	29.5	29	29.2	28.7	77.6	19.5	19	54.5	4.1	2.8	
13	59.82	26.1	32.7	22.6	28.3	29.4	29.1	29.2	28.7	77.5	19.2	20.7	53.8	4	3	
14	59.86	26.1	32.6	21	27.6	29.1	28.8	29	28.7	78	19.4	18.8	50.5	3.3	2.5	
15	59.73	26.5	32.3	22.3	28.1	29.2	28.8	29	28.7	76.9	19.6	20.2	55.5	3.5	2.8	
16	59.50	24.9	31.3	21	27.7	29.3	28.8	29.1	28.6	83.1	19.3	18.3	49.5	2	1.9	
17	59.24	25.5	31.9	21.5	27.6	29.2	28.8	28.9	28.7	81.5	19.5	19.4	51.1	3.2	2.2	
18	59.37	25.5	32.4	19.7	27.5	29.5	28.8	29	28.6	75	17.9	17.4	52.8	4.4	3.3	
19	60.09	25.9	32.7	20.1	27.5	29.3	28.7	28.8	28.1	74.2	18.2	17.5	52.4	4.4	3.2	
20	60.44	26.6	32.6	21.9	27.7	29.6	28.7	28.9	28.7	76.7	19.6	19.9	52	3.9	2.8	
21	60.57	26.5	32.5	22.8	28.1	29.3	28.9	28.9	28.7	78	19.9	20.8	49	3.1	2.4	
22	60.56	25.8	31.8	21.8	27.8	29.4	28.8	29.1	28.7	75.9	18.6	19.8	48.8	3.6	2.7	
23	60.47	25.9	32.9	20.7	27.4	28.3	28.8	28.9	28.6	76.3	18.6	18.5	53.7	4.1	3	
24	60.40	26.3	32.2	21.6	27.5	29.4	28.8	29	28.6	79	19.9	19.2	50.9	3.8	2.6	
25	60.30	26	33.3	20.8	27.5	29.3	28.8	28.9	28.6	75.5	18.5	18	51.5	4.2	3	
26	60.86	26.5	33.7	20.7	27.5	29.3	28.8	28.9	28.7	72.9	18.2	18.8	52	5.2	4.1	
27	61.17	25.6	32	22.2	28	29.1	28.8	28.9	28.7	88.4	21.4	21.5	53.9	1.5	1.1	
28	60.48	25.6	30.4	22.5	27.5	28.5	28.7	28.8	28.6	81.9	19.8	21	45	2.5	2	
29	60.35	25.4	30.7	20.6	27.8	28.1	28.4	28.6	28.5	79.4	19	19.7	50.6	2.9	2.3	
30	60.74	25.5	31.4	22.1	27.4	28.5	28.3	28.5	28.6	84.2	20.4	20.1	54.8	1.8	1.5	
Mean Total	760.31	26	32.3	21.5	27.8	29.2	28.8	29	28.7	78.4	19.3	19.3	52.1	3.5	2.6	
Departure from normal	+0.86	+0.1	+1.9	-0.6						-3.9	-1		104.6	79.1		

Day.	Wind.				Clouds.				Sun-shine.	Rain, 24 hours beginning mid-night.	Miscellaneous.	
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.	Amount (mean).	Form and direction.		Upper.				Lower.
						0-10.	Form and direction.					
1	E quad.	119	16.5	EbyN	5.9	A.-Cu.	E	Cu.	ENE	h. m.	mm.	
2	NE quad.	129	14	WbyN, SE	3	Ci.-S.		Cu.	EE	7 10		
3	ESE	125	15.5	W	2.7			Cu.	E	8 20		
4	NE quad.	119	11.5	W	1.3	Ci.		Cu.		9 55		
5	W quad.	146	16	WNW	3.8	Ci.		Cu.		10 25		
6	E quad.	117	14	W	4.4	A.-Cu.	EbyS	Cu.	EE	7 45		☁ ☁ ☁ d p.
7	NW quad.	113	15.5	WNW	4.9			Cu.	EE	9 30	1	☁ ☁ ☁ d p.
8	WSW, NE	91.5	12.5	WSW	4.2	Ci.-S.		Cu.	EE	8 20	5.7	☁ ☁ ☁ d p.
9	SW quad.	107	13	W	3.1	Ci., Ci.-Cu.		Cu.	EE	10 15		
10	WSW, ENE	133	14	WNW	3.3	Ci.		Cu.	EE	9 20		
11	NE	179	15	E	3.5			Cu.	EE	9 35		
12	E quad.	113.5	17	ENE	3.7	Ci.-S.		Cu.	EE	7 20		
13	ESE, WSW	120.5	16	WbyS	3.3	Ci.-S.		Cu.	SE, E	9 30		
14	N quad.	96	12.5	WSW	5.8	A.-Cu.	ESE	Cu.	E	6 15		
15	ENE, WNW	128	13	WNW	5.5	A.-Cu.		Cu.	E	6 35		d° p.
16	NE, NNE	88.5	8.5	WNW	5.9	Ci.-Cu., A.-Cu.		Cu.	E	5 40	1.8	d° a. ● p.
17	W, WSW	117	15	W	5.4			Cu.	E	7 45		
18	ESE, WSW	153	16.5	ESE	2.4			Cu.	E	9 55		
19	E quad.	181.5	15.5	W	2.3	Ci.		Cu.	E	9 50		
20	SE	139.5	15	WNW	2.5	Ci.-S.		Cu.	E	9 15		
21	E quad.	102	13.5	W	4.6	A.-Cu.	NE	Cu.	E	7 00		
22	E quad.	127	13	WbyN	4.2		SWbyW	Cu.	ENE	6 40		☁ p.
23	ESE	158	17	ESE	2.5	Ci.		Cu.	E	8 30		
24	NNE, WSW	136.5	15	W	2.3	Ci.-S.		Cu.	E	9 50		
25	W, E	142.5	15.5	W	2.7	Ci.		Cu.	E, NE	9 15		☁ p.
26	NNE	174.5	19.5	NNE	6.3	Ci.-S.	SE	Cu.	E	5 40		☁ p.
27	N quad.	158.5	23	N	9.4	Ci.-S.		Cu.	ESE	1 40	29.3	☁ ● p.
28	E quad.	123	22	E	8.3	Ci.		Cu.	E	4 20	3	d° a. ● p.
29	N quad.	84	8.5	NE	8.4	A.-Cu.		Cu., Cu.-N.	E	4 20		d° p.
30	E quad.	65.5	10	NE	8.4	A.-Cu., Ci.		Cu.-N.	E	4 00	1.6	● p.
Mean Total		126.2	14.8		4.5					7 46		
Departure from normal		3,787.5			-1.8					232 55	41	
		-997.6								+68 35	-86.1	

^a All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meters above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.^a

[$\phi=16^{\circ} 25' N$; $\lambda=120^{\circ} 36' E$; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pressure ^b (mean)	Air temperature at Mirador (on the top of the mountain).					Air temperature in the valley (near the city hall).					Relative humid- ity (mean).	Vapor pres- sure (mean).	Radiation.		Evaporation.	
		Mean.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Maxi- mum.	Hour.	Mini- mum.	Hour.	Mini- mum on grass.			Maxi- mum in sun. Black bulb in vac- uo. ^c	Free ex- posure (total)	Shel- ter (total)	
		mm.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	Per ct.			mm.	°C.	°C.	mm.
1	639.44	18.2	25.2	2.40p.	14.5	6.00a.	25	11.50a.	14.2	6.00a.	80.2	12.2	13	44.5	4.8	2.3	
2	39.23	17.8	24.8	11.15a.	15	5.25a.	25.7	11.40a.	14.3	4.30a.	81	12.1	13.7	44.5	3.4	1.7	
3	37.92	18	24	10.55a.	14.2	5.50a.	24.5	11.25a.	13.1	6.00a.	81	12.4	11.7	50.6	3	1.5	
4	38.14	17.6	23.8	1.25p.	14.5	2.20a.	24.5	10.35a.	13.1	6.05a.	84.8	12.6	12.7	47.1	2.7	1.7	
5	38.16	18.2	24.1	1.55p.	13.9	6.00a.	24.5	10.15a.	12.7	5.05a.	82.3	12.6	11.4	45.2	2.5	1.8	
6	37.62	17.9	24.3	1.20p.	14.5	6.00a.	24.5	10.15a.	12.7	5.40a.	83.7	12.6	12.8	46	3.4	1.7	
7	37.56	18.2	25.2	11.00a.	15.1	5.20a.	25.5	11.10a.	13.7	5.55a.	80	12.3	13.3	46.1	3.9	2.4	
8	37.31	17.8	25.1	1.10p.	14.2	6.00a.	25.6	0.40p.	13.5	5.55a.	80	12.1	12.2	45.6	8.5	4.7	
9	37.90	18.6	24.8	9.50a.	15	5.00a.	25.5	10.15a.	13.2	5.55a.	76.7	12.2	12.2	46.3	4.1	2.7	
10	37.60	18.8	24.8	0.45p.	15.3	9.50p.	25.3	10.10a.	14.2	5.30a.	80.3	12.9	11.8	50	3.1	1.6	
11	37.15	18	24	10.15a.	14.3	4.30a.	24.4	10.20a.	13.6	4.35a.	81.3	12.4	12.4	38.9	4.2	2.6	
12	37.21	18.4	25.8	11.55a.	15	10.50p.	26	0.20p.	13.6	4.00a.	78.8	12.2	10.5	46.4	5.6	2.3	
13	37.34	18.1	25.1	1.00p.	14.8	6.00a.	25.4	1.40p.	14.6	1.20a.	82.5	12.7	13.4	45.8	5.2	2.8	
14	37.58	18.8	25.7	9.55a.	15.2	3.30a.	25.5	11.00a.	13.5	4.00a.	77.3	12.2	13.5	50.3	3.5	2.3	
15	37.33	17.9	23.9	11.00a.	15.3	5.50a.	24.1	11.00a.	14.5	6.40a.	88	13.4	13.4	40.6	1.9	1.1	
16	36.97	17.9	24.4	11.40a.	14	5.55a.	25.4	Noon	12.6	6.15a.	83.5	12.4	12.4	45.4	4.9	2	
17	36.92	18	24	0.05p.	14	3.30a.	24	0.05p.	13.7	4.00a.	85.2	13	12.7	43	2.3	1.1	
18	36.92	18	24	0.40p.	14.7	6.20a.	24.5	2.15p.	13	6.10a.	89.8	13.7	12	51.7	3.2	1.6	
19	37.69	18.6	24.4	10.25a.	14.7	4.00a.	25	11.20a.	13.1	6.20a.	75.7	11.8	11.3	50.2	4	2.1	
20	38.14	17.5	24.2	0.15p.	15.4	2.55a.	25.2	0.45p.	13.5	6.45a.	85.3	12.7	13	47.5	2.8	1.4	
21	38.16	18.5	24.4	0.20p.	14.1	5.55a.	24.9	0.35p.	13.2	6.00a.	82	12.8	11.3	47.8	3.7	2	
22	38.01	17.9	24.4	11.00a.	14.2	5.50a.	25.9	11.35a.	13.2	6.30a.	86.5	13	12.5	46	2.9	1.4	
23	37.93	18.1	24.3	10.30a.	15	3.55a.	24.6	10.35a.	14.7	6.20a.	87	13.3	14.4	44.6	2.5	1.3	
24	38.15	18.1	23.9	1.20p.	14.5	3.35a.	24.6	11.50a.	13.4	3.20a.	88.5	13.6	13.1	44.7	2.2	1.1	
25	37.91	18.7	24.6	11.40a.	14.8	5.00a.	26.1	10.45a.	14.2	6.10a.	88	14	13.7	46.3	3.4	2	
26	38.59	19.5	25.4	2.15p.	16.2	5.00a.	26.7	2.45p.	13.2	6.30a.	63.5	10.1	12.5	45.7	11.1	4.9	
27	38.74	19.9	25.4	1.15p.	16.2	17m. n.	26.5	1.10p.	15.9	5.30a.	69.5	12.1	14.5	46	7.2	3.4	
28	37.86	18	23.2	2.20p.	14.9	11.40p.	24.6	1.25p.	14.7	12m. n.	74	11.2	15	45.4	7.4	3.1	
29	37.65	18	25.1	1.50p.	14.4	2.55a.	25	3.15p.	13.4	6.50a.	78.8	12	12.7	45.6	7	3.4	
30	38.12	18.9	25.1	...	15	6.15a.	25.9	10.40a.	14.7	1.50a.	77.5	12.5	13.1	46.5	4.8	1.9	
Mean	637.84	18.3	24.6		14.7		25.2		13.7		81.1	12.5	12.7	46.1	4.3	2.2	
Total															129.2	65.9	

Day.	Wind.				Clouds.		Sun- shine.	Rain, 24 hours begin- ning 6 a. m.	Miscellaneous.
	Prevailing direction. ^d	Total move- ment.	Maxi- mum hour- ly veloc- ity.	Direction at the time of the maximum velocity.	Form and direction.				
					Upper.	Lower.			
1		Km.	Km.		0-10.		h. m.	mm.	
2	SE	403.2	35.2	E	4.7	Ci.	5 45		☉ p.
3	E	422.3	25.5	E	5.6	A.-Cu.	4 25	26.9	☉ d ² ☉ ☉ ☉ p.
4	SE quad.	230.6	19.8	W	4.3	Ci.	6 15		☉ d ² ☉ p.
5	E, W	270.3 ²	21.1	W	3	Ci.	7 15		☉ a.
6	W, E	275.3	21.9	W	1.7	Ci.	7 55		☉ a. ☉ ☉ ☉ p.
7	E	300.3	20.4	SW	3.9	Ci.	6 45		☉ a. ☉ ☉ ☉ p.
8	E	402.4	31.2	E	5.1	Ci.	5 55	2.5	☉ a. ☉ ☉ ☉ p.
9	E	497.2	39.9	E	1.6	Ci.	7 20		☉ a. ☉ ☉ ☉ p.
10	E, W	343.7	20.9	W	3.6	Ci.	6 30		☉ ☉ ☉ p.
11	E, W	258.4	19.9	SW	3.6	Ci.-Cu.	5 25		☉ a. ☉ ☉ p.
12	E quad.	275.4	19	SE	3	Ci.	5 20		☉ a. ☉ ☉ p.
13	E, SE	288.4	19.9	SE	2.7	Ci.	7 35		☉ p.
14	E	398.8	30	E	4.6	A.-Cu. WSW	6 35		☉ p.
15	E, W	291.8	21.5	SE	6.7	A.-Cu.	3 45		☉ a. d ² ☉ p.
16	E	259.7	18.2	E	6	Ci., Ci.-S.	3 25		☉ d ² ☉ p.
17	SE	309.4	19.1	SW	3.1	Ci.	6 15		☉ d ² ☉ a.
18	W	299.5	23.6	SE	5.3	Ci.-N. WSW	4 20		☉ a. d ² ☉ p.
19	SE, W	265.7	21.1	W	6.3	Ci.	6 05		☉ d ² a. ☉ a. p.
20	E	294.8 ²	21.5	W	3.9	Ci.	7 05		☉ p.
21	E, W	260.2	20.9	W	3.7	A.-Cu., Ci.	5 45		☉ d ² ☉ a.
22	E, W	270.5	22	W	3.4	Ci.	7 55		☉ p.
23	E quad.	287.6	20.3	E	4.1	Ci.	4 05		☉ ☉ a. ☉ d ² ☉ p.
24	SE, E	317.9	25.2	SE	4	Ci.	4 55		☉ d ² ☉ a. p.
25	E, SE	264.7	23	W	3.3	Ci.	6 40		☉ d ² ☉ a. ☉ p.
26	N, W	351.7	23.6	E	5.6	Ci.	5 50		☉ d ² ☉ a. ☉ p.
27	E	372.1	36.5	E	4.6	Ci.-S. SSW	7 15		☉ a. ☉ a. p. ☉ ☉ p.
28	E	412.2	28.5	E	6.6	Ci.-S. EbyS	4 15		☉ a. ☉ p.
29	E	419	33	E	6.4	Ci.-S.	4 50		☉ a. p. d p.
30	E, SE	315.5	23.5	SE	3.4	Ci.-S.	6 50		☉ p.
	SE	354.8	27.1	SE	3.9	Ci.	5 20		☉ d ² p.
Mean		323.8	24.4		4.3		5 55		
Total		9,713.4					177 35	29.4	

^a All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.

^b The barometric readings of this station are not reduced to sea level.

^c Maximum of hourly observations taken from 6 a. m. to 6 p. m.

^d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, NOVEMBER, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Jolo	7.7			19	31.3	0.3	1	2.8	5.3		4.6	4.6				7.1
Isabela, Basilan			9.1	15.7							1.3	7.9	10.7	8.9	14.7	
Zamboanga			4.6	2.5							2.5	10.9				
Davao								14.2	3.6		2.5			4.8	5.8	
Cotabato	.3		17.8					.5			19	43.9	.5	4.8	5.3	
Cagayan, Misamis				21.3												
Dapitan	5.1		1.3	.5	8.1	1.8	1.5							1.8	.5	1.8
Butuan	1.5	8.6		.5		2.8	.5			.8				1.8		
Dumaguete			28.4	3.9	3.9							7.1				
Tagbilaran	4.9															
Iwahig	9.4	.8		19.7	9.9											
Surigao	2	17.2	6.9	7.6	2.3		15.5		.5	7.1	15.2		2.5	12.7	.5	3.6
Maasin			14													
Cebu				11.4						7.1						3
Iloilo																
San Jose Buenavista		7.1		6.9	.3											
Cuyo					1											
Ormoc	2.5	2.3	3	22.6	3				.3	5.1			5			
Guiuan	7.1	4.9	25.7	6.6	3.3				8.9	3.3	.6	30	32.7	2.5	2	1.3
Tacloban	4.6	5.3	15.5	17.6							2.5	.1	8.8	11		1.3
Capiz			4.1	5.9	3						.3					
Borongan	10.7	1.6	27.2	5.1	6.6			15.5	11.9	6.6	2.3	13.5	16	3.8	2.3	4.8
Calbayog	1.5		35.5	11	1.8			2	1.5	14.4		1	4.8	3	12.5	1.8
Masbate											2.3				7.4	3.8
Romblon			5.6	4.7	2.5	3.3			.8		5.1		9.9	2.5		
Batag			5.3	21.1			10.2	8.1	2.5			5.6			1.3	8.2
Gubat	2	4.1	28.7	14.7			14.5	6.6	2				12.7		7.4	10.4
Legaspi	16.1		7.4	6.4				7.4	2.1	9.4		8.8	3.5		6.3	11.7
Sumay, Guam	11.5	1.3	17.8					8.9					22.9		2.5	
Calapan	1.5	1.3	2.3		18.3	.5	36.3	2.8	4.8			.5	2			15.5
Virac	12		2.5	1.3	.3			1.3	2.1	4.6	2	9.2	1.3	3	14.5	8.2
Nueva Caceres	1.8				6.4								8.9			
Batangas								2								
A timonan					25.4	2	3	9.4	2.5	3					8.4	
Ambulong, Tanauan										8.9					2.3	
Paracale	14.7	.8	3.3	2.3	.5	1	5.8	20.3		11.7	8.4	17.3	1.5		1.8	3.8
Santa Cruz, Laguna	19.3									7.6	.3	2.1	6.6	.8		3.3
Manila					1			5.7								1.8
Antipolo								5.3				1				.5
Iba								6.4								
San Isidro								6.8				.5				
Tarlac								1.5								
Baler	22.6		1.5					3								
Dagupan			3.8						6.6	3	2.3	23.1	6.8	21.1		13.2
Bolinao														2		
Baguio		26.9						2.5				12.7				
San Fernando, Union								3.8							1.3	
Echague								37.6			5.3	3				
Candon																
Vigan														1		
Tuguegarao								8.4		24.6						
Laoag													9.4			
Aparri							7.6		1.5	2.3						

Daily rainfall at the stations of the Weather Bureau, November, 1914—Continued.

Station.	Day of month.														Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	
Jolo	2.5		24.4		29.7										164.2
Isabela, Basilan				1	6.1		1					3	8.9	5.3	68.6
Zamboanga				.8	21.1		2.8								39.7
Davao								4.6			3.8		2.5		48.9
Cotabato	10.9	3.8		.3	8.9	14.7		.5		1.3				6.6	139.1
Cagayan, Misamis		3.6													24.9
Dapitan	21.1	92		77	2		4.1	6.7	.5	27.4	1.8	2.6	.8	.5	258.9
Butuan	15	.3	1.1		13		.6		26.4	1.5					74.7
Dumaguete										34.8		3.6			81.7
Tagbilaran		.3					1	2.3		87.1				1.5	97.1
Iwahig	4.4		9			2				85.2	21.7	.7			162.8
Surigao	37.1	1	22.3	.3	12.9		9.4	8.4	73.2	27.2			4.4		289.8
Maasin							5.3	16.8	30.7	23.1			4.6	9.1	103.6
Cebu								3.8	5.1	11.7		1.5			43.6
Iloilo										2.8					2.8
San Jose Buenavista										2.6					16.9
Cuyo										41.1					42.1
Ormoc	1.3		2.5	.3		1.8		12.7	8.6	24.8				.5	89.1
Guiuan	8.9	1.8	3		1.3		2.5	10.4	8.4	4.1	3.8	1.8	1.8	1.3	178
Tacloban	9.2		12.2		1.5	4.5	1.5	4.3	14	7.5	3.7	7.5	5.7		137
Capiz		.3	7.4			.3			.5	10.4	1.1				33.3
Borongan	14.8	11.2	27.9	4.4	3.8	5.9	2.8	56.6	20.3	37.5	7.1	28.7	7.7	19.5	376.1
Calbayog	.8	1.5	18.3	1.8	10.7			3.5	16.8	4.5	4.5		1.8	.5	156.5
Masbate								6.4		17.8	2.3	15.2	14.7	1.5	74.2
Romblon			.8	1.5	1.5	1.3				3	13.2	1.3	.5		72.9
Batag							1.3	8.1	15.5		21.8	50.8	2.5	9.9	174
Gubat		3	5.8	16.3	3.8	4.8		10.7	19.6		1.3	22.9	2.3	13.4	207
Legaspi	7.9	2	11.3	23.6		13.3	.3	3.3		1	21.1	17.3	10.1	20.7	211
Sumay, Guam	3.8				2.5		20.3	2.6		.5	3	2.5	10.2	5.1	114.4
Calapan	.8	.3	50.8	.5						1	13.7	3.3	8.1	36.8	201.9
Virac			.5	1.3	.8	4.6				2.8	13.9	56.1	8.6	25.4	173.6
Nueva Caceres			3.3							.5	1.4	1.7		17.3	41.3
Batangas					1.8						2.3		.5	1.8	8.4
Atimonan										3.3	33.8	6.6	2	.5	94.5
Ambulong, Tanauan										6.6	52.1		1.5		71.4
Paracale	9.4		8.2	.5	2.1	2.5	.8	2.3	1.8	11.7	26.2	29.7	10.4	15.7	214.5
Santa Cruz, Laguna										16.8	57.4	.8	4.1	4.4	123.5
Manila											29.3		3		41
Antipolo					4.6						47.5				60.4
Iba				.5								4.6			6.4
San Isidro															6.4
Tarlac															1.8
Baler															1.8
Dagupan	.3	4.6	3.8		4.6	1		7.6		7.1	5.3	11	7.4	4.1	157.3
Bolinao						2.5									5.8
Baguio												6.4			21.6
San Fernando, Union															29.4
Echague							.5				2.5	10.7	2.8		5.1
Candon														1.5	61.2
Vigan															1
Tuguegarao						13.7						27.2	8.2		82.1
Laoag															9.4
Aparri				5.4	9.1	1.8				.3	17.3	141.4			186.7

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, NOVEMBER, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Dapitan.		Butuan.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.6	21.7	31.6	22.6	29.9	22.8	31.7	21.9	34.6	21.3	31.7	21.5	31.4	21.2	29.5	22.9
2	31.2	21.1	32.6	21.9	30.5	22.1	32.2	21.5	35.1	21.6	31.5	21	31.8	22.3	28	22.1
3	29.6	22.5	32.8	22.1	29.6	23.5	31.7	21.3	35.2	21.9	30.3	23	31.9	22.3	27.4	23.7
4	29.8	22.1	32.2	22.3	29.7	23	31.2	22	32.9	21.7	31.7	23.5	32.1	23.2	30.1	22
5	28.5	20.8	31.6	22.1	31.6	22.9	31.7	21.5	34.4	22	30.7	21.3	31.5	22.1	30.1	21.6
6	29.6	21.7	32.6	22.6	30.5	23	32.2	21.9	35.3	22.4	31.2	21.5	32.4	22.8	30.3	23.4
7	30.9	21.3	32.4	21.6	29.5	22.9	31.7	21.3	35.8	22.3	31.7	21	32	25.2	29.6	20.9
8	31.7	21.3	31.6	22.6	30.6	22.8	31.2	22	34.9	22.2	31.1	20.9	31.9	25.4	30.6	22.2
9	31.4	22.1	33.1	23.5	30.4	23	31.2	21.3	34.1	22.3	31.2	20.4	31.8	24	30.1	20.7
10	30.8	21.4	33.8	23.1	32	22.5	32	22.9	35.4	22.9	31.9	22.2	32.4	23.4	30.1	22.6
11	32.4	21.5	33.6	22.8	30.5	23.1	29.3	22.4	35.6	23.3	32.5	21.9	32	25.8	28.2	21.2
12	29.4	22.2	32.6	24.1	29.6	23.2	31.2	21.5	34.9	23.3	31.7	21.8	31.7	26.1	30.1	22.4
13	30.8	20.7	31.6	22.4	30.8	23	32.2	22	34.8	23.1	31.5	22.5	32	23.4	30.4	22.1
14	30.6	21.4	30.6	22.6	31.1	23	32.2	21.9	34.9	23.2	31.5	21.8	34.2	22.5	30	23.2
15	31.5	22.3	31.8	22.1	30.5	23.4	30.7	22.5	34.2	22.9	31.6	22	32.2	25.8	30.5	23.4
16	32.8	22.2	33.6	22.1	31.4	23.8	31.2	21.3	33.9	22.7	32.4	21.5	32.2	24.5	30.6	21.7
17	29.7	21.9	32.1	22.6	31.4	23	30.7	21.8	35.2	23.1	31.5	21.2	32.4	24	29.1	22.9
18	30	21.5	33.1	23.3	30.7	23.5	31.3	22.3	35.1	22.6	32.3	22	32.3	23.6	28.6	22.1
19	29.4	21.3	33.6	23.6	31.5	24	31.5	21.8	34.8	22.9	31.7	21.4	32.2	23.8	29.1	22.8
20	30.3	21.8	33.8	23.3	32.5	23.4	30.8	22.3	34.6	22.9	31.3	22	31.6	25.9	30.3	22.8
21	30	22.4	34.6	23.1	30.4	23.5	31.7	22.4	35.5	23	32.2	22	31.5	21.9	29.3	23.1
22	30.8	22.8	30.6	22.8	28.6	22.1	31.7	22.6	35.4	23.3	32.2	23.1	31	25.3	30.2	23.4
23	30.1	21.8	33.6	22.7	31.4	23.4	30.2	22	32.5	22.1	32	20.8	30.4	25.6	28.6	20.2
24	32	21.4	32.6	22.7	29.9	24.5	31.7	22	33.2	23.1	31.7	22.3	31.2	24	29.6	22.6
25	30	22.8	34.1	23.6	31.2	23.3	31.7	21.9	34.6	22.6	31.2	22.4	31.4	23.4	30	21.4
26	31.6	22.1	32.4	23.1	31	23.5	29.7	22.9	35	22.7	29.7	23.5	31.6	22.9	30.3	23.1
27	32.7	22.6	32.6	22.6	31.5	24	31.2	21.9	34.8	22.5	30.8	21.9	26	22.3	31.1	24.4
28	30.8	22.3	34.4	23.8	31.7	24	31.7	22.1	34.9	23.4	32.1	22.1	31.2	24.8	30.1	21.7
29	31.9	22	32.2	22.6	31.7	23.5	31.2	21.5	34.7	22.7	32.5	22	30	24.7	30.3	22.6
30	30.3	21.3	34.6	23.6	31	23.5	26.8	22.5	32.7	22.5	32.4	22.8	30.4	25.1	30.1	22.7
Mean	30.8	21.8	32.7	22.8	30.8	23.2	31.2	22	34.6	22.6	31.6	21.9	31.6	23.9	29.7	22.4

Day.	Dumaguete.		Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San José Buenavista.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30.4	23.2	31.2	22.7	31.2	21.2	31.2	22.5	30.5	24	30.5	24.6	30.9	23.4	34.2	23
2	29.8	25.6	31.6	22.5	31.2	22.5	29.5	22.6	30.1	23.5	31.6	24.3	30.1	24	33.3	22.4
3	30.6	25.2	31.4	22	31.2	21.4	26.7	23.3	28.7	22.4	31	23.5	31.5	23.4	33.1	20.6
4	28.3	23.7	31.2	22.6	31.7	21.4	31.2	22.9	31.4	23.2	30.5	24.4	31.5	22.8	32.8	22.1
5	29.5	23.3	30.3	22.8	30.8	22.3	31	23	30.5	23.2	31.5	23.5	31.1	22.4	32.6	21.5
6	29.4	23.5	30.8	22.4	31.2	22.3	31.5	22.7	31.7	23.1	31.9	24.5	31.4	23.6	33.8	22.1
7	29.7	25.2	31.1	21.8	31.8	21.9	30.3	23.3	31.2	23.6	31	24.4	32	23.5	33.8	20.6
8	29.6	23.8	31.4	21.4	31.6	20.4	31.2	22.8	31.5	23.6	31.5	24.8	31.9	23.7	33.6	21.5
9	29.7	23.6	31.4	21.1	31.6	21.6	31	22.4	31.1	22.6	31	24.5	31.5	23.9	33.5	21.1
10	30	24.6	30.6	21.8	31.5	21.1	30.3	22.7	30.8	22.8	31.8	23.9	31.1	24	34.4	22.2
11	29.6	24.6	31.8	22.3	31.3	22	30.3	23	31	24.1	30.9	22.8	31.5	24.3	33.7	22.4
12	29.9	25.6	31.5	23	31.1	21.7	30.8	22.6	31.6	24.1	31	24.5	31.5	24.3	33.8	21.5
13	30.9	23.6	31.4	21	31.6	23.1	31.8	21.8	30.8	22.6	31.1	24.5	30.7	24.3	33.9	21.4
14	30.3	24.5	32.6	21.2	31.8	21.5	31.4	22.8	30.1	23.3	31	24.5	31.4	24.5	34.2	22.7
15	29.8	25.8	31.5	22.5	31.9	21.8	30.4	22.7	30	23.2	31.2	24	31.4	24.5	33.7	22
16	29.7	23.6	32.5	21.2	31.7	21.5	31.4	22.4	31	22.8	31	24	31.6	23.7	34.1	21.5
17	30.1	25.7	31.9	22.7	31	21.3	30.8	22.8	30	22.9	30.7	24.4	31.4	23.9	34.9	21.6
18	29.8	25.2	32.3	23.6	31.5	21.8	30.1	22.8	31.5	23.2	31.5	24.7	31.5	24.3	33.7	22.3
19	29.6	25.1	32.2	22.6	30.7	23.3	30.1	22.8	31	23.5	31.1	24.6	31.3	24.3	34.9	22.2
20	31	25.4	32	22.4	32	22.7	30.9	22.9	31.5	24	31.6	25.1	31.4	24.4	35.7	22.5
21	31.2	26.4	32.4	22.5	32.2	21.5	29.3	23.1	30.1	23.1	32.5	24.9	32.1	24.4	34.9	22.6
22	30.4	25.4	32.5	22	31.8	22.2	30.2	23.3	31.6	24.1	31.9	24.9	31.1	24.3	33.8	23
23	29.4	24.2	32.4	21.4	31.4	22.1	29.3	24.1	30.6	24.3	31.1	24.5	30.9	24.1	36.4	21.7
24	31.3	24.1	30.6	22.7	31.7	21.2	29.8	23.6	30	23.5	31.5	24.2	32.1	24.6	34.8	22.5
25	30.7	24	31.3	23.3	32.3	21.2	29.9	23.4	29.8	23.4	31.9	24.1	31	24.6	33.8	23.2
26	27.8	22.2	25.3	21.9	32.7	23.4	30.2	22.7	29.7	23.1	27.9	23.2	27.5	24.2	29.7	24
27	30		30.6	21.8	30	23	31.4	22.9	31.5	25.5	31	24.8	31.6	23.9	33	23.5
28	29.5	23.3?	32.4	22	31	23.3	30.2	24.8	30.8	23.4	30.1	24.8	30.7	24.2	34.2	22
29	30.7	23.9	30.8	21.7	31.2	21.9	30.3	23.3	31	22.6	30.3	23.2	31.3	23.8	33.7	21
30	30.7	24.6	32.2	22.8	32	22.4	31.8	23.5	30.5	23	32	24.5	32	24.6	34.6	21.6
Mean	30	24.4	31.4	22.2	31.5	22	30.5	23	30.7	23.4	31.1	24.3	31.2	24	33.9	22.1

Maximum and minimum temperatures at the stations of the Weather Bureau, November, 1914—Contd.

Day.	Cuyo.		Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.	31.4	26.3	31.5	22.5	31.2	25.3	31.1	23.7	32.3	25	31.8	22.6	31.3	22.6	32.4	26.2
2.	31	26.3	31.5	21.9	31.1	23.4	31.1	23.8	31.8	25.5	31.6	23.1	34.6	22.4	32.8	25.6
3.	31	26.3	30	20.7	29.2	24.6	28.4	23.5	31.4	23.8	31.9	21.8	32.7	20.8	34.6	25.5
4.	31.3	25.7	30.7	21.9	30.4	23.5	30.2	23.4	31.5	23.7	29.6	23	30.3	22.3	33.4	25.8
5.	30.5	23.3	31.9	21.2	31.7	22.6	31	22.9	31.2	23.3	31.1	21.4	31.2	22.2	33	25.2
6.	32.3	24.7	31.9	21.6	31.7	23.4	31.3	23.4	31.6	24.2	31.7	21.9	31.3	22.4	32.8	26.2
7.	31.8	26.1	32	20.5	31	23.3	32.6	22.8	32.3	24	32	21.4	31.6	21.7	34	25.5
8.	32	26.5	33.3	20.4	31.5	23.2	32.4	23.6	32.3	23.7	32.1	21.7	32.2	23	34.6	26
9.	33.3	25.1	31.3	20.7	31.6	23.1	31.3	23.6	32	23.2	31.7	22.7	31.3	22	32.8	25.8
10.	31	26.9	33.1	21.5	31.4	23.6	32	24	32.2	25	31.9	22.3	33.9	22.7	33.4	26
11.	31.1	26.8	32	22.6	31.3	25	33.1	23.5	31.5	24.4	31.9	23.2	32.7	21.2	33.6	26
12.	31.5	25.5	32.5	21.4	31.6	24.3	32.7	23.2	32.4	24.6	32.2	22.2	32.8	21.4	34	26
13.	32	26.3	31.2	22	31.1	24.6	31.4	24.1	32.3	24.9	32.1	23.5	31.6	23.3	34.6	25
14.	31.7	26	31.4	20.8	31.8	24.9	32.3	23.5	32.7	25.5	32.4	23.2	33.1	22.5	34.8	25.8
15.	31.2	26	32.8	22	31.7	24.6	31.8	23.5	32	24.2	32.1	22.6	30.8	21.4	32	24.8
16.	31	26	32.8	21.4	31.9	25	31.5	23	32	24.1	32.1	22.9	31.9	21.5	32.2	24.5
17.	32.2	25.4	31.5	22.3	31.8	24.2	31	24	32.5	24.5	32.2	24.5	31.2	22.2	34.5	24.6
18.	31.7	25.9	32.1	22.4	32.1	24.5	31.9	22.5	32.2	24.6	32.1	22.7	30.6	21.6	34.4	25
19.	31.8	26.4	31.3	21.4	31.2	23.4	33.1	23.5	32.7	24.5	32.5	22.7	33	21.7	33.2	25.8
20.	32.2	26.5	32.9	22.2	32.3	25.1	31.7	23	32.2	24.1	32.6	22.7	31.3	22.4	35.5	26
21.	31.7	27	32.6	20.8	31.4	23.6	33	23.6	32.4	25.8	32.1	22.7	32.6	22.6	34.8	26.2
22.	31.3	26.3	33.1	22.3	31.8	25.1	32.7	24	32.4	25.6	32.1	23.6	32.7	22.8	32.6	25.4
23.	32.4	26.6	32.6	21.9	31.9	26.2	33.6	23.6	32.8	24.7	32.6	25.7	34.2	21.8	32.6	25.5
24.	31.5	26.5	30.8	23.6	31.8	25.3	30.9	24	32.4	24.7	31.8	24.5	31.4	23.3	31.6	26.5
25.	30.2	26.9	30.7	22.9	31.7	22.9	32	24	32	26	32.2	23	30.7	23.2	32.2	25.4
26.	29.8	26.7	27.8	23.6	31.3	24.3	28.2	23.5	30.6	24.8	32.1	24.1	29.9	23.4	31.6	25
27.	30.7	23	31.6	22.7	31.5	25.3	31.5	23.5	31.2	24.4	32.1	23	30.6	22.4	33.4	25
28.	30.1	25.7	32.5	22.2	30.9	23.6	32.4	23.6	31	24.4	31.6	23	32.6	21.5	31.4	25
29.	30.6	25.9	31.6	21	31.3	23	30.8	23.5	31.2	25.5	31.6	22.7	31.3	23.4	30.4	25.2
30.	30.5	26.2	30.8	21.9	31.1	25.1	29.6	23.4	31.8	25.5	31.7	24.6	30.3	22.9	32.2	24.8
Mean	31.4	26	31.7	21.8	31.4	24.2	31.6	23.5	32	24.6	31.9	23	31.9	22.3	33.2	25.5

Day.	Romblon.		Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.	32.7	23.8	29.8	22.5	31.2	24.6	32.3	23	28	24.1	31.5	24.8	31.3	23.6	32.3	21.5
2.	33.2	25.3	29.9	23	31.1	24.6	32.4	24.6	29	22.3	31.6	24.5	32.8	21.4	32.5	18.5
3.	32.9	24.9	29	23.9	31.6	24.2	33.1	24.9	28	24.1	32	22.3	32.5	20.1	32.5	18.3
4.	32.9	22.9	29.9	23	30	23.2	31.2	23.8	30	23.3	31	21.1	31.5	22	32.5	18.7
5.	33	21.7	29.9	22.8	30.1	23.1	32.1	24.5	30.4	24.1	31.1	22.5	31.1	22.4	32.6	20.8
6.	32.8	24.1	30.2	23	31	24	32.8	25.1	30	24.1	31.5	21.5	31.2	20.8	32.4	19.9
7.	33.1	23.4	29.9	23.8	31.7	23.9	32.8	25.4	28.8	25	31.5	24.1	33.6	21.1	32.5	20.2
8.	33.6	24.3	29.5	23	30.2	23.5	31.1	23.5	30	25	31.7	23.1	31.4	22.5	32.5	22.7
9.	33.1	25.9	29.5	23	30.4	23.1	31.4	23	29	23.9	30.8	22.6	31.8	21	32	18.5
10.	33	24	30	23.1	31.4	23.6	32.8	24.4	29.4	21.8?	31	22.5	29	21.1	31.7	20.9
11.	33	24.7	29.8	24	31.2	23.9	31.2	24.3	29.4	22.3?	32	22.4	32.4	21.2	31.1	18.5
12.	33.1	23.5	30	23.5	31.5	24.8	31.3	25.4	30.8	23.3	31.4	22.4	30	21.5	31.6	18.3
13.	33.3	25	30	23	32	25	31.8	25.1	29.4	25	31.1	22.8	32.6	21	32	19.1
14.	33	24.7	30	23.5	31.1	24.8	32.3	24.7	30	23.6	31.2	22.8	31.7	22.6	32.5	20.5
15.	33.1	23.7	30	23.2	31.9	26	31.4	24.5	30.4	25	32.1	23.2	31.6	21.9	32.5	19
16.	32.4	24.9	30	23	30	23.6	31.9	24.9	30.2	23.3	31.4	23.1	32	21.8	31.6	18.7
17.	32.9	25.6	30.4	23.3	30.8	24	32.1	22.4	31	23.9	31.5	22.6	31.7	23.5	32.4	20
18.	32.6	24.3	30.2	23	31.3	22.4	32.2	24.9	31.4	24.4	31	21.4	31.1	19.4	32.2	18.5
19.	33.1	22.9?	30.5	23.5	31.5	24	32	25.1	30.2	25	31	22.5	32.2	21	31.9	19
20.	32.7	24.8	30.5	23.5	30.8	25.4	31.6	24.4	29	25.6	31.4	21.1	31.4	21.8	32.8	19.5
21.	34.1	24.2	31	23.6	31.4	25	32.4	24.2	30.6	25.6	31.8	22	30.3	21.2	32.3	20.4
22.	33.2	25	30.4	23.5	30.6	23.7	31.1	25.2	29.6	25	32	25.5	31	21.4	32	20.2
23.	33.4	23.7	31	24	30.7	25.4	32.6	24.4	30	25	31.5	23	31.5	23.8	33.3	19.7
24.	33.5	23.5	29.9	22.8	30.5	24	33.1	25.5	28.6	23.4	31.8	22.1	32.8	20.8	31.9	19.1
25.	32.7	23.8	29	23.5	30	24	30.7	25	29.8	25	31.5	22	33.4	21.1	31	19.7
26.	31.2	24.9	29	23.5	29.9	24.9	30.1	25.8	29.2	24.6	31.5	23	32.7	23	29.4	18.3
27.	33	25.7	29.9	24	31.6	26.7	32.2	25	29.4	25	31.6	25.5	30	21.6?	31.5	20.4
28.	32.3	24.1	29	23	30.6	26	30.8	24.4	28.6	23.4	29.1	24.2	32.5	22.8	32.3	20.4
29.	32.6	24	29	22.6	28.7	23.9	30.3	23.1	29.6	23.8	30.5	23.5	30.9	21.5	30.3	21.6
30.	32.4	25.3	28.8	23	29.4	25	31.1	25	29.2	24	30.5	21.8	29.2	22.2	31	19.5
Mean	32.9	24.3	29.9	23.3	30.8	24.3	31.8	24.5	29.6	24.1	31.3	22.9	31.6	21.7	32	19.7

Maximum and minimum temperatures at the stations of the Weather Bureau, November, 1914.—Contd.

Day.	Batangas.		Atimonan.		Ambulong. Tanauan.		Paracale.		Sta. Cruz. Laguna.		Manila.		Antipolo.		Iba.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	33.1	22.7	29.6	24.1	30.8	24	29.6	22.6	30.6	23	32.5	22	32.2	22.2	32.4	18.2?
2	32.7	21.6	29.9	25.6	32	24	30.6	22.1	30.7	22.7	32.4	22	32.9	21	33.7	21.5
3	33.1	21.5	30.7	25.9	31.8	22.3	30.2	23	31.1	22.1	32	20.7	32.6	20	32.3	20.7
4	33.3	20.7	29	25.8	32.9	21.8	30.5	22.2	31.7	21.3	32.7	20.3	32.4	19	32	20.3
5	34.1	21.7	29.8	24	33.8	22.5	30.8	23.4	30.9	22.1	31.5	21.1	35.8	20.3	31.5	19.2
6	34	22.3	30.6	24.1	32	22.9	30.8	23.5	31.1	22.2	32.5	21.5	32.5	20.6	32.2	19.7
7	34.1	22	30.6	25.8	32.4	24.2	30.3	25	31.6	22.1	31.9	21.2	31.5	21.4	32.6	19.1
8	35.3	21.8	28.7	25.4	31	24.3	30	25.8	30.6	23.8	31.8	21.6	32.2	20.7	32	19.9
9	34.4	21.8	30	22.6	33.1	22.5	30.8	22.7	32.3	21.7	33.2	20.7	33.8	20.3	32.5	19.9
10	34.3	22	29.7	25	32.1	22.9	29.8	23.4	31.4	23.1	32.4	22.2	33	21.3	32.1	19.7
11	34	22.3	30.2	25	31.1	23.4	29.8	24.7	30.5	22.4	33.1	22.4	32.2	20.5	31.7	20.8
12	34.1	21.6	30.4	25.6	32.8	22.5	28.4	23.1	30.7	21.2	32.6	21.7	33.3	21	34.7	21.1
13	34.3	23.5	31.1	25.9	32	24.5	30.4	23.5	31	23.5	32.7	22.6	33.7	21.1	33.6	20.7
14	34.4	23	30.8	24	32.8	24	30.6	24.2	30.9	23	32.6	21	32.8	21.3	32.2	19.6
15	34.3	21.7	30.7	25.1	32.1	24.1	31	25.3	30.9	22.2	32.3	22.3	34.1	22	32.3	21.4
16	33.9	22	30.4	25.9	30.2	22	30.3	25	30.6	21.7	31.3	21	32	19.7	32.1	19.5
17	34.5	22.8	29.7	24.3	33.2	23.5	30.1	23.6	31.4	21	31.9	21.5	33.3	21.3	31.7	21.3
18	34.3	21.4	30.1	26	32.3	22.1	30	23.7	30.6	21.3	32.4	19.7	33.6	20.3	32.3	20.1
19	34.4	22	30.8	25.6	32.9	21.6	29.8	22.9	31.5	21.9	32.7	20.1	34.6	19.7	31.8	18.1
20	33.8	22.3	30	24.7	33	23	30	23.2	31.9	23	32.6	21.9	34.6	20.8	31.7	19.9
21	32.3	21.6	29	24.2	32.5	22.4	30.6	23.9	31.4	22.1	32.5	22.8	31.4	21.3	32.5	20.1
22	33.3	23.5	30.4	26.6	33	24.6	30.8	25.5	31.5	24	31.8	21.8	33	21.6	32.5	20.5
23	33.1	22.2	30	24	31.8	22.1	30.3	24.2	31.3	22.9	32.9	20.7	34.5	20.7	32	20.3
24	33.2	21.8	30.2	26.4	34.8	22.5	31	23.2	32.4	21.3	32.2	21.6	32.9	20.3	32.6	20
25	34.3	20.4	30.8	26.5	32.9	23.6	30.4	23.7	31.5	21.2	33.3	20.8	34.4	19.7	32	20.2
26	33.5	20.6	28.9	25.8	32.3	24.5	28.5	26	31.4	23.3	33.7	20.7	33.5	20.8	31.7	20
27	34.7	24	29.7	24.2	32	23.9	29.8	25.2	31.1	23.9	32	23.2	32.2	22.3	34.4	23
28	31.3	23.5	28.8	25.1	29	23.6	29	24.8	28.6	23	30.4	22.5	30.3	21.8	33.2	24.9
29	31.9	22.6	29.7	24.7	29.2	24	29.2	24.5	28.9	23.5	30.7	20.6	30.7	20.3	31.8	20.6
30	33.5	22.2	29	25.6	29.2	23.9	28.8	24.8	29.1	22.6	31.4	22.1	31.5	21.2	32.1	20.6
Mean	33.7	22.1	30	25.1	32	23.2	30.1	24	31	22.4	32.3	21.5	32.9	20.8	32.4	20.4

Day.	San Isidro.		Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernan- do, Union.		Echagüe.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.6	21.4	33.2	20.5	32.2	21.8	35	22.6	32.9	21.4	25.2	14.5	32.7	22.2	30	21.2
2	33.2	21.9	34.4	21.1	30.2	21.2	35.1	22.8	34.4	23.1	24.8	15	32.6	22.1	32.3	21.2
3	33	20.9	34.8	21	30	21.4	34.9	21.9	32.9	23.4	24	14.2	32.6	21.2	31.9	20.3
4	34	20.3	34.6	20.2	32.6	20.9	33.9	21.6	33.1	23.7	23.8	14.5	32.3	22.2	32.9	19.1
5	34.1	19.6	34.2	20.2	31.2	20	32.8	21.5	32.5	23.7	24.1	13.9	32.5	20.4	31.8	18.8
6	33	21	34.2	20.7	32.1	20.6	35.3	22.1	33.9	22.6	24.3	14.5	32.6	21.2	31.4	19.5
7	32.5	20.4	34.6	20	31.5	20.4	34.3	21.5	34	23.1	25.2	15.1	33.4	21.4	31.6	18.9
8	32.4	21.2	34.5	20.4	33.6	20.7	35.3	23.3	34.5	23.1	25.1	14.2	32.6	20.3	32	21.1
9	33.9	21	34.5	20.4	31	22	33.5	21.8	33.4	22.8	24.8	15	32.2	21.2	32.6	21.2
10	33.4	22.1	34.6	21.2	31.5	22.1	35.2	23	33.5	24.1	24.8	15.3	32.5	21.6	31.5	20.4
11	32.6	22	33.8	22.2	31	22	34.8	23	34.2	24	24	14.3	31.8	21.9	30.9	22.4
12	32.6	21.9	34.2	22	31.9	22.6	34.8	22.5	33.5	23.5	25.8	15	32.6	21.8	30.1	21.7
13	31.6	22.8	33.2	21.1	31.4	22.8	34.5	23	33.6	23.2	25.1	14.8	33.9	23	31.6	20.7
14	33.6	21.6	35	20.7	31.3	21.5	34.3	21	32.3	22.9	25.7	15.2	33.2	22.1	32.3	19.4
15	33.4	22.5	34.2	22	31.5	22.9	33.3	23.3	32.8	24.1	23.9	15.3	32	24	32.8	21.8
16	32.3	19.9	34.8	20.1	33	20.5	34.6	21.9	33.1	23.5	24.4	14	32.6	22	32.3	18.8
17	32.2	22.9	34.7	21.2	31.8	22.8	33.6	21.6	33	23.1	24	14	33.1	21.4	32.9	21
18	33.1	20.5	34.8	21	33.4	20.4	35.1	22.1	33.1	24.1	24	14.7	33.5	21.8	33.4	20.8
19	33.1	19.5	34.8	20.4	30.3	20.5	33.8	20.6	33.3	22.1	24.1	14.7	32	20.8	32.6	17.9
20	33.7	21	35.2	20.2	31	21.5	33.8	21.9	34	22.1	24.2	15.4	32.7	21.2	33.5	19.3
21	34	21.9	35.6	21.6	31.5	21.2	31.8	22.6	32.1	25	24.4	14.1	32.5	21.9	32.3	21.8
22	33.1	22.4	35.2	21.6	30.2	21.3	35.4	23.5	33.6	22.2	24.4	14.2	31.8	21.7	28	22.4
23	34	20.8	35.2	20.6	31.4	22.8	35.5	22.5	33.4	23.6	24.3	15	31.9	23	32.5	22.5
24	33.7	20.9	34.8	20.8	33	21	31.8	23	32.5	23	23.9	14.5	32.8	22.5	33	19
25	33.5	21.7	34.5	21.6	31	21.7	34.8	23	32.5	23.5	23.8	14.8	32.2	22.7	32	21.8
26	34.1	21.2	34.8	21.1	31.6	22.6	33.5	22	32.9	22.9	26.4	14.7	32.1	22.3	31.8	22.2
27	31	23.6	33.5	22.2	28.4	23.2	32.3	23.5	32.5	23.4	25.4	16.2	31.3	22.6	25	22.3
28	32.6	22.2	33	22	30.4	23.6	33.2	23.4	33.5	24	23.2	14.9	30.8	24	28.2	21.8
29	31.5	20.6	33	20.5	31.3	22.1	34.8	21.9	31.6	21.8	25.1	14.4	32.1	22.4	28.7	20.9
30	33.6	22.3	34.2	21.2	31.9	22.8	34.1	22.1	33	21.4	25.1	15	31.9	22	29.5	22
Mean	33	21.4	34.4	21	31.4	21.7	34.2	22.4	33.2	23.1	24.6	14.7	32.4	22	31.4	20.7

Maximum and minimum temperatures at the stations of the Weather Bureau, November, 1914—Contd.

Day.	Candon.		Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.	Maxi- mum.	Mini- mum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1.....	31.5	23.5	33.5	25.2	33.8	22.6	35.6	21.5	29.6	22.4	28.1	23
2.....	31	23.5	32.1	24.2	35	21	35.8	21.6	30.5	20.6	28.9	23.4
3.....	31	23.1	32	22.8	35.5	20.3	33.2	21.1	30.4	21.6	29	24.2
4.....	31.4	23.6	32	24	35.6	19.2	34.2	21.9	31.5	21.7	30	23.1
5.....	31	22.6	31	22.2	35.6	21	33.4	21.5	30	22.1	27.1	23.1
6.....	31	22.6	32.3	22.5	35.5	20.8	33.6	21.4	31.7	22.6	29.4	23.6
7.....	31.1	23	31.8	23.6	34.7	21.5	34.1	22.2	30.4	22.8	29.7	23.8
8.....	31.2	22.9	33	23	33.1	21.5	33.7	20.9	31.4	22.4	27.4	23.6
9.....	31.4	23	31.7	24	35	21	33.2	22.5	30.6	21.6	28.3	23
10.....	31.4	22.7	31.7	23.3	31.2	20	37.1	21.9	28.5	20.6	26.5	22.6
11.....	31.5	23.6	32	23.1	33.1	22	37.2	21.4	28.7	22.6	25.6	22.1
12.....	31.2	23.5	32	23	34	21.9	35.2	19.9	29.6	22.2	29	22.4
13.....	31.5	24.5	32.5	24.5	34.3	21.2	35.1	22.4	31.9	22.7	29	22.6
14.....	31.5	23.8	33	23.5	35	20.6	33.5	22.6	32.1	22.7	30.8	24.6
15.....	31	24.5	32.1	23	35.1	22	34.7	21.9	31.4	22.6	28.4	22.4
16.....	31	24	32	23.4	34.6?	19	33.1	21.1	30.2	22.1	29.5	22.6
17.....	31	23.4	32	23.5	35.5	21.6	33.7	21.9	31.9	22.4	29.5	22.5
18.....	31.4	22.5	32	22.6	35	22	34.3	21.5	29.6	23.4	26.5	22.7
19.....	31.5	23.7	32	24.5	34.6	20.6	32.9	22.6	30.6	21.8	27	22.7
20.....	31.3	23.5	31.8	23.2	36.1	20.8	33.6	22	31.9	22.2	29.6	23.6
21.....	31	23.5	31.3	21.7	32.4	22.5	33.4	20.9	28.2	23.2	26.5	23.8
22.....	31.1	23.6	32	21.8	28.5	22.2	36.2	20.4	27.2	23.1?	27.3	21.9
23.....	31.5	24.4	32.3	24.2	32.6	22.4	34.6	22.1	28.1	22.6	27	22.8
24.....	31	24.5	31.8	23.5	35.5	21.8	33.2	23.8	31	22.8	28.2	23.6
25.....	31	23.4	31.6	21.8	32.5	21.8	33.7	20	29.2	22.4	27.6	22.5
26.....	31	23.7	32.2	23.5	32	22.1	34.2	20.6	29.4	22.5	28.6	21.2
27.....	32	24	33	23.4	26	22.6	34.7	20.5	27.9	22.7	25.3	22.4
28.....	31.6	25.1	32.7	23	27.4	21.7	32	25.5?	24.6	21.5	22.4	18.9
29.....	30.9	23.2	33	21.7	30.6	21.5	35.6	22.6	28.4	21.7	23.4	18.8
30.....	31.2	23	32	22.7	29.8	20.5	33.7	19.5	29.1	21.6	28.3	21.6
Mean	31.2	23.5	32.2	23.2	33.3	21.3	34.3	21.7	29.9	22.2	27.8	22.6

SEISMOLOGICAL BULLETIN FOR NOVEMBER, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

1, 1^h 36^m 00^{s*} [1, 9^h 36^m 00^s]. Ormoc (W Leyte). A subsultory and oscillatory earthquake, direction SE-NW, intensity V and duration 10 seconds. Its source of origin appears to have been in the sea to the W of Leyte, where there is a seismic center whence come frequent earthquakes of variable intensities but always of small extension. See in Bulletin for August 1910 the article "Seismic centers of Samar, Leyte and Eastern Mindanao."

1, 5^h 50^m 24^{s*} [1, 13^h 50^m 24^s]. NW Luzon. Earthquake felt in the provinces of Ilocos Norte, Ilocos Sur and Mountain. The greatest intensity of IV-V was in Ilocos Norte and the northern part of Ilocos Sur; it probably originated in the China Sea but very close to the Ilocos coast.

4, 9^h 30^m [4, 19^h 09^m]. Guam (Mariana Islands). Earthquake of intensity I-II.

16, 8^h 57^m [16, 16^h 57^m]. Butuan (N Mindanao). Oscillatory earthquake direction ENE-WSW, intensity IV, duration 10 seconds.

17, 7^h 47^m 11^{s*} [17, 15^h 47^m 11^s]. Legaspi (SE Luzon). Oscillatory earthquake, direction WNW-ESE, intensity III, duration 5 seconds.

19, 3^h 43^m 00^{s*} [19, 11^h 43^m 00^s]. NE Luzon. Earthquake felt throughout the whole of the province of Cagayan. In Aparri, a town situated at the extreme north of the province, subsultory and rotatory movements of intensity IV were noted, while in the extreme south of the same province only small undulations of little intensity were perceptible. It is very probable that the place of origin of the shock was within the limits of the province to the ESE of Aparri, where there is a center of local and perhaps also volcanic character.

23, 18^h 55^m [24, 2^h 55^m]. Butuan (N Mindanao). Oscillatory earthquake, direction ENE-WSW, intensity IV-V, duration approximately 6 seconds.

24, 11^h 56^m 38^s [24, 21^h 35^m 38^s]. Guam (Mariana Islands). Oscillatory earthquake, direction NNW-SSE, intensity III, duration about 8 seconds. The origin of the shocks was probably to the north of the Mariana Islands, between them and the Japanese Bonin Islands; this is deduced from the time at which the earthquake was registered in the different observatories: Guam, 11^h 56^m 38^s (approximate time); Osaka, Japan, 11^h 56^m 50^s; Nagasaki, Japan, 11^h 57^m 05^s; Taihoku, Formosa, 11^h 57^m 56^s; Manila, 11^h 58^m 14^s.

25, 6^h 35^m [25, 14^h 35^m]. Butuan (N Mindanao). Earthquake of intensity II-III.

27, 18^h 14^m [28, 2^h 14^m]. Butuan (N Mindanao). Earthquake of intensity III. There was a repetition of intensity II-III at 7^h 02^m [15^h 02^m] of the 28.

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (Midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

28, 4^h 04^m 16^s* [28, 12^h 04^m 16^s]. Gubat (SE Luzon). Earthquake of intensity III.

29, 4^h 45^m [29, 12^h 45^m]. Butuan (N Mindanao). Oscillatory earthquake, direction, ENE-WSW, intensity III-IV, duration 5 seconds. This and the other earthquakes felt in Butuan had probably their origin in the center which exists in the bay of the same name; the local and superficial character of the shocks seem to indicate this. See Bulletin for August 1910, mentioned above.

30, 16^h 26^m 00^s* [December 1, 0^h 26^m 00^s]. NE Mindanao. Earthquake of intensity IV. It was perceptible throughout the whole of the Province of Surigao and in the Agusan Valley. It probably originated in the "Great Philippine Deep" in the Pacific. There was a repetition of intensity III at 17^h 30^m [December 1, 1^h 30^m].

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N: T₀=9.0, ε=3.31, $\frac{r}{T_0^2}$ =0.039; A_E: T₀=6.2, ε=2.58, $\frac{r}{T_0^2}$ =0.082. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
276	1	Iv	eP	1 36 00	11	2		Ormoc (W of Leyte).
			L	37 11				
			M _N	38 04				
			F	48				
277	1	IIv	eP	5 50 24	5	39	51	NW of Luzon.
			L	51 06				
			M _N	51 37				
			M _E	51 53				
			F	6 03				
278	1	Iv	eP	7 39 03				
			L	39 26				
			F	41				
279	1	I	eP	22 09 44				
			F	15				
280	3	I	eP	5 39 53				
			F	46				
281	3	I	eP	5 48 24				
			F	56				
282	3	I	eP	12 30 40				
			F	37				
283	6	I	e	1 53				
			F	2 22				
284	6	Iv	eP	6 23 16				
			L	23 43				
			F	28				
285	7	IIr	eP	6 41 42	7	47	116	
			L	45 47				
			M _N	46 32				
			M _E	46 36				
			F	7 37				
286	8	I	e	11 29 48				
			F	49				
287	8	I	e	12 02 40				
			F	37				
288	9	Iv	eP	17 35 00				
			L	35 16				
			F	39				
289	10	I	e	6 43 43	9	3		
			M _E	57 40				
			F	7 17				
290	13	Iv	eP	14 49 45				
			L	50 01				
			F	55				
291	14	Iv	eP	9 11 51				
			L	12 05				
			F	14				

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.			Period.	Amplitude.		Remarks.
								A _N μ	A _E μ	
292	16	Iv	eP L F	h. m. s.						
				11 35 00						
				35 20						
				39						
293	16	Iv	eP L F	14 08 20						
				08 36						
				12						
294	17	IIv	eP L M _E M _N F	7 47 11					Legaspi (SE of Luzon).	
				47 56						
				48 38		4		60		
				48 42		4-5				
				8 04						
295	19	Iv	eP L F	1 53 29						
				53 55						
				57						
296	19	Iv	eP L M _N F	3 43 00					NE of Luzon.	
				43 44						
				44 42		3		10		
				51						
297	21	Ir	eP S L M _N F	14 54 00						
				56 44						
				59 31						
				15 03 26		11		9		
				16 14						
298	22	Ir	eP S L M _E M _N F	8 25 35						
				30 22						
				34 48						
				36 42		11		26		
				37 04		10		13		
				9 54						
299	22	Iv	eP L F	13 22 24						
				22 39						
				26						
300	24	I	eP F	1 14 25						
				30						
301	24	IIr	eP S _N S _E L _E L _N M _N M _E F	11 58 14					Felt in Guam (Mariana Islands).	
				12 02 48		5-6				
				02 56		5				
				06 06		7-8				
				06 28		9-10				
				09 06		10-11		273		
				09 06		9-10			234	
				14 02						
302	28	Iv	eP L F	4 04 16					Gubat (SE of Luzon).	
				05 02						
				10						
303	28	I	e F	4 27 00						
				33						
304	28	IIr	eP S L M _E M _N F	10 49 41						
				53 22						
				56 18						
				11 00 50		13		26		
				01 06		10		28		
				12 08						
305	28	Ir	eP S L F	13 23 57						
				27 25						
				30 42						
				14 12						
306	29	IIv	eP S L M _N M _E F	5 03 15						
				04 46						
				06 02						
				06 10		8		133		
				07 09		7		164		
				42						
307	30	Iv	eP F	16 26 00					NE of Mindanao.	
				40						

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

1, 1^h 36^m 00^{s*} [1, 9^h 36^m 00^s]. Ormoc (W de Leyte). Temblor de tierra subsultorio y oscilatorio, dirección SE-NW, intensidad V, duración 10^s. Su origen se hallaba en el mar al W de Leyte, donde existe un centro en el que se producen frecuentes temblores de tierra de variable intensidad, pero casi siempre de muy poca extensión; véase en el *Bulletín de Agosto de 1910*, el artículo "Centros Sísmicos de Sámar, Leyte y de la parte Oriental de Mindanao."

1, 5^h 50^m 24^{s*} [1, 13^h 50^m 24^s]. NW de Luzón. Temblor de tierra sentido en las provincias de Ilocos Norte, Ilocos Sur y Montañosa. Su mayor intensidad fué de IV-V en Ilocos Norte y parte septentrional de Ilocos Sur: el origen se hallaba probablemente en el Mar de la China pero muy cerca de las costas de Ilocos.

4, 9^h 30^m [4, 19^h 09^m]. Guam (Islas Marianas). Temblor de tierra de intensidad I-II.

16, 8^h 57^m [16, 16^h 57^m]. Butuan (N de Mindanao). Temblor oscilatorio, dirección ENE-WSW, intensidad IV, duración 10^s.

17, 7^h 47^m 11^{s*} [17, 15^h 47^m 11^s]. Legaspi (SE de Luzón). Temblor oscilatorio, dirección WNW-ESE, intensidad III, duración 5^s.

19, 3^h 43^m 00^{s*} [19, 11^h 43^m 00^s]. NE de Luzón. Temblor de tierra sentido en toda la Provincia de Cagayán. En Aparri, situado en su extremo N, se observaron movimientos subsultorios y aparentemente rotatorios de intensidad IV, mientras que en el extremo S de la provincia tan solo se percibieron ondulaciones de muy poca intensidad. Es muy probable que su origen se hallaba dentro de la provincia al ESE de Aparri, donde existe un centro de caracter local y tal vez volcánico.

23, 18^h 55^m [24, 2^h 55^m]. Butuan (N de Mindanao). Temblor oscilatorio, dirección ENE-WSW, intensidad IV-V, duración 6^s próximamente.

24, 11^h 56^m 38^s [24, 21^h 35^m 38^s]. Guam (Islas Marianas). Temblor oscilatorio, dirección NNW-SSE, intensidad III, duración unos 8^s. El origen de este terremoto se hallaba seguramente al N del grupo de las Islas Marianas, entre éstas y el grupo Japonés de Bonin; según se desprende de las horas en que fué registrado en diferentes Observatorios: Guam 11^h 56^m 38^s (hora aproximada); Osaka, Japón, 11^h 56^m 50^s; Nagasaki, Japón, 11^h 57^m 05^s; Taihoku, Formosa, 11^h 57^m 56^s; Manila 11^h 58^m 14^s.

25, 6^h 35^m [25, 14^h 35^m]. Butuan (N de Mindanao). Temblor de tierra de intensidad II-III.

27, 18^h 14^m [28, 2^h 14^m]. Butuan (N de Mindanao). Temblor de tierra de intensidad III. Repitió con intensidad II-III a 7^h 02^m [15^h 02^m] del día 28.

28, 4^h 04^m 16^{s*} [28, 12^h 04^m 16^s]. Gubat (SE de Luzón). Temblor de tierra de intensidad III.

29, 4^h 45^m [29, 12^h 45^m]. Butuan (N de Mindanao). Temblor oscilatorio, dirección ENE-WSW, intensidad III-IV, duración 5^s. Este y los otros temblores de tierra sentidos en Butuan, probablemente tuvieron origen en el centro que existe en la bahía del mismo nombre; así parece indicarlo su caracter local y superficial. Véase el *Boletín de Agosto de 1910* citado arriba.

30, 16^h 26^m 00^{s*} [1.º Dic., 0^h 26^m 00^s]. NE de Mindanao. Temblor de tierra de intensidad IV. Fué perceptible en toda la Provincia de Surigao y en el Valle del Agusan. Su origen se hallaba probablemente en el mar Pacífico en el *grande Abismo de Filipinas*. Hubo una repetición de intensidad III a 17^h 30^m [1.º Dic., 1^h 30^m].

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

BULLETIN FOR DECEMBER, 1914.

METEOROLOGICAL BULLETIN FOR DECEMBER, 1914.

By Rev. JOSE CORONAS, S. J.,
Chief, Meteorological Division of the Weather Bureau.

GENERAL WEATHER NOTES.

Pressure and temperature.—The mean atmospheric pressure for the month was almost identical with that of the preceding December in the Visayas and Mindanao, and slightly smaller in Luzon. In Manila it was 0.49 mm. greater than the normal, and 0.33 mm. less than the monthly mean of December, 1913.

The mean monthly temperature was somewhat higher in all the stations of the Philippines than that of last year. In Manila it was only 0.1° C. greater than the normal for the month and 0.3° C. greater than that of December, 1913. The extreme temperatures in Manila were 33.4° C. on the 11th and 18.4° C. on the 29th. The absolute maximum and minimum in Baguio were: 26.4° C. and 13.2° C. on the top of Mirador and 27.1° C. and 11.1° C. in the valley.

PRESSURE AND TEMPERATURE AT THE FIRST AND SECOND CLASS STATIONS FOR DECEMBER, 1914.

Station.	Pressure.						Temperature.					
	Mean.	Departure from Dec., 1913.	Highest mean.	Day.	Lowest mean.	Day.	Mean.	Departure from Dec., 1913.	Highest.	Day.	Lowest.	Day.
	mm.	mm.	mm.		mm.		°C.	°C.	°C.		°C.	
Tagbilaran	759.70	-0.05	761.34	26	758.52	8, 11	25.9	+0.3	32.7	20	20.1	28
Surigao	59.84	0	61.46	25	58.49	11	26	+ .2	31.3	1	20.7	29
Cebu	59.93	- .01	61.49	25	58.80	8	27.2	+ .5	32.5	5	22	7
Iloilo	59.68	- .07	61.23	25	58.44	10	26.7	+ .3	32.4	22	21.2	26
Ormoc	60.15	+ .05	61.82	25	58.85	8	26.2	+ .2	32.8	7, 9	18.9	23
Tacloban	60.30	+ .09	61.98	27	59.06	11	26.4	+ .5	32.5	1, 7	21.1	15
Capiz	60.27	- .14	61.87	27	59.01	11	26.7	+ .6	32.7	1	21.6	16
Calbayog	60.35	+ .10	61.96	25, 26	59.15	8	25.7	+ .4	33.6	10, 12, 27	19.8	14, 15
Legaspi	60.45	- .11	62.22	26	59.23	8	27.1	+ .9	32.8	5	21.2	26
Atimonan	60.75	- .61	62.60	27	59.46	5	26.5	+ 1	30.5	3	20.8	31
Ambulong, Tanauan	60.48	- .30	62.19	27	59.34	5	26.4	+ .7	33.2	23	20.8	26, 28
Paracale	61.16	- .26	62.95	27	59.86	5	26.2	+ .5	30.6	19	19.9	26
Manila	60.99	- .33	62.56	27	59.84	5	25.3	+ .3	33.4	11	18.4	29
San Isidro	61.22	- .24	62.80	26, 27	60.03	22	26.1	+ .6	34	22	17.5	29
Dagupan	60.15	- .49	61.70	26, 27	59.08	5, 8	27	+ .8	36.1	5	19.1	28
Bolinao	60.59	- .37	62.14	26	59.55	8	27.5	+ .9	34	5	19	31
Baguio ^a	638.25	- .03	639.38	26	637.50	8	18.2	+ .9	26.4	1	13.2	Various
Vigan	760.51	- .56	762	25	759.24	8	26.7	+ .8	34	2	20.5	29
Tuguegarao	62.06	- .98	63.38	28	60.08	22	25.1	+ 1.6	34	5	17.5	31
Aparri	62.18	- 1.08	63.67	13	59.97	5	24.7	+ 1.3	30.6	4, 11	20.5	20

^a The barometric readings of this station are not reduced to sea level.

Rainfall.—This month also had a scarcity of rain so that all the stations in the Philippines registered less rainfall than the December normal. This difference was specially great along the whole of the eastern part of the Archipelago.

In Manila the amount of rain collected in the gauges was 52.4 mm. and in Baguio 7.5 mm., quantities which are less than the normal by 7.3 mm. and 43.3 mm. respectively.

RAINFALL AT VARIOUS STATIONS OF THE WEATHER BUREAU DURING THE MONTH OF DECEMBER, 1914.

Station.	Total.	Departure from Dec., 1913.	Departure from normal.	Rainy days.	Departure from Dec., 1913.	Greatest rainfall in a single day.	Day.	Station.	Total.	Departure from Dec., 1913.	Departure from normal.	Rainy days.	Departure from Dec., 1913.	Greatest rainfall in a single day.	Day.
	mm.	mm.	mm.			mm.			mm.	mm.	mm.			mm.	
Jolo	68.8	- 87.2	- 82.9	12	-4	18.3	9	Calapan	121	- 24.3		20	- 4	20.8	22
Isabela, Basilan	49.5	- 96.6	- 81.7	8	+2	17	10	Virac	244.6	-100.2		19	- 9	89.2	15
Zamboanga	44.6		- 50?			14.5?	7?	Nueva Caceres	74.2	-191.5	-170.4	10	- 8	21.6	11
Davao	75.9	-154.6	-122.7	7	-5	32.5	14	Batangas	16.3	- 21.7		8	- 5	5.8	24
Cotabato	71.9	- 27	- 55.5	14	+4	18.8	7	Atimonan	124.1	-223.8	-232.9	16	-13	20.1	21
Cagayan, Misamis	4.8			8		1	7	Ambulong, Tana-							
Butuan	73.5	-192.5	-230.4	19	-5	12.4	11	uan	26.4	- 26.5		9	- 3	12.2	8
Dumaguete	71.4	+ 15.2		13	-1	19.5	5	Paracale	273.8	-396.9		22	- 7	44.5	15
Tagbilaran	74.3	- 44.8	- 83.8	8	-3	59.4	9	Santa Cruz, Laguna	122.6	+ 7.1		17	- 4	25.6	1
Iwahig	230.2			10		163.5	12	Manila	52.4	+ 14.6	- 7.3	14	+ 2	15	4
Surigao	449.8	-327.9	- 92.9	22	-4	61	10	Antipolo	50.2	+ 17.8		12	- 1	12.7	5
Maasin	201.5	- 99	- 99.3	10	-3	52.8	10	Iba	8.7	- 9.5		3	- 1	8.1	5
Cebu	81.3	- 7.4	- 70.2	16	-4	24.7	7	San Isidro	12.8	+ 9.1	- 32.4	7	+ 2	4.1	24
Iloilo	53.3	- 10.9	- 64.7	6	-6	19.8	26	Tarlac	1.8	- 39.6	- 37.6	2	- 1	1	24
San Jose Buenavista	4.6	- 41.8	- 50.5	5	-2	2.5	5	Baler	330.3	+194.4	- 38.3	16	- 6	89.6	10
Cuyo	14.8	+ 4.4	- 36.6	2	0	14	5	Dagupan	.8	- 2.5	- 13.1	1	- 1	.8	24
Ormoc	115	- 80.8	- 60.6	15	-7	44.4	5	Bolinao	5.4	- 8.6	- 7	3	- 2	3.3	15
Guinan	236.2	-176.3		23	-6	52.8	10	Baguio	7.5	- 4.4	- 43.3	7	+ 4	2.6	16
Tacloban	177.8	-161	-159.7	23	-6	54	5	San Fernando,							
Capiz	25.6	-136.7	-219.1	13	-8	6.1	29	Union	0	- 6.1	- 8.6	0	- 4	0	0
Borongan	437.8	-255.8	-159.9	26	-5	61.8	5	Echagüe	90.8	-12.4		12	- 8	23.4	10
Calbayog	45.7	-196.2	-198.1	15	-8	7.6	5	Candon	5.1	+ 5.1	- 7.2	1	+ 1	5.1	15
Masbate	63.3	-125.4	-111.3	15	-5	12.4	29	Vigan	2	- 1.4	- 3.7	1	- 1	2	15
Romblon	101.8	-120.5	-109.2	16	-9	11.9	1	Tuguegarao	59.5	+ 9.5	- 85	7	- 8	21.9	12
Batag	169.8	-218.3		17	-7	33	15	Laog	0	- 8.1		0	- 1	0	0
Gubat	220.1	-241.1	-247.6	20	-6	56.7	11	Aparri	73.2	-337.1	-173.1	17	- 4	14.7	13
Legaspi	169.8	-189.5	-289.7	20	-5	35.7	11	Santo Domingo,							
Sumay, Guam	135.8	- 51.9		17	-2	26.7	14	Batanes	357	- 32.2	- 5.5	23	- 6	63	11

^a 29 days of observation.

DEPRESSIONS AND TYPHOONS.

During the whole of the month the Observatory had occasion to announce only one typhoon which had a good deal of influence on Guam, especially on the 14th and 15th. In the following table we give the observations made in our station of Sumay on the 13th to 16th.

METEOROLOGICAL OBSERVATIONS MADE AT SUMAY, GUAM, LADRONE ISLANDS, DECEMBER 13 TO 16, 1914.

Date and hour.	Pres- sure.	Wind.		Weath- er.	Rain- fall 24 hours beginning 6 a. m.	Date and hour.	Pres- sure.	Wind.		Weath- er.	Rain- fall 24 hours beginning 6 a. m.
		Direc- tion.	Force.					Direc- tion.	Force.		
Dec. 13:	mm.		0-12.		mm.	Dec. 15:	mm.		0-12.		mm.
6 a. m	758.47	ENE	5	o		6 a. m	755.70	WSW	7	o	
2 p. m	56.20	N	6	o		10 a. m	56.63	SW	7	o	
Dec. 14:						2 p. m	55	SSW	7	o	
6 a. m	56.58	NNW	6	o		4 p. m	56.40	S	5	o	
2 p. m	54.62	WNW	6	o		Dec. 16:					
3.30 p. m	54.10	WNW	6	o		6 a. m	58.57	SSE	2	o	
5 p. m	54.65	W	6	o	26.7	2 p. m	58.88	SSE	4	c	2.5

From these observations it is evident that on the 13th the typhoon was more than 300 miles to the E of Guam, and that it moved to the NW during the 13th and 14th. The complete backing of the winds observed on the 13th to the 16th from N and NNW over W to S and SSE makes it quite certain that the typhoon must have moved very much inclined to the W, probably since the night of the 14th. After the 16th it became very difficult to follow the track taken by the typhoon which very likely recurved to the NE on the 18th and filled up before the 20th to the SW of the Bonin Islands.

NOTAS GENERALES DEL TIEMPO.

Presión y temperatura.—La presión atmosférica media de este mes es casi idéntica a la del año anterior en Visayas y Mindanao, y algo menor en Luzón. La de Manila se diferencia en +0.49 mm. de la normal, y en -0.33 mm. de la media mensual de Diciembre, 1913.

La temperatura media mensual es para todas las estaciones de Filipinas algo mayor que la del año anterior. La de Manila sólo difiere en +0.1° C. de la normal y en +0.3° C. de la de Diciembre, 1913. Las temperaturas extremas en Manila fueron 33.4° C. y 18.4° C., observadas los días 11 y 29 respectivamente. Las máximas y mínimas absolutas registradas en Baguio fueron: 26.4° C., 13.2° C. para la cumbre del Mirador, y 27.1° C., 11.1° C. para el valle.

Precipitación acuosa.—También este mes ha habido falta de lluvia, resultando para todas las estaciones de Filipinas una cantidad total de agua caída en todo el mes inferior a la normal de Diciembre. Esta diferencia aparece particularmente notable en toda la parte oriental del Archipiélago. Véase a este fin la tabla de lluvia mensual que acompaña el texto inglés.

En los pluviómetros de Manila se recogieron en todo el mes 52.4 mm. de agua, y en los de Baguio 7.5 mm.; cantidades que se diferencian respectivamente de las normales de Diciembre en -7.3 mm. y -43.3 mm.

DEPRESIONES Y TIFONES.

Un solo tifón anunció este mes el Observatorio el cual influyó bastante en Guam, sobre todo los días 14 y 15. En el texto inglés publicamos una tabla con las observaciones hechas en nuestra estación de Sumay los días 13, 14, 15 y 16.

Según estas observaciones, el tifón se hallaba el día 13 a más de 300 millas al E de Guam y se movió al NW durante los días 13 y 14. El role completo de los vientos que se observó del 13 al 16 desde el N y NNW hasta el S y SSE por el W prueba que el tifón hubo de moverse muy inclinado al W, probablemente desde la noche del 14 al 15. Desde el 16 era muy difícil seguir la trayectoria de este tifón el cual probablemente recurvió al NE el 18 y se deshizo antes del 20 al SW de las Islas Bonin.

METEOROLOGICAL DATA FOR MANILA CENTRAL OBSERVATORY.*

[$\phi = 14^{\circ} 34' 41''$ N; $\lambda = 120^{\circ} 58' 33''$ E; barometer above sea, 14.2 meters; gravity correction not applied, -1.72 mm.]

Day.	Pressure (mean).	Air temperature. ^b			Underground temperature.				Relative humidity (mean)	Vapor pressure (mean)	Radiation.			Evaporation. ^b		
		Mean.	Maximum.	Minimum.	0.25 meter.		0.50 meter.				1.50 meters.		Minimum on grass	Maximum in sun. Black bulb in vacuo.	Free exposure (total)	Shelter (total)
					8 a.m.	2 p.m.	8 a.m.	2 p.m.			8 a.m.	8 a.m.				
1	760.73	25.7	31.6	22.1	27.6	22.8	28.4	28.6	28.7	28.1	85.9	21	20.3	53.2	1.8	1.6
2	61.23	25.4	31.2	22.5	27.5	28.5	28.4	28.7	28.6	28	84.5	20.4	21.3	47	1.9	1.7
3	60.66	26.5	32.2	23.1	27.5	28.7	28.5	28.6	28.5	28.1	83	21.1	21.9	53.9	3	2.2
4	60.27	25.9	31.8	22.1	27.5	28.8	28.6	28.7	28.6	28.2	86	21.2	20.3	54.4	1.6	1.5
5	59.84	25.7	31.9	22.5	27.5	28.4	28.5	28.5	28.5	28.1	86.4	21.1	21	51.5	1.9	1.7
6	60.12	26.4	31.9	23	27.7	28.8	28.5	28.8	28.6	28.2	84.3	21.4	21.2	52.2	2.3	1.6
7	60.31	26.8	32.1	23.6	28	29.3	28.5	28.8	28.6	28.1	76.6	19.7	21.9	52.7	3.8	2.7
8	60.06	25.1	30.4	22.2	28	28.6	28.8	29	28.6	28.1	86.6	20.4	20.4	46.5	1	1
9	60.52	24.9	31.5	20.6	27.6	28.3	28.7	28.6	28.5	28.1	80.3	18.6	18.3	49.5	2.4	1.9
10	60.28	25.6	31.6	21.5	28	28.4	28.7	28.5	28.5	28.1	80.4	19.5	21.1	51.3	2.9	2.1
11	60.23	26.6	33.4	22.7	27.6	29	28.5	28.8	28.5	28.1	74.6	18.9	20.6	54.4	4.5	3.6
12	60.17	25.6	31	23.2	27.8	28	28.7	28.5	28.5	28.1	85.4	20.5	20.9	52.4	1.5	1.1
13	60.60	25.1	31.6	22.3	27.5	28.5	28.6	28.5	28.5	28.1	87.4	20.6	20.2	55.8	3.5	3
14	60.95	25.4	31.7	22.1	27.7	28.5	28.6	28.6	28.4	28	80.8	19.2	20.6	51.5	3.2	2.3
15	60.87	24.5	29.5	20.7	27.3	28.2	28.5	28.4	28.3	28.1	88.7	20.2	18.5	46.8	.9	.8
16	61.92	25.5	30.9	22.3	27.5	28.5	28.3	28.5	28.3	28.1	85.5	20.6	20.8	45.2	2.4	1.9
17	62.02	25.7	31.8	21.6	27.5	28.4	28.3	28.4	28.3	28.1	81.1	19.6	20.2	51.2	3.2	2.2
18	61.84	25	31.3	20	27.2	28.2	28.2	28.6	28.3	28	82.2	19.2	17.5	49.5	3.2	2.2
19	61.06	25.5	30.6	22.1	27.3	28.5	28.2	28.5	28.3	28	85.7	20.7	19.8	44.4	1.9	1.6
20	61.10	25.4	31.4	21.8	27.4	28.2	28.4	28.4	28.4	28.1	80	19.1	18.8	55.5	2.9	2.4
21	60.30	25.4	31.8	20.6	27.1	28.2	28.2	28.3	28.3	28	82.1	19.6	18.5	50.2	3.3	2.4
22	59.90	26	32	22.3	27.4	28.2	28.1	28.5	28.3	28	83.2	20.6	20.2	54.6	3.3	2.4
23	60.68	26.1	31.9	22.5	27.6	28.7	28.3	28.5	28.3	28	81.6	20.4	20.9	50.1	3.4	2.4
24	61.53	25.4	30.9	21.7	27.6	28.5	28.4	28.7	28.3	28	82.1	19.6	19.3	52.4	2.1	1.8
25	62.35	25.9	31.9	22.2	27.5	28.9	28.5	28.8	28.3	28	78	19	20.1	51.8	4	3.2
26	62.53	24.7	32.3	20	27.3	28.5	28.4	28.6	28.3	28	76.4	17.5	17.3	50.4	3.6	2.9
27	62.56	23.8	31.2	18.5	26.8	28.3	28.3	28.5	28.1	28	74.8	16.1	15.9	49.9	4.4	3.3
28	62.30	23.9	31.2	18.5	26.6	28	28	28.2	28.3	28	75.7	16.4	16	53.8	4	2.9
29	61.29	23.7	30.3	18.4	26.2	27.7	27.8	28.1	28.3	28	79.2	17.1	15.3	51.7	4.2	2.2
30	60.81	24	30.3	20.2	26.7	27.6	27.8	28	28.3	28	83.6	18.4	17.8	47.7	2.5	2.1
31	61.54	24.2	31.4	18.5	26.2	27.5	27.8	27.8	28.3	27.9	78.4	17.2	16	52.5	3.9	2.9
Mean Total	760.99	25.3	31.4	21.5	27.4	28.4	28.4	28.5	28.4	28.1	82	19.5	19.4	51.1	2.9	2.2
Departure from normal	+0.49	+0.1	+1.5	+0.3							+0.8	+0.3			88.5	67.6

Day.	Wind.				Amount (mean). 0-10.	Clouds.			Sunshine. h. m.	Rain, 24 hours beginning mid-night. mm.	Miscellaneous.
	Prevailing direction.	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.		Form and direction.					
						Upper.	Lower.				
1	N quad.	85	10	SW	4.1	Ci.-S.	Cu.	EbyN	7 20	1.6	d° a. ⊕ ⊙ ⊙ ⊙ ⊙ p.
2	N quad.	151	12	W	5.9	Ci., A.-Cu.	Cu.	EbyN	5 50	1.7	d a. p. ⊕ p.
3	NNE	166	15	WbyN	4.9	A.-Cu.	Cu.	E	7 25		
4	ENE, ESE	97.5	15	WNW	6.1	Ci.	Cu.	EbyN	5 45	15	⊕ a. ⊙ ⊙ ⊙ p.
5	E quad.	86.5	10.5	WNW	5.5	Ci.-S.	Cu.	E	5 55	5.6	⊙ ⊙ ⊙ p.
6	W quad.	107.5	14	WNW	5	Ci.-S.	Cu.	E	7 35	5.6	⊙ ⊙ p.
7	W quad.	126	13	WSW	4.8	Ci.-S.	Cu.	E	7 55		
8	NE, NNE	80	10	NE	7.8	Ci.-S., A.-Cu.	Cu.	E	3 25	3.8	⊕ d a. ⊙ p.
9	N, NE	99.5	12.5	NE	4.8	Ci.	Cu.	E	3 45	1.3	d p.
10	NNE	115.5	11.5	WbyS	6.1	Ci.	Cu.	EbyN	5 50		
11	NNE, NE	148	15.5	ENE	3.8	Ci.-S., Ci.	Cu.	E	7 30		
12	W quad.	93	13	ENE	7.9	A.-Cu.	Cu.-N.	E	3 10	5.6	d a. ⊙ p.
13	E, ENE	136	15	E	8.8	A.-Cu.	Cu.	E	3 40	3.9	⊙ ⊙ p.
14	E quad.	148.5	15	NE	8.1	Ci.-S.	Cu.	E	4 05	.6	⊙ d a.
15	NE, WSW	50.5	6.5	W	9.1	A.-Cu.	Cu.-N.	E	2 45	4.9	d° ⊙ p.
16	E quad.	89.5	18	E	7.8	A.-Cu.	Cu.	E	3 05		
17	SE	121	16	SE	3	Ci.	Cu.	E	7 35		
18	WSW	91	11	WSW	.6		Cu.	E	8 30		
19	WSW	77	11	WSW	4.9	Ci.	Cu.	E	5 40	2	p p.
20	NNE, N	77.5	12.5	N	6.8	A.-Cu., Ci.	Cu.	E	3 40		
21	WSW	107.5	13	N	2.7		Cu.	E	7 15		
22	E quad.	87.5	12	WSW	4.6	Ci.	Cu.	E	7 30		
23	N, NNE	138.5	15	W, NNE	3.1	Ci.-S.	Cu.	ENE	7 25		d° ⊙ p.
24	Variable	55	8	WNW, N	3	Ci.-S.	Cu.	E	5 20	.5	d p.
25	SE	126.5	18	SE	3	Ci.	Cu.	E	8 35		⊙ a.
26	ESE	92.5	10	WNW	2.4	Ci.	Cu.	E	8 00		
27	E quad.	126	13.5	W, WNW	1.3		Cu.	E	8 40		
28	E quad.	116	14	W	2	Ci.	Cu.	E	8 35		
29	W quad.	91.5	13	WbyN	4.6	Ci.	Cu.	E	6 25		
30	E quad.	106	12	W	6.8	A.-Cu. E, ENE	Cu.	E	3 15	.3	p° p.
31	E quad.	153.5	18	W	2.9	Ci.	Cu.	E, ENE	9 05		
Mean Total		108	13		5				6 09		
Departure from normal		3,347			-1.1				190 30	52.4	
									+31 34	-7.3	

* All the mean values given in this table are deduced from hourly observations.
^b These values are taken from instruments mounted in the Observatory park, 1.5 meter above ground.

METEOROLOGICAL DATA FOR MIRADOR OBSERVATORY, BAGUIO.*

[φ=16° 25' N; λ=120° 36' E; barometer above sea, 1,512.5 meters; gravity correction not applied, -1.65 mm.]

Day.	Pressure ^b (mean).	Air temperature at Mirador (on the top of the mountain).					Air temperature in the valley (near the city hall).				Relative humidity (mean).	Vapor pressure (mean).	Radiation.			Evaporation.	
		Mean.	Maximum.	Hour.	Minimum.	Hour.	Maximum.	Hour.	Minimum.	Hour.			Minimum on grass.	Maximum in sun. Black bulb in vacuo. ^c	Free exposure (total)	Shelter (total)	
	mm.	°C.	°C.		°C.	Hour.	°C.	Hour.	°C.	Hour.	P.ct.	mm.	°C.	°C.	mm.	mm.	
1	638.38	19.1	26.4		15.2	11.00p.	25.8	2.05p.	13.9	11.20p.	71.8	11.6	14.6	47.5	7.6	3.6	
2	38.73	18.7	25.8	0.40p.	13.2	3.15a.	26.6	0.10p.	13.3	2.10a.	71.5	11.2	11.5	47.2	6.6	3.9	
3	38.25	19.2	24.8	1.45p.	15.2	5.20a.	26	1.45p.	15	2.10a.	75.8	12.2	14.2	45.2	6.6	3.5	
4	38.02	18.6	25.5	10.40a.	15.5	4.50a.	26.2	10.50a.	14.1	6.50a.	82.8	12.9	14.2	46.1	2.6	1.4	
5	37.60	19.2	25.8	11.05a.	15.4	6.05a.	25.7	11.10a.	14.6	4.00a.	84.5	13.8	13.5	47.1	2.5	1.5	
6	37.88	19.1	26.2	11.40a.	16	5.15a.	26.9	0.15p.	15	6.55a.	84.8	13.8	14.8	47	3.4	1.8	
7	37.80	18.9	25.2	0.05p.	15.3	4.00a.	27.1	0.25p.	14.5	6.45a.	79.7	12.9	13.1	47.5	5.5	2.6	
8	37.50	18.5	25.6	11.05a.	15.5	1.30a.	26	11.00a.	14.2	2.00a.	74.8	11.8	13.8	46.5	6.6	3.4	
9	37.71	18.9	26.1	0.05p.	14.8	3.35a.	26.5	1.45p.	14.4	4.20a.	51.2	8.1	14.9	47.4	10.3	4.7	
10	37.78	18.1	23.8	11.10a.	14.4	6.45a.	24	10.30a.	13.6	4.15a.	77.5	11.7	12.7	47.5	5.6	2.8	
11	37.79	18.5	25	2.00p.	14	11.50p.	24.3	1.20p.	14	11.00p.	84	13.2	15.37	48.9	5.3	2.5	
12	37.76	18.5	25	11.45a.	14.4	0.05a.	25.4	11.35a.	14.6	0.10a.	79.2	12.4	13.2	50.3	4.6	2.2	
13	37.73	18.6	24.8	11.15a.	15.5	10.50p.	26	11.10a.	14.5	2.55a.	80.7	12.7	14.2	44.1	5	2.3	
14	37.90	18.2	24.3	10.40a.	15	5.40a.	24.5	10.10a.	13.7	3.25a.	82	12.6	13.6	46.5	3.6	1.6	
15	37.94	18.7	24.7	1.20p.	15.1	3.45a.	24.9	10.30a.	14.9	7.00a.	80.3	12.7	14.4	44.8	3.9	2.1	
16	39.04	18.2	24.2	10.40a.	15	1.50a.	26	11.55a.	14.5	6.45a.	86.2	13.3	13.5	46	2.6	1.3	
17	39.19	18.2	22.8	10.00a.	15.1	6.45a.	24.1	1.45p.	14.7	5.40a.	88.5	13.7	14.9	41.6	1.3	.7	
18	39.02	18.2	24.5	11.55a.	15	6.30a.	24.9	11.25a.	13.2	5.55a.	91.7	14.1	13.7	46.2	2.3	1.4	
19	38.48	17.9	23.4	11.50a.	14.5	6.50a.	24.1	0.05p.	13.7	6.20a.	88.3	13.4	13.3	41.9	3.4	1.7	
20	38.33	17.7	25	10.30a.	14.3	6.00a.	26.5	0.10p.	13.1	6.00a.	82.7	12.3	13.4	44	2.3	1.5	
21	37.92	18.4	24.9	1.30p.	14.3	6.00a.	26.4		12.7	6.45a.	77	12	12.3	46.4	6.1	3	
22	37.56	19.2	25	0.10p.	15.6	4.15a.	25.8	0.10p.	13.5	6.20a.	75.2	12.4	12.7	48.2	5.3	2.2	
23	38	17.7	23.6	10.05a.	14.2	6.10a.	24	1.50p.	13.2	6.50a.	82.3	12.3	12.3	44.9	5.5	2	
24	38.60	18	25.1	11.55a.	14.2	3.00a.	25.6		13.2	5.00a.	77.2	11.7	13.5	42	5.9	2.3	
25	39.32	17.2	23.1	11.20a.	14.6	12m.n.	23.1	Noon	14.5	12m.n.	91.3	13.3	13	36.6	1.5	1	
26	39.38	17.6	24.3	Noon	13.9	5.55a.	25.5		12.5	6.05a.	84.2	12.6	12.5	46.6	4.6	2.2	
27	39.30	17.6	24.8	11.10a.	13.2	6.05a.	26		11.1	6.15a.	73	10.9	11.5	46.5	7.2	3.5	
28	38.99	17.3	23	1.00p.	13.2	5.50a.	23.8	11.00a.	11.7	6.30a.	79.3	11.5	10.4	45.8	5.2	2.3	
29	37.66	16.7	21.9		13.5	6.40a.	22.9	10.55a.	12.2	6.20a.	85	12	11.7	46.7	3.4	1.7	
30	37.60	17	23.9	10.45a.	13.2	3.40a.	24.3	0.35p.	12.3	6.55a.	81.3	11.5	11.7	46.8	4.6	2.2	
31	38.48	17	23.8	1.55p.	14.4	3.55a.	23.1	2.00p.	11.5	7.00a.	78.3	11.1	11.8	46.5	3.9	1.8	
Mean	638.25	18.2	24.6		14.6		25.2		13.6		80.1	12.3	13.2	45.8	4.7	2.3	
Total															144.8	70.7	

Day.	Wind.				Amount (mean).	Clouds.		Sunshine.	Rain, 24 hours beginning 6 a. m.	Miscellaneous.
	Prevailing direction. ^d	Total movement.	Maximum hourly velocity.	Direction at the time of the maximum velocity.		Form and direction.	Upper.			
		Km.	Km.		0-10.			h. m.	mm.	
1	SE, E	333.4	21.5	E	4.3	A.-Cu.	Cu. ENE, E	5 30		
2	E	369.1	23.5	E	.9	Ci.	Cu.	8 10		
3	E	382.2	31.6	E	2.1	A.-Cu.	Cu.	7 30		≡ p.
4	E, SE	274.1	21.1	W	5.1	Ci.	Cu., Cu.-N.	4 40		Ω ² a. ● a. ≡ ² p.
5	W	240.2	20.4	W	4.1	Ci.	Cu.	4 35		≡ p.
6	E quad.	267	22	E	3.7	Ci.	Cu.	5 30		Ω a. ≡ a. p.
7	E	311.7	20.7	E	2.3	Ci.	Cu.	7 50		Ω ² a. ≡ ² p.
8	E	342.1	20.3	W	4.7	Ci.	Cu.	6 00		≡ d p.
9	SE	403.4	27.4	E	3	A.-Cu.	Cu. SW	6 55		Ω ² a. p. ● p.
10	E	527.7	41	E	5.3	A.-Cu.	Cu. E	4 50	0.8	Ω ² a. p. ● p.
11	E	343	25.5	E	6.6	A.-cu., ci.-cu.	Cu. ESE	4 20		≡ p.
12	E	442.4	35.2	E	8.6	A.-Cu. SE	Cu.	3 00		≡ d p.
13	E, SE	339.8	25.1	E	4.9	Ci. W	Cu. W	5 35		≡ a. p.
14	E	323.9	22	E	7	A.-Cu. ESE	Cu.-N. E	3 00		Ω ² a. ≡ ² p.
15	SE, E	307	26.2	E	6.4	A.-Cu.	Cu. ESE	5 05	1.5	d ² a. d ² ≡ p.
16	E	346.4	20.9	W	5.3	Ci.	Cu.	4 25	2.6	≡ ² a. ● p.
17	E, W	219.6	18.5	W	8	A.-Cu.	Cu.	2 30		≡ a. p. d ² p.
18	Variable	288.9	23.3	W	6.7	Ci.	Cu.-N.	4 40	1.3	Ω ² a. ≡ ² d ² p.
19	E	319.7	19.6	NW	5.4	Ci.	Cu. SE, S	5 50	.5	≡ a. p. ● p.
20	E	329	20.6	SE	3.6	Ci.	Cu.	3 50		≡ a. p.
21	E	323.5	19.6	W, E	4.1	Ci.	Cu.	7 30		≡ p.
22	E	276.4	25.7	W	3	Ci.	Cu.	7 40		Ω ² a.
23	NE quad.	280.7	18.7	W	3.1	Ci.	Cu. SW	4 25		Ω a. ≡ p.
24	E	385.5	21.9	E	5.4	A.-Cu.	Cu. ESE	4 20	.3	Ω ² a. ≡ ² a. d ² p.
25	E, SE	312.1	22.7	SE	8	Ci.	Cu.-N. SE	1 50	.5	d ² ≡ ² a.
26	W, SE	230.2	21.1	W	3	Ci.	Cu.	5 55		Ω ≡ a. ≡ ² p.
27	SE, E	353.8	22.7	SW	.6	Ci.	Cu. E	7 10		≡ Ω a. ≡ p.
28	E, W				3.6	Ci.	Cu.	7 20		Ω a. ≡ a. p.
29	E, W				5.3	Ci.	Cu.	5 50		Ω a. ≡ a. p.
30	E	344.5	22.5	W	2.3	Ci.	Cu. E, W	6 50		Ω ² a. ≡ a. p.
31	E, W	298.6	25.2	W	1.4	Ci.	Cu. NW, WNW	6 50		Ω ² a. ≡ p.
Mean								5 28		
Total		328.1	23.8		4.4			169 25	7.5	

* All the mean values given in this table are deduced from six daily observations taken at 2, 6, 10 a. m. and 2, 6, 10 p. m.
 b The barometric readings of this station are not reduced to sea level.
 c Maximum of hourly observations taken from 6 a. m. to 6 p. m.
 d This element is based on hourly observations taken from a quadruple register, which gives only eight possible directions of the wind.

DAILY RAINFALL AT THE STATIONS OF THE WEATHER BUREAU, DECEMBER, 1914.

Station.	Day of month.															
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Jolo						2.8	1.3	5.8	18.3	0.8	0.3		16.8	1.5	0.8	
Isabela, Basilan					9.1	.8	5.6	.8		17	2		1	12.4		
Zamboanga						8.4	14.5		(*)	(*)		.8	10.2	10.7		
Davao					3.6		5.3	13.7					9.4	32.5		
Cotabato		2	2.3		.3	4.8	18.8	4.6	2.5		.3		.8	6.6		
Cagayan, Misamis			.8		.3	.3	1	.8		.8		.3				
Butuan	.5	1.3	.5	5.1		3.3	3.3	2.3	10.9	10.1	12.4	6.6	1.5	.3		1
Dumaguete		2		5.8	19.5		8.9	1.5	1.3	5.1	2.5	1				
Tagbilaran	.5	2.3	.8				2.5		59.4	4.8	2					
Iwahig				6.6		2.8	12.8					25.1	163.5	12.5		
Surigao	7.9	32.2	24.6		37.4	14.5	56.4	12	36.1	61	16.9	30				2.8
Maasin			7.4		19.1	4.8	8.1	11.2	21.6	52.8	18.1	42.4				
Cebu		8.6					24.7	11.9	3	12.7		6.6		1		
Iloilo		12.7			8.6	3				7.9	.8					
San Jose Buenavista					2.5	.8					.5		.5			
Cuyo					14											
Osmoc		10.2	8.1	.8	44.4	4.9	2.3		5.6	3.8	11.5	3.3				
Guian	11.4	5.1	.8	3.3	9.2	15.7	24.6	17.5	3.8	52.8	4.9	.5			.3	2.8
Tacloban		4	5.5		5.4	8.4	10.6	8.2	4.9	32.8	8.4	2.6	1.3	.9		.8
Capiz		.8			4.1	.5				2.8	2.1					.5
Borongan	5.3	19.9	4.1	25.1	61.8	10.9	42.4	39.1	38.1	41.9	37.8	8.6		6.6	3.8	9.2
Calbayog	1.1	.8	6.1	1.5	7.6	1.5	.8	.5	.3	4.6	2.8				2	4.6
Masbate	.5	1.8	3.6			9.4	.5	2	1.5	8.4	7.7				1.3	
Romblon	11.9	11.7	1.3	2.3	5.1	7.4	7.9		2.8	9.6	9.9	2				
Batag	9.4	7.1	3.8	19.8	5.6		2.5	12.7	5.1	10.2	16.3	1.8			33	3.8
Gubat	4	2.5	2	35.3	17.8	2		5.6	12.4	8.1	56.7	2.5	2.8		4.8	6.4
Legaspi	9.4	5.6	14.7	2	10.1	.3	2.3		4.3	5.1	35.7	11.9	1		17.5	6.6
Sumay, Guam	3.8		24.1	20.3		6.4		7.6	8.9	3.8				26.7		2.5
Calapan		1.5			17.3	1.8	1.3	.6	6.4	5.6	11.7	4.8	3.3	.3	1	9.1
Virac	9.4		13.2	5.1	21.1	1	1.8	13.2	8.9	13	29	24.4	1	2	89.2	.8
Nueva Caceres				.9	5.3				.3		21.6	2.7	9.4		18.8	4.2
Batangas		1							.8		.5	2.8				
Atimonan	6.9		3.3	15.8	6.9		8.1	3.8	8.1		10.7	13	2		5.1	
Ambulong, Tanauan			1.5			3.8		12.2			1.3	5.3				
Paracale	3.8	3.3	4.5	10.8	11.2	2	3.3	23.1	25.4	3.5	21.8	14.3	13	4.3	44.5	2
Santa Cruz, Laguna	25.6	17.2	4.9	1.3	3.8	3.6	.5	4.1		1.3	5.8	11.7	8.2			
Manila	1.6	1.7		15	5.6	5.6		3.8	1.3			5.6	3.9	.6	4.9	
Antipolo		3.1		.8	12.7		1	.5	1		3.6	9.9	5.1		6.9	
Iba					8.1								.3		.3	
San Isidro							.5	2		1.3		1.1	.5			
Tarlac																.8
Baler		4.6				3	1.5	10.4			89.6	6.9	3	18.3	36	36.6
Dagupan																28.4
Bolinao																3.3
Baguio										.8					1.5	2.6
San Fernando, Union																
Echague							3.6	7.4	1	28.4		1.8	14.8	6.6	1	
Candon															5.1	
Vigan															2.	
Tuguegarao		10.9							2.5		20.6		21.9	1	2.6	
Laoag																
Aparri			2.5				5	2.8		2.6		10.1	14.7	2.1	.8	
Santo Domingo, Batanes	.5		2	1.1	30	18	32.6	17.2	.3	63	34.3	2.4	.2	1.8	.2	2.2

* No observation.

Daily rainfall at the stations of the Weather Bureau, December, 1914—Continued.

Station.	Day of month.																Total.
	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.		
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	
Jolo								2.5	17.1	0.5					0.3	68.8	
Isabela, Basilan						.8										49.5	
Zamboanga																44.6	
Davao			3											8.4		75.9	
Cotabato					9.4		1.8			9.1					8.6	71.9	
Cagayan, Misamis														.5		4.8	
Butuan			2.3	1.5			.5	.5						1.5	8.1	73.5	
Dumaguete								2		4.8	4.3	1.3	6.1	5.3		71.4	
Tagbilaran										2						74.3	
Iwahig	2						3.9		.5							230.2	
Surigao					.5		3	8.6		23.2	8.9	.8	49.1	17.3	6.6	449.8	
Maasin			7.4	8.6												201.5	
Cebu				9.7				.5		1.3	3	1				81.3	
Iloilo										19.8			.5			53.3	
San Jose Buenavista													.3			4.6	
Cuyo												.8				14.8	
Ormoc				11.2	3.6					3.8			1.5			115	
Guiuan			8.2	6.6		.3	23.4	3.6	18.8	8.6	2.8	1	6.9		.5	236.2	
Tacloban	.6			10.4	.8		.1	3.2		2.5	3	5.6	11.7	.2		177.8	
Capiz				.5	1					1.1		1	6.1	5.1		25.6	
Borongan			1.5	12.5	1.3		7.1	6.8	.5	3	1	18.5	22.1	8.9		437.8	
Calbayog			1.8		1		6.1					.8	1.8			45.7	
Masbate										2	3.5	4.6	12.4	4.1		63.3	
Romblon				.5	9.1	7.1	3			9.7	.5					101.8	
Batag				13.2						3.6			20.4	1.5		169.8	
Gubat				10.7	7.6				1.8	5.3	8.1	11.2	11.2	1.3		220.1	
Legaspi	.5			4.6	27			1.5		8.2	1	.5				169.8	
Sumay, Guam			2.5	5.1		1.3	3.8	2.5					2.5		1.3	135.8	
Calapan			5.1	6.8	17.8	20.8	.5		.5	3.3			1.5		12.7	121	
Virac		.3		2.5	5.1	.5				3			.1			244.6	
Nueva Caceres				2.9	6.6	1.5										74.2	
Batangas				1.5		1.1	2.8	5.8								16.3	
Atimonan			12.4	4.8	20.1		1	1.3				.8				124.1	
Ambulong, Tanauan						2.3										26.4	
Paracale			2.5	16.7	43.6	8.9	4.5	4.3			2.5					273.8	
Santa Cruz, Laguna			.5		1	24.2		8.4						.5		122.6	
Manila			2					5							.3	52.4	
Antipolo			3.3				2.3									50.2	
Iba								4.1								8.7	
San Isidro			3.3					1								12.8	
Tarlac																1.8	
Baler		6.1					3.3	73.6			1.3	8		6.9		330.3	
Dagupan								8								.8	
Bolinao	1.8									.3						5.4	
Baguio		1.3	.5					3	.5							7.5	
San Fernando, Union																0	
Echague			1.3				.5	17.8	4.6			.5	1.5			90.8	
Candon																5.1	
Vigan																2	
Tuguegarao																59.5	
Laoag																0	
Aparri		5.4	.5				2.1	2.3		10.7	9.4	4.9	1.8			73.2	
Santo Domingo, Batanes	8.4	2.4					2.6	2	17.7	8.9	44.5	9.4	24.7	25.2	5.6	357	

MAXIMUM AND MINIMUM TEMPERATURES AT THE STATIONS OF THE WEATHER BUREAU, DECEMBER, 1914.

Day.	Jolo.		Isabela, Basilan.		Zamboanga.		Davao.		Cotabato.		Cagayan, Misamis.		Butuan.		Dumaguete.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.9	22	33	23.1	29.9	23.5	31.2	20.5	34.4	22.5	31.7	21.5	30.5	23.6	30	25.9
2	33	21.3	32.8	22.1	31	23	31.7	20.7	35.3	21.6	31.9	21.9	28.7	22.4	30.8	23.7
3	32.5	21.4	33.1	22.7	30	23	32.1	22	34.6	23.1	31.6	22.3	28.8	23.6	30.4	23.2
4	31	22.5	30.1	22.1	29.5	23	29.7	22.5	34.5	23.6	31.2	22.5	29.1	23	30.8	24.7
5	31.5	22.3	32.4	22.1	29.9	23.3	30.7	22.5	34.6	22.9	31.6	21.7	29	23.1	29.6	24.2
6	29.9	22.1	29.8	22.3	29.8	23.5	31.2	22	35.2	22.3	31.2	22.7	29.5	24	29.3	23.8
7	30.5	21.1	30.8	22.3	28.1	23.5	31.2	22.5	35.1	23.2	32.1	22.4	29.5	23	30.4	22.7
8	30.9	21.5	31.4	23.1	22.5	23.8	31.7	20.5	34.8	23	30.7	21.5	27.5	22.4	29.9	23.2
9	30.5	21.3	32.6	23.1	22.1	23.8	30.7	21	33	21.4	31.3	20.8	27.2	22.4	29.3	23.7
10	31.5	21.4	33.6	22.6	22.1	23.8	27.7	22.8	31.5	22.7	29.5	23	26.4	23.1	30.1	23
11	29.8	21.9	28.6	22.5	22.1	23.8	28	22.3	32.3	23	30.3	23	26.6	22.9	28.8	23.7
12	32.8	21.4	33.7	22.1	30.5	23.4	31.7	21.5	34.5	22.7	32	21.7	27.3	22.9	29.4	23.7
13	31.4	21.6	34	22.1	31	23.1	27.7	23.5	34.3	22.7	32.6	23.4	29.8	23.6	29.3	25.7
14	29.9	22.5	33.1	24.1	30.4	23.5	27.7	18.5	33.9	20.3	31.9	19.9	28.6	22.5	29.1	24.1
15	30.9	22.4	33.8	22.6	30.5	23	29.7	17.5	33.1	21.6	31.6	19.9	29.5	22.4	29.6	25.2
16	30	20.8	34.6	22.1	31.9	22.9	32.2	20	33.6	20	30.7	18.9	29.5	20.6	31.2	21.9
17	30.9	20.7	33.4	20.1	30.1	22.1	31.2	20	34.7	20.5	32	20.4	29	21.4	29.6	25.2
18	29.8	21.7	34.1	21.7?	31.5	22	31.7	21.5	34.6	21.1	30.9	22.3	29	20.4	30.9	22.8
19	29.9	22.5	34.1	21.7?	31.7	22.4	31.7	22.5	35.1	21.7	31.3	21	28.6	21.2	30.9	24.4
20	29.9	22.4	34.6	22.1	31.5	22.5	31.8	22.9	34.3	22.3	31.1	24.4	28	24.1	31.1	25
21	29.9	22.9	34.8	23.9	32	24	31.2	22.8	35.3	23.2	32.2	23	31	23.6	29.3	25.9
22	30.5	21.7	31.1	23.8	29.5	23.2	31.2	21.7	34.7	22.9	31.6	21	31.4	23.1	30	25
23	30.9	21.3	32.9	22.1	30.5	22.3	31.7	21.9	34.6	22.7	31.3	21.4	30	22.1	30	22.7
24	30.8	21.8	33.6	21.9	31	23.1	31.5	22.4	34	22.9	33	23.2	29.9	22.9	29.5	24.2
25	30.7	21.7	34.3	22.6	30	23.5	30.7	20.9	33.1	20.9	32	19.9	30	21.6	31.1	24.7
26	29.6	21.3	32.4	21.1	30.2	22	31.7	20.8	33.8	20.7	31.9	20.6	28.5	19.1	30.7	23
27	29.9	22	34.2	21.6	31.5	22	31.2	21.5	33.6	22.4	32.6	22	30	21.2	28.9	23.3
28	30.1	21.3	33.1	21.5	30.5	22.5	31.2	21.1	32.9	20.3	31.4	20.3	29.5	20.9	28.5	22.8
29	30.2	22.2?	32.6	21.5	30.6	21.7	31.5	19.4	33.5	18.9	29.6	19.2	28	17.9	30.1	22.4
30	30	21.8	32.1	19.6	30.5	22	31.7	20.8	32.6	20.5	29.4	20.3	27.6	21.4	28.8	22.3
31	30.4	21.5	34.6	21.1	30.8	22	31.6	22.9	34	23.3	31.6	23.4	29	22.7	30.1	22.1
Mean	30.6	21.8	32.9	22.2	30.5	22.8	30.9	21.4	34	22	31.4	21.6	28.9	22.2	29.9	23.8

Day.	Tagbilaran.		Iwahig.		Surigao.		Maasin.		Cebu.		Iloilo.		San Jose Buenavista.		Cuyo.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32	22.8	31.1	21.4	31.3	23.1	31.4	23.3	31.1	25	31.7	24.6	34.8	23	30.1	26.5
2	31.3	22.6	31.6	21.6	29.8	22.3	29.5	23	30.7	24.4	31.1	23.1	33.7	21.5	30.6	25.4
3	30.9	22.8	31.5	21.5	29.3	22.9	29.6	22.8	32	24.8	31	23.5	33.8	22.6	30.6	26
4	31.3	22.8	32.1	22.6	29.7	22.8	30	23.5	31.5	24.1	31.1	24.1	33.7	22.6	30.8	26.6
5	31.1	22.6	30.8	22.3	29	23.8	29.5	23.8	32.5	25	31.9	24.5	33.7	22.5	31	26.5
6	30.5	23.5	32.1	23.4?	29	23.9	31	23.8	31.9	24.5	30.8	24.1	33.1	23.5	30.1	24.8
7	31.6	23.5	30	23.2	29.9	23.7	29.6	24	31.5	22	30.1	23.7	32.8	23.5	30.2	26.8
8	30.9	22.7	31.5	23.4	31	23.3	30	23.6	29	23.2	30.9	24	33.8	21.5	30.7	26.1
9	28.9	22.6	31.4	22.6	29.2	22.7	29.5	23.2	29.5	23.2	30.9	23.8	33.7	21.6	30	25.8
10	31.1	22.5	31.5	22.9	27.3	22.7	29.6	22.6	29.5	23.3	30.2	24.4	32.8	21.5	30.2	25.9
11	29.4	23.1	32.3	22.7	29.2	22.5	28.6	23.2	28.8	23.1	29.1	23.8	31.8	22.1	29.7	26.1
12	30.5	22.5	26.6	23.3	27.3	22.6	29	23	28.5	24.5	30.1	24.5	33.5	23.1	31.1	26.1
13	32.4	22.4	29.4	23.4	30.3	22.4	30	23.8	30.2	23.1	30.7	24.1	36.6	22.1	31.2	26.4
14	30.6	22.6	30.9	22.6	29.5	24.4?	30.6	22.6	30	23.3	31	22.4	33.6	20.9	31	24.7
15	32.1	21.8	31.6	20.6	31.2	22.9	29.6	23	29.7	23.2	31.3	22.6	34.2	20	30.6	25
16	31	20.6	31.2	21.4	29.6	20.9	29.7	22.2	31.4	23.4	31.3	21.3	33.7	19.9	30.8	23.1
17	31.5	22.6	31.1	20.4	29.8	22.3	30.5	22.3	30.8	23.9	30.9	23.5	34.2	22	31	25.7
18	32.4	21.6	31	19.8	29.3	22.5	30.3	22.6	31	24	29.9	22.5	32.6	20.6	30	25.3
19	31.4	22.4	30.9	20.3	28.9	23.9	29.5	24	31.5	23.4	30.1	22.1	33.7	20.5	30.1	25.6
20	32.7	23.1	31.3	21.2	28.6	23.7	29.7	23.4	31.1	24.5	31	22.9	33.7	20.6	29.9	25.9
21	31.2	23.6	31.4	21.8	30.8	23.1	30.4	24.2	30.5	23.7	30.5	24.3	33.6	21.7	30.4	25.9
22	31.5	22.2	32.2	21.9	30.8	22.1	30.5	24.3	30.4	24.6	32.4	24.3	33.7	22.1	30.8	25.9
23	31.3	21.6	32	21.6	30.7	23.2	30	22.8	32.4	23.3	31.4	23	34.2	22.6	30.7	25
24	32.2	21.8	30.7	21.5	29.6	22.8	29.9	23	29	24.5	30.6	23.6	33.7	20.5	30.2	22.6
25	32.4	20.3	30.4	22.9	29.5	21.8	30	23.2	30	24	30.5	22.6	34.7	21.3	30.7	22.6
26	32.4	20.7	30.9	19.8	28.9	21.3	29.9	22.1	30.2	22.5	30	21.2	34.1	20	30	23.3
27	31	21	30.5	20.2	29	23.9	30.2	22.8	30	23.9	29.7	22.8	36.4	22.5	29.9	25.6
28	31	20.1	31.1	21.2	28.8	21.3	30.4	22	29.9	22.7	29.7	22.9	33.8	20.3	29.6	25.3
29	30.6	20.6	30.8	19.6	27.9	20.7	28.9	21.7	30.4	22.5	28.9	22.6	31.7	22.6	28.9	23.8
30	29.6	22.1	30.7	21.6	28.3	22.6	29.6	22.6	29.5	22.9	29.2	22.9	32.2	21	29.4	24.8
31	31.8	22.4	30.3	21.1	28.9	22.3	30	23	31.5	23.9	30.1	23.3	33.2	21.5	29.8	25.5
Mean	31.2	22.2	31	21.7	29.4	22.7	29.9	23.1	30.5	23.7	30.6	23.3	33.7	21.7	30.3	25.4

Maximum and minimum temperatures at the stations of the Weather Bureau, December, 1914.—Ctd.

Day.	Ormoc.		Guiuan.		Tacloban.		Capiz.		Borongan.		Calbayog.		Masbate.		Romblon.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32	23.1	31.6	24.2	32.5	23.4	32.7	25.4	31.7	25.8	33	21.9	33.4	25.4	32.7	25.2
2	31	23	30.8	24.4	31.9	24.1	31.8	24.4	31.8	23.2	33.1	22.6	31.8	24.5	32.8	23.8
3	31.6	22.9	30.6	24.3	31.1	23.4	32.5	24.3	31.6	23	32.8	22	32.6	24.6	32.9	24.2
4	32	22.4	32.3	24.4	32.1	23.7	32.4	24.5	31.7	23.7	29.8	23.3	32.6	24.5	32.6	24.1
5	31.2	22.9	31.2	25.1	31.1	24.4	32.2	25.5	31.6	24.2	29.4	23.5	33.6	24.8	33	25.4
6	32.6	23.8	30.9	23.1	31.7	23.8	31.3	24.6	31.6	22.7	30.2	23.2	32	25.6	33	25
7	32.8	23.5	31.1	25	32.5	23.7	31.3	25	32.1	23.2	33.5	23.2	33.4	25.2	33.2	24.3
8	32	23.9	31.1	23	32.4	23.6	32.3	24.8	31.6	22.7	30.3	23.1	33.6	24.8	32.5	23.8
9	32.8	23.3	30.5	23.5	32	23	31.4	24.4	31.1	23.7	32.7	21.1	29.6	24.8	32.7	24.5
10	30.6	22.8	31.1	23.8	31.5	23.5	31.2	25	31	23.2	33.6	23.4	33.5	23.2	32.7	24
11	28	23.9	31.2	23.5	30.1	23.1	31.6	24.8	30.8	22.6	30.3	23.2	29.2	24.8	31.6	23.9
12	28.8	23.4	31.3	24.4	31	23.5	31.8	25.2	32.1	23.4	33.6	23.2	32.2	25.5	33.2	24.2
13	31.9	22.1	31.4	25.5	31.5	22.1	32	25.2	31.1	23.4	32.4	21.8	32.5	23.2	32	25.3
14	31.7	21.2	30.2	25.5	32.4	22.5	31.9	22.8	31.6	25	32	19.8	33.2	23.2	32.2	24.3
15	31.8	20.8	31.4	24.3	31	21.1	32	22.8	31.9	21.4	31	19.8	32.6	24.2	33	22.8
16	29.8	19.9	29.4	22.5	28.3	23.4	31.4	21.6	29.6	22.9	29.4	22	31.6	24.2	32	22.9
17	32.1	21.2	31.4	25.3	31.4	22.9	32.3	23.1	30.6	22.9	32.6	20.5	30.8	24	32.1	24.9
18	31.2	21.3	30.9	25.1	30.3	22.9	31.6	22.2	30.9	21.8	32.6	20.7	30.8	24.5	32.7	24.4
19	31.9	20.9	30.7	24.3	30.2	22.5	32	24.7	31.7	22.9	32.2	21	31.4	25.2	32.7	22.3
20	31	22.3	30.9	24.5	30.3	24	32	24.3	31.8	23.7	31.7	23.2	32.5	23.1	31.1	24.4
21	31.9	23.2	31	24.7	30.7	24	31.7	25.2	31.8	23.3	31.2	25	32.2	25.6	29	25
22	31.2	20.7	31.8	23.4	31	23.5	32.4	24.1	31.6	23	30.7	23.4	32.8	25.8	31.6	24.9
23	30.9	18.9	30.9	22.7	31.6	22.6	32.2	22.3	31.6	21.2	31.5	21.4	33.4	25	32.5	22.7
24	31.8	21.2	30.8	23.8	31.1	23.2	31.8	24.3	31.1	22.2	32.6	21.5	33	24.6	32	23.3
25	31.6	20.4	31.2	24.3	31.2	23.6	31.4	22.6	32.6	24.4	32.7	20.2	31	25.2	32.2	24.5
26	31	20.3	30	23.5	30.3	23.3	31.2	21.9	31.6	22.5	30.7	22.3	31.6	24	32.5	22.7
27	32	21.4	30.4	23.5	31.6	22.2	31	23.6	31.8	24.2	33.6	20.6	31.6	24	29.5	23.3
28	32.3	20.5	30.9	23.4	31.7	22.5	29.9	23.6	31.6	25.2	32.8	21.3	28.8	24	32.1	23.9
29	29.1	19.6	30.2	23	28.3	21.4	27.3	23.1	31.1	20.6	31.5	21.6	29.4	22.5	32.2	24
30	29.8	21.4	30.9	24.3	30	22.8	30.2	23.3	30.8	24.5	30.2	21.2	30.6	23.5	32.5	20.5
31	31.3	20.3	29.9	24.4	31.9	22.5	30.2	23.6	30.8	20.7	33.3	20.4	30.8	23.5	32.4	22.9
Mean	31.3	21.8	30.9	24.1	31.1	23.1	31.5	23.9	31.4	23.1	31.8	22	31.9	24.6	32.2	23.9

Day.	Batag.		Gubat.		Legaspi.		Sumay, Guam.		Calapan.		Virac.		Nueva Caceres.		Batangas.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	30	24	31.3	25.2	31.4	25.3	29.6	24.4	31.5	23.6	30.6	23.2	32	20	33.8	23.5
2	29	22.7	31.8	25	32.6	24.9	29.8	23.4	32	25	33	21.4	31.5	19.6	32.9	22.6
3	29	23.8	31.6	25	30.7	25	28.4	24.4	31.5	23.6	33.2	21	31.9	19.5	34.3	22.5
4	29	23.2	27	24.3	28	24.5	29	24	31.5	24	30.1	22.7	30.9	20.8	33.9	23
5	28	22.6	29	23.8	32.8	24.3	28.8	24	31.5	25	31.1	21.8	32.4	20.9	33.5	23.2
6	29	23.5	31.4	23.7	31.8	25.2	28.4	24	31.1	22.5	32	22	31.9	21.3	33.4	23.5
7	29	24	31.1	24.6	32.4	24.7	29	22.4	31.2	24.2	30	21.3	31.3	20.2	34.3	23.4
8	29.8	23.5	30	24.2	31.8	25	29.2	24	31.4	23.5	32.2	22.5	32	19.9	33.3	22.5
9	29	23.5	29.3	25.2	31.1	24.2	28	22.4	29.8	22	30.8	22.4	32.5	18.4	33.3	21.2
10	28.8	22.7	30	25.7	30.6	25.4	28.8	23.4	31	23.5	31.1	23	30.4	20.6	33.8	23
11	29	22.3	27.7	24	28.6	24.5	28	23.2	30.5	23	30	23.4	31.3	21	33.9	22.2
12	29	24	30.8	24.3	31.1	24.8	28.2	23.6	30.4	23.6	32.1	23.6	32.3	21.1	34.3	23.4
13	29	22.6	29.7	24.2	30.5	24.6	27.4	24.4	29.4	23	31	22.8	29.9	20	30.3	22
14	29.3	23.7	30	25.6	32.4	24.7	27.8	23.6	31.1	20.5	30.3	22.6	30.9	17	32.4	21.2
15	29.5	23.5	29.9	25.3	31.2	25.5	29.4	23.2	32	22.5	29.4	21.2	30.7	18.5	32.7	21.7
16	28	22.2	28.5	23.5	28.6	23.3	29.4	23.9	30	21	31.2	22	29.6	22	31.9	22
17	29.5	23.5	29.9	25.5	30.7	24.3	29.4	23.6	30.7	23	31.8	20.2	31.3	18.7	33.5	24.1
18	29.8	23.5	29.9	23	31.1	24.3	28.6	23.8	31.2	20.8	29.8	20	30.4	18.2	32.9	20.6
19	30	23.4	31.6	21.3	31.6	25.3	28.6	23.8	32	21.5	32.3	20.3	31.1	21.5	32	20.8
20	29	23	30	23.8	30.3	25.5	28.8	23.4	28.2	23.2	31.3	21.9	30	22.4	30.3	21.5
21	29.9	23.7	30.1	24.9	31.2	25.2	29.4	23	30.5	22.8	31.5	23.2	30.7	21.4	33.3	20.2
22	28.9	22.7	29.7	24.5	31.6	22.8	29.8	22.4	31.5	23.1	32	23.1	31.1	21.6	33	23
23	29	23	30.1	23.7	32.6	22.2	28.8	23.2	31.6	22	32.2	19.9	31.5	19.5	32.3	21.6
24	29	24	29.8	25.5	32.2	25.2	27.8	23.4	31.1	24.2	30.5	19.8	32.1	19	32.8	22.3
25	29	23	30	25.8	31.5	24.4	29	23.4	31.8	21.6	30.7	23.9	31.8	18.9	32.8	21.6
26	29.5	22	28.4	22.8	30.8	21.2	28.6	23.4	31	24.5	30.2	20.4	30.9	15.6	33	20
27	28.9	24	29	23.6	30.5	24.1	28	23.7	31	22	31	22.9	31.2	20.6	32.6	20
28	28	22	27.5	23	30.1	23.6	28.8	23.9	30.5	23.9	30.9	19.6	30.1	18.2	32.4	20.7
29	28	22	28	23	30.5	23.3	28.6	24	31	21	31.6	21	30.2	21.2	31.9	18.5
30	28	22	28.5	21.6	31.2	23.2	29.6	24.4	31	21	32.1	19	31.3	14.5	32.3	20.5
31	29	21.7	29.5	24	31.6	24.2	29.4	24.4	31.1	20.9	32.3	19.1	31.2	16.7	33.3	19.2
Mean	29	23.1	29.7	24.2	31.1	24.3	28.8	23.6	31	22.8	31.2	21.7	31.2	19.6	32.8	21.8

Maximum and minimum temperatures at the stations of the Weather Bureau, December, 1914.—Ctd.

Day.	Atimonan.		Ambulong, Tanauan.		Paracale.		Sta. Cruz, Laguna.		Manila.		Antipolo.		Iba.		San Isidro.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	29.6	26.1	30.5	24	30	25	28.9	22.9	31.6	22.1	32	20.9	33.7	20.2	33.5	21.6
2	30	25.7	30.2	24	29.6	25.5	30.5	23.9	31.2	22.5	32.1	21.1	32.2	20.6	33.1	22.1
3	30.5	23.6	31.7	23.9	30.2	24.9	30.7	23	32.2	23.1	33	21.8	34	23.1	33.7	22.5
4	30.3	24.9	30.9	23.9	30	24.3	30.3	23.2	31.8	22.1	33	21.5	32.1	20.7	33.6	21.4
5	29.4	24.8	30.8	24	29.7	24.6	30.1	23	31.9	22.5	31	21.4	32.5	21.1	32.7	21.6
6	30.4	25.3	31.2	24.3	30	24.2	30.5	23.3	31.9	23	33.3	21.8	31.9	21.9	33.5	20.9
7	29.9	25.1	31	23.6	30	25	30.1	23.5	32.1	23.6	33	22.2	32	20.8	33.5	21.4
8	28.3	25.4	30	24	29.5	24.3	29.2	22.4	30.4	22.2	29.7	21.8	31.9	20.7	32.8	22.4
9	26.7	24.6	28.2	22.3	28.3	23.3	30.2	22.5	31.5	20.6	30.4	20	32	22.6	32.7	22.1
10	29.5	24.8	30.8	23.1	28.9	23.5	29.2	23.2	31.6	21.5	31.6	20.2	32.3	21.3	32.3	21.4
11	28.3	24.6	30.5	23.9	29.8	24	29.6	22.2	33.4	22.7	32.6	21.3	32.7	24.2	32.5	22.4
12	27.2	24.4	29.5	24	27.8	24.2	29.1	23.5	31	23.2	31.5	21.3	32.2	21.1	32.6	22.3
13	27.1	23.7	29.3	24	27.7	23	28.5	23	31.6	22.3	29.5	21.1	32.1	21.1	32.3	21.8
14	28.3	22.1	31	23	29.4	22	29.5	23	31.7	22.1	30.7	21.8	31.7	23.5	31.5	22.4
15	28.9	24.8	32	22.6	29.3	24.1	29.6	23.5	29.5	20.7	28.7	20.6	31.5	21.2	31	22.5
16	28.3	24	31.5	23.9	29.4	24	29.2	23.9	30.9	22.3	30.6	21.5	31.9	20.6	32.2	21.4
17	29.4	22.1	32	22.1	30	23.4	29.9	23	31.8	21.6	32.5	21	32.6	21.5	33	22.6
18	30.2	25.3	32.8	20.9	30	22.4	30.6	21.7	31.3	20	31.7	19	31.5	19.5	33.4	20.3
19	28.8	24.8	31.8	21.8	30.6	25.2	29.8	22	30.6	22.1	30	20.4	32	20.4	33.6	21.3
20	28.2	24	30	23.9	28	24.5	28.4	20.9	31.4	21.8	30.8	21	32.4	20	31.5	20.9
21	27	24.4	31.4	23	28	24	29.9	22.9	31.8	20.6	32.3	20.3	31	18.9	33	19.8
22	28.1	23.8	33	23	29.5	23.3	29.6	22.2	32	22.3	30.6	21.3	31.5	19.6	34	21.5
23	28.4	22.9	33.2	22.5	30	22	31.1	21.4	31.9	22.5	32.5	21.2	32.5	18.9	33.7	22.5
24	29.9	24.5	28	23.6	29.3	22.8	28.6	22	30.9	21.7	31.3	21	33.3	20.9	32.2	22.5
25	28.5	21.4	32.2	21.7	30.2	21	30.6	21.8	31.9	22.2	31.8	20.6	34	23.2	32.4	22
26	29.7	24.7	30.8	20.8	30	19.9	29.7	20.4	32.3	20	32.5	19	31.7	17.9	32.8	18
27	29	25.1	30.5	22.6	28.6	24.4	29.4	19.4	31.2	18.5	32.1	18.3	31.4	17.5	32.1	18.1
28	30.2	25.1	31	20.8	30	23.5	29.1	20.9	31.2	18.5	32.4	18.2	30.5	17.3	32.6	17.5
29	29.7	25.2	30.4	21.4	30.2	25.4	29.4	19.5	30.3	18.4	30.5	18.2	31	18	31.2	19.2
30	29.5	22.4	29.7	21.6	30	21.8	29.1	20	30.3	20.2	31	19.8	30.9	18.2	32.4	19
31	29.6	20.8	31	21.4	29.9	21.2	30	20.5	31.4	18.5	32.8	18	30.9	18.2	31.2	19
Mean	29	24.2	30.9	22.9	29.5	23.6	29.7	22.2	31.4	21.5	31.5	20.6	32.1	20.4	32.7	21.1

Day.	Tarlac.		Baler.		Dagupan.		Bolinao.		Baguio.		San Fernando, Union.		Echagüe.		Candon.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	34.2	22	29	24	35.2	22.5	33.5	22.9	26.4	15.2	32.5	22.7	31.9	20.2	31.5	23.8
2	34.8	21.1	31.5	22.5	35.4	21.5	33.9	22.9	25.8	13.2	32.1	21	30.4	22	31.6	21.6
3	35.6	22	32	23	35.7	24.6	33.5	22.9	24.8	15.2	32.7	22	31.2	22.5	31.4	23.4
4	35.3	21.7	32	22.8	34.1	23	33.6	22.2	25.5	15.5	33	22.1	32.3	22.2	31.5	23.9
5	34.7	21.6	31.8	22.1	36.1	22.9	34	22.6	25.8	15.4	32.7	22	32.3	20.7	31.5	23.4
6	35.4	21.7	31	21.8	33.2	23.1	32.8	23.9	26.2	16	32.1	23	32.8	20.3	32	23.4
7	34.5	21.1	31	21.6	35.2	23.1	33.1	24.3	25.2	15.3	32.6	22.4	31.8	21.2	31.5	24.7
8	34.3	22.1	31.6	21.7	33.9	22.8	33.1	23.9	25.6	15.5	32.2	22	30.7	22.5	31	23.5
9	34.3	20.1	30.5	21.1	35.3	23.3	33	24.1	26.1	14.8	31.6	23.6	29.9	20.9	31.5	23.5
10	33.8	20.4	30.5	21.2	32.7	22	32.9	23.3	23.8	14.4	31.9	22.2	27.7	20.8	30.5	23.5
11	34.2	22	30	22.5	34.8	23.6	33.5	24.3	25	14	32	22.3	31	22.3	31	26
12	34	21.6	31.8	22.9	32.8	22.1	32.6	23.1	25.8	14.4	32.5	21.1	29.3	21.8	31	23.6
13	34	22.1	29	22.4	34.2	23	33.5	24.4	24.8	15.5	32.2	23.3	23.8	21.1	32.1	24.5
14	33.9	22.5	27.2	21	33.6	23.8	32.9	23.1	24.3	15	32.4	23.7	25.8	20.1	30.4	24.5
15	33.8	22.2	27.5	22.4	33	22.6	33.1	23.9	24.7	15.1	31.8	22.1	25.5	21	30.5	24.8
16	34.4	21.8	26.9	21.5	35.2	21.6	32.7	22.9	24.2	15	32.2	23.3	29.4	21.4	30.2	24.1
17	34	22	29.1	22.5	35	22.5	33	24.4	22.8	15.1	32.5	22.1	32.3	19.9	30.7	24
18	36	20.2	30	20.5	32.9	22	32.5	24.4	24.5	15	32.1	22.1	31	21.8	30.5	24
19	36.2	22	30.2	22	32.3	22.7	32.4	24.4	23.4	14.5	31.5	22	27	22.4	31	23
20	34.2	20.4	30.4	20.9	34.8	22.9	32.6	21.7	25	14.3	31.7	21	28.9	21.2	29.6	23
21	35	19.5	30.7	21.2	31.7	21	33	21.9	24.9	14.3	31.8	20	31.6	20.1	30	22
22	35.5	20.8	31.5	22.3	32.3	21.5	33	23.1	25	15.6	31.6	21	33.1	20	30.4	22.5
23	35	21.2	31.5	22	30.8	23.6	31.8	24.9	23.6	14.2	31.5	23	30	22.9	30	23.5
24	33.8	21.5	27.5	22.4	35.2	21.9	33.1	22.4	25.1	14.2	33	21.4	27.5	21.3	29.5	22.5
25	34.5	21.8	29	-----	34.4	22.5	33.7	24.2	23.1	14.6	32	23.7	31.3	22.4	29.5	25
26	34.5	19	31.5	18.1	34.4	21.5	32.7	24.9	24.3	13.9	32.1	22.4	31.3	19.3	30.7	24.7
27	34.8	18.2	30.4	19.7	34.3	20	32.8	22.6	24.8	13.2	31.2	21	32.3	20.4	30	23
28	34.5	17.5	29	19.3	32.9	19.1	32.5	22	23	13.2	30.9	19.7	30.3	17	30	22.5
29	34.6	18.6	32.3	19.2	32.1	20.4	32.4	22.7	21.9	13.5	31	21.1	28.1	20.5	29.9	22
30	34.5	18.3	30.9	19.8	34.3	20.1	31.6	21.9	23.9	13.2	31.4	20.9	29.7	19.5	30	22.4
31	36.2	18.1	29.2	20	31.3	20	31.6	19	23.8	14.4	31.7	19.4	30.9	17.8	30	22.2
Mean	34.7	20.8	30.2	21.5	33.8	22.2	32.9	23.2	24.6	14.6	32	21.9	30	20.9	30.7	23.5

Maximum and minimum temperatures at the stations of the Weather Bureau, December, 1914—Ctd.

Day.	Vigan.		Tuguegarao.		Laoag.		Aparri.		Sto. Domingo, Batanes.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	32.5	22.2	33.4	21.8	35.1	20.5	29.6	23	29	23.6
2	34	22.2	32.6	21	36.8	20	29.2	22	29.8	23.6
3	31.7	24.5	32.1	22.8	36.5	20.9	28.6	22.6	29.4	24.2
4	31.5	23.6	33	22.7	33.4	22.4	30.6	22.1	28.7	24.6
5	31.7	23.6	34	22.2	33.9	22.6	30.2	22.5	29.8	24
6	31.6	23.4	33	21.9	35.1	22	29.2	22.6	26.4	22.4
7	31.8	23.2	32.2	21.5	35.7	21.1	29.4	22.8	26.2	22.5
8	32.2	22.7	31.2	21.6	36.8	19.5	28.4	22	25.8	22
9	31.8	23.5	31.2	22.3	37.1	22	28	21.6	25.9	22.2
10	32	22.2	30.3	21.2	33.7	20.6	27.3	22	27.5	23.8
11	31	24	32.5	21.8	33.8	24.5	30.6	22.5	30.1	24.2
12	31	23.1	31	20.2	34.8	19.9	28.7	21.3	24	22
13	31.2	23.4	26.6	21.1	32.6	24.5	24.3	21.5	23.6	18.4
14	31.8	23.2	26.8	20.8	36.2	21.7	24.6	21.4	23.8	20.4
15	32	25	28.8	21.5	34.7	23.1	26.7	21.8	24.4	21.7
16	30.8	23.7	31.5	22.4	33.2	23.3	29.4	21.8	23.3	20.8
17	31.2	23	33.4	22.3	34.6	22	30.5	22.6	25.4	21.6
18	31.2	22.3	31.4	22.5	32.3	21.5	28	23.5	25.4	21.9
19	31	22	28.1	22.1	32.7	23.7	27.5	23.3	26.6	21
20	30.5	20.7	30.5	21	34.1	18	27.4	20.5	26.3	22.4
21	30.3	21.3	31.6	19.9	33.3	18.4	29.2	20.7	28.6	22.3
22	32	21.3	33.6	20.3	32.2	19.5	30.4	21.6	29.2	23.2
23	30	20.8	30.2	22	33.7	18.6	27.5	22.6	25.3	23.2
24	31.8	21.8	28.2	21.6	33.4	18.5	26.6	22.4	28.1	22.2
25	31	23.6	31.5	22.5	34.2	19.8	29.6	22.6	29.6	23
26	31.5	22.7	32.4	21.9	34.7	22.4	29.1	22.8	27.5	22.5
27	30.4	21.8	32.8	21.6	34.8	20.1	26.5	22.8	26	22.5
28	30.3	22.2	32	19	34.6	20	28.4	21.8	23.7	21.6
29	30.7	20.5	29.5	20.8	33	21	26.4	21.8	25.2	20.4
30	31.5	21.3	32.5	20.9	32.7	18.9	28.2	21.3	25	20.4
31	31.2	21.7	32.8	17.5	32.8	19.9	29.6	20.6	28	21
Mean	31.4	22.6	31.3	21.4	34.3	21	28.4	22.1	26.7	22.2

SEISMOLOGICAL BULLETIN FOR DECEMBER, 1914.

By Rev. MIGUEL SADERRA MASÓ, S. J.,
Assistant Director of the Weather Bureau.

EARTHQUAKES FELT IN THE PHILIPPINES.¹

6, 8^h 09^m [6, 16^h 09^m]. Butuan (N Mindanao). Oscillatory earthquake, direction NNE-SSW, intensity IV, duration 10 seconds.

7, 12^h 23^m 15^{s*} [7, 20^h 23^m 15^s]. Bolinao (W Luzon). Earthquake of intensity III; it originated in the China Sea at a short distance from Luzon.

10, 18^h 31^m 16^{s*} [11, 2^h 31^m 16^s]. S Mindanao. Earthquake felt throughout the whole of the southern and eastern part of Mindanao. The epicenter was probably in the eastern part of the Celebes Sea. Its intensity within the island was not greater than IV in the most southerly provinces of Cotabato and Davao; it was perceptible in all the rest of the Island with the exception of the more northerly parts of Dapitan, Misamis and Surigao; consequently the area affected within the island had an extension of more than 500 kilometers in the E-W direction and about 400 kilometers in the N-S direction. Notwithstanding this we do not think that it had very great intensity in the epicenter, from the fact that it was registered but weakly in Manila and was not registered at all in the other observatories of the Far East.

14, 22^h 26^m 05^{s*} [15, 6^h 26^m 05^s]. Samar and Leyte. Earthquake of intensity V-VI which was felt throughout the whole of the Island of Samar and in the NE of Leyte. It originated to the E on the Great Philippine Deep of the Pacific and consequently affected principally the eastern part of Samar, where there was also a repetition of intensity III ten minutes later.

15, 19^h 56^m 22^{s*} [16, 3^h 56^m 22^s]. Echagüe (E Luzon). Oscillatory earthquake, direction SSW-NNE, intensity III, duration 5 seconds. It was accompanied by a subterranean noise. Its epicenter was probably to the south of Echagüe in the province of Nueva Vizcaya.

16, 1^h 54^m 32^{s*} [16, 9^h 54^m 32^s]. Davao (SE Mindanao). Oscillatory earthquake, direction SW-NE, intensity IV, duration 15 seconds; there were repetitions of intensity III at 2^h 35^m [10^h 35^m] and 2^h 40^m [10^h 40^m].

16, 3^h 58^m 00^{s*} [16, 11^h 58^m 00^s]. SE Mindanao. Earthquake of intensity IV-V in the district of Davao and eastern parts of Cotabato; it was also felt in the Agusan Valley. The origin of these earthquakes seems to have been the same as that of the 10th.

16, 17^h 35^m 44^s [17, 3^h 14^m 44^s]. Guam (Mariana Islands). Earthquake of intensity III.

19, 19^h 25^m 33^{s*} [20, 3^h 25^m 33^s]. Central Luzon. Earthquake felt throughout the whole of the central part of the Island of Luzon in a zone which extended from the Pacific to the China Sea, and comprehended the Provinces of Pangasinan, Nueva Ecija, Tarlac, the northern parts of Tayabas, Zambales and the south of Nueva Vizcaya, Benguet, and

¹ The intensity of earthquakes is given in the notation known as the Rossi-Forel scale. The time is that indicated by the seismographs at the Central Observatory whenever the disturbance has been registered by them. This fact is denoted by an asterisk (*). Otherwise the time is that noted by the observer who sent the report. All time indications are in Greenwich mean time (midnight=0^h), Insular time being added in brackets for the convenience of Philippine readers.

Union. Although it had the great extension of 250 kilometers in the E-W direction and more than 150 from N to S, it does not appear that the intensity was anywhere greater than IV. The place of origin of the shock was in the seismotectonic line which crosses the island in the direction indicated, as has been mentioned several times in this BULLETIN and recently in the article "The relation of seismic disturbances in the Philippines to the geological structure"¹ page 220, where this seismotectonic line is described. This line is marked on the map accompanying the article with the letters CC, and is given as probably indicating the existence of a great fault.

25, 9^h 23^m 18^s* [25, 17^h 23^m 18^s]. **NE Luzon.** Earthquake of intensity IV, felt throughout the whole of the Province of Cagayan; it originated probably in the sea between the extreme north of Luzon and the island of Camiguin.

28, 11^h 49^m 07^s* [28, 19^h 49^m 07^s]. **Batangas (S Luzon).** Oscillatory earthquake, direction S-N, intensity III, duration 4 seconds.

28, 14^h 39^m [28, 22^h 39^m]. **Cotabato (S Mindanao).** Oscillatory earthquake, direction NE-SW, intensity III, duration 5 seconds. It was also felt slightly in the Agusan Valley to the NE of Cotabato; it originated probably in the region of Rio Grande or Pulangui.

30, 8^h 28^m [30, 16^h 28^m]. **Cotabato (S Mindanao).** Oscillatory and subsultory earthquake, intensity II-III, duration 2 seconds.

31, 14^h 32^m [31, 22^h 32^m]. **Baguio (W Luzon).** Earthquake of intensity II-III.

RECORDS OF THE MICROSEISMOGRAPH.

[Time: Greenwich mean. Midnight=0^h. Instrument: Wiechert seismograph; 1,000 kilograms. A_N : $T_0=9.0$, $\epsilon=3.31$, $\frac{r}{T_0^2}=0.039$; A_E : $T_0=6.2$, $\epsilon=2.58$, $\frac{r}{T_0^2}=0.082$. Alluvium. 2.40 meters above sea level.]

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A_N μ	A_E μ	
308	2	Iv	eP	h. m. s.				Western Luzon.
			F	22 35 05				
309	2	Iv	eP	22 47 00				
			F	49				
310	7	Iv	eP	12 23 15				
			L	23 40				
			M _N	24 02	1	2		
			F	28				
311	7	Iv	eP	15 24 21				
			L	24 34				
			F	27				
312	9	Iv	eP	7 06 49				
			F	09				
313	10	Iv	e	18 31 56				Southern Mindanao, probable origin NE Celebes Sea.
			L	34 19				
			M _N	35 42	7	9		
			F	55				
314	14	Iv	eP	22 26 05				Samar and Leyte. Origin in the Philippine Deep.
			L	27 15				
			M _E	27 38	6	26		
			F	42				
315	15	Iv	eP	19 56 22				North of Nueva Vizcaya.
			L	56 49				
			F	59				
316	16	Iv	eP	1 54 32				
			L	56 56				
			M _N	59 31	10	8		
317	16	Iv	eP	3 58 00				
			F	4 01				

¹ The Philippine Journal of Science Vol. VIII, No. 4, Sec. A, August 1913.

Records of the microseismograph—Continued.

No.	Date.	Character.	Phase.	Hour.	Period.	Amplitude.		Remarks.
						A _N μ	A _E μ	
318	18	I	e F	<i>h. m. s.</i> 22 46 57 58				Central Luzon. Maximum and end in N-S component lost by the force of the shock.
319	19	IIv	eP L M _E F	19 25 33 25 53 26 14 44	2	474		
320	20	Ir	e F	14 20 25 15 22				
321	21	Iv	eP L M _N F	17 25 44 26 08 26 25 32	1	32		
322	22	Iv	eP F	0 14 45 17				
323	22	Ir	e F	9 02 30 24				
324	22	Iv	eP F	20 31 24 33				
325	24	Iv	eP F	13 10 40 13				
326	24	Iv	eP F	17 56 36 18 00				
327	25	Iv	eP L M _N F	9 23 18 24 17 24 34 39	2	14		
328	28	Iv	eP L M _N F	11 49 07 49 23 49 49 55	2	42		
329	30	Iv	eP L M _E F	11 26 00 26 17 26 20 31	2	27		

TEMBLORES DE TIERRA SENTIDOS EN FILIPINAS.¹

6, 8^h 09^m [6, 16^h 09^m]. Butuan (N de Mindanao). Temblor oscilatorio; dirección NNE-SSW, intensidad IV, duración 10^s.

7, 12^h 23^m 15^{s*} [7, 20^h 23^m 15^s]. Bolinao (W de Luzón). Temblor de tierra de intensidad III; su origen se hallaba en el Mar de la China a poca distancia de Luzón.

10, 18^h 31^m 16^{s*} [11, 2^h 31^m 16^s]. S de Mindanao. Temblor de tierra sentido en toda la parte sur y oriental de Mindanao. El epicentro se hallaba probablemente en la parte oriental del Mar de Célebes. Su intensidad dentro de la isla no pasó de IV en las provincias más meridionales de Cotabato y Dávao; fué perceptible en todo el resto de la isla, excepto en los distritos más septentrionales de Dapitan, Misamis y parte N de Surigao; por consiguiente el área afectada dentro de esta isla se extendía más de 500 kilómetros en la dirección E-W y unos 400 de N a S. No creemos con todo que en el epicentro tuviese grande intensidad, por el hecho de haberse registrado débilmente en Manila, y dejado de registrarse en algunos de los observatorios del Extremo Oriente.

14, 22^h 26^m 05^{s*} [15, 6^h 26^m 05^s]. Sámar y Leyte. Temblor de tierra de intensidad V-VI sentido en toda la Isla de Sámar y en la parte NE de Leyte. Su origen se hallaba al E en el Pacífico en el Abismo de Filipinas, y así afectó principalmente la parte oriental de Sámar; donde se observó una repetición de intensidad III diez minutos más tarde.

15, 19^h 56^m 22^{s*} [16, 3^h 56^m 22^s]. Echagüe (E de Luzón). Temblor oscilatorio, dirección SSW-NNE, intensidad III, duración 5^s. Acompañado de ruido subterráneo. El epicentro se hallaba probablemente al sur de Echagüe en la Provincia de Nueva Vizcaya.

16, 1^h 54^m 32^{s*} [16, 9^h 54^m 32^s]. Dávao (SE de Mindanao). Temblor oscilatorio, dirección SW-NE, intensidad IV, duración 15^s. Repitió con intensidad III a 2^h 35^m [10^h 35^m], 2^h 40^m [10^h 40^m].

16, 3^h 58^m 00^{s*} [16, 11^h 58^m 00^s]. SE de Mindanao. Temblor de tierra de intensidad IV-V en el distrito de Dávao y parte oriental del Cotabato; sentido también en el valle del Agusan. El origen de estos temblores parece era el mismo que el del día 10.

16, 17^h 35^m 44^{s*} [17, 3^h 14^m 44^s]. Guam (Islas Marianas). Temblor de tierra de intensidad III.

19, 19^h 25^m 33^{s*} [20, 3^h 25^m 33^s]. Centro de Luzón. Temblor de tierra sentido en toda la parte central de la Isla de Luzón en una zona que se extiende desde las costas del Mar Pacífico a las del de la China, y comprende las Provincias de Pangasinán, Nueva Écija y Tárlac, y la parte N de las de Tayabas, Zambales y la S de Nueva Vizcaya, Benguet y Unión. Con ser de tan grande extensión 250 kilómetros en la dirección E-W y más de 150 de N a S no parece que su intensidad pasase en ninguna parte del grado IV. El origen de este temblor se hallaba en la línea seismotectónica que cruza la isla en la indicada dirección, mencionada varias veces en este Boletín y recientemente en el artículo "The relation of seismic disturbances in the Philippines in relation to the geological structure,"² pág. 220, donde se describe dicha línea seismotectónica, señalada en el mapa con las letras CC. y se da como muy probable la existencia de una gran falla.

25, 9^h 23^m 18^{s*} [25, 17^h 23^m 18^s]. NE de Luzón. Temblor de tierra de intensidad IV, sentido en toda la Provincia de Cagayán; su origen se hallaba probablemente en el mar entre el extremo NE de Luzón y la isla de Camiguín.

¹ La intensidad de los terremotos se indica conforme a la conocida escala de Rossi-Forel. Cuanto a la hora de su ocurrencia, adoptamos la indicada por los sismógrafos de este Observatorio siempre que los hayan registrado, distinguiéndola por medio de un asterisco (*). En caso contrario copiamos la apuntada por los observadores que nos envían las notas. Todas las indicaciones del tiempo se refieren al tiempo medio de Greenwich (medianoche=0^h). Para conveniencia de los lectores de Filipinas se añade también el tiempo insular.

² The Philippine Journal of Science, Vol. VIII, No. 4, Sec. A, August, 1913.

28, 11^h 49^m 07^{s*} [28, 19^h 49^m 07^s]. Batangas (S de Luzón). Temblor oscilatorio, dirección S-N, intensidad III, duración 4.^s

28, 14^h 39^m [28, 22^h 39^m]. Cotabato (S de Midanao). Temblor oscilatorio, dirección NE-SW, intensidad III, duración 5^s. Sintióse también muy débilmente en el valle del Agusan al NE de Cotabato; probablemente el origen se hallaba en la región del Río Grande o Pulangui.

30, 8^h 28^m [30, 16^h 28^m]. Cotabato (S de Mindanao). Temblor de tierra oscilatorio y subsultorio, de intensidad II-III, duración 2^s.

31, 14^h 32^m [31, 22^h 32^m]. Baguio (W de Luzón). Temblor de tierra de intensidad II-III.



**APPENDIX TO THE MONTHLY
BULLETIN FOR 1914.**

**ANNUAL SUMMARY OF METEOROLOGICAL DATA FOR MANILA
DEDUCED FROM TWENTY-FOUR DAILY OBSERVATIONS
DURING THE YEAR 1914.**

Month.	Pressure.		Air temperature.									
	Mean.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Departure from normal.	Mean minimum.	Departure from normal.	Absolute maximum.	Day.	Absolute minimum.	Day.
January	783.24	+2.08	23.7	-1.2	30.4	+0.3	19.0	-1.4	32.7	31	14.5	11
February	62.26	+ .93	24.2	-1.1	30.9	+ .1	18.9	-1.4	33.1	28	16.3	19
March	60.77	+ .25	26.5	- .1	34.1	+1.7	20.6	- .7	35.7	12	17.6	26
April	60.17	+ .76	28	- .1	35	+1.1	23.1	+ .3	36.9	26	19.2	1
May	58.42	+ .05	28.5	+ .1	35.7	+2.1	23.9	0	37.7	15	21.4	2
June	57.62	- .33	27.4	- .5	32.8	+ .4	24	+ .1	35.5	14	22.7	20
July	56.78	- .46	27	0	31.6	+ .7	24.4	+ .7	33.5	31	22.7	17
August	56.99	- .32	27	0	31.6	+ .9	23.6	- .1	34.1	5	22.1	4
September	57.35	- .09	26.2	- .7	30.6	0	23.6	0	34.1	25	22.2	21
October	61.13	+2.39	25.9	- .8	31.8	+ .7	21.9	-1.1	33.4	3	20	23
November	60.31	+ .86	26	+ .1	32.3	+1.9	21.5	- .6	33.7	26	19.7	18
December	60.99	+ .49	25.3	+ .1	31.4	+1.5	21.5	+ .3	33.4	11	18.4	29
Annual	759.67	+0.55	26.3	-0.4	32.4	+1.0	22.2	-0.3	37.7	V, 15	14.5	I, 11

Month.	Wind.				Relative humidity		Vapor pressure.		Cloudiness.		
	Prevailing direction.	Velocity			Mean.	Departure from normal.	Mean.	Departure from normal.	Mean.	Departure from normal.	
		Total.	Departure from normal.	Hourly maximum.							Direction at the time of the maximum velocity.
January	E quadrant	4,925.5	- 204.6	28	NNE	76.2	-1.9	16.5	-1.6	5.5	+0.2
February	SE	5,255.5	- 134.3	26	ESE, SE	73.8	- .1	16.3	-1.2	5.6	+ .7
March	SE	6,344	- 498.7	28.5	SSE	68.6	-2.9	17.3	- .8	3.6	- .8
April	SE	5,921	-1,081.2	34	SE	70.8	+1.1	19.6	+ .2	4.5	+ .4
May	SE	6,137.5	- 719.2	34	SW	72.6	-3.4	20.6	-1	5.5	- .2
June	W quadrant	6,714	- 98.1	64	SW	81.7	+ .8	21.9	- .4	7.6	+ .6
July	SW	10,790	+2,197.3	53	WbyS	85.4	+ .6	22.4	0	8.3	+ .5
August	SW	11,171.5	+2,090.9	53	SW	83	-2	21.9	- .5	8	+ .1
September	SW	7,340.5	- 883	41	WSW	87.3	+1.6	21.9	- .5	7.5	- .2
October	E quadrant	3,862.5	-1,415.1	22	N, NNE	79.7	-3.8	19.7	-1.9	5.4	-1.2
November	E quadrant	3,787.5	- 997.6	23	N	78.4	-3.9	19.3	-1	4.5	-1.8
December	NE quadrant	3,347	-1,350.4	18	E, SE, W	82	+ .8	19.5	+ .3	5	-1.1
Annual		75,596.5	-3,044.0	64		78.3	-1.1	19.7	-0.7	5.9	-0.2

Month.	Evaporation.		Sunshine.		Rainfall.					
	Free exposure, total.	Under shelter, total.	Total.	Departure from normal.	Total.	Departure from normal.	Greatest in a single day.	Day.	Rainy days.	Departure from normal.
January	126.1	96.5	186 15	- 5 26	3.5	- 23.8	1.7	8	3	-2
February	140.1	106.6	174 05	-23 49	7.3	- 3.1	3.3	14	4	+1
March	206.3	153.4	263 10	+33 20	6.1	- 12.1	5.1	15	2	-1
April	183.7	135.3	259 15	- 3 03	53.4	+ 18.8	26.2	5	8	+4
May	176.7	133.6	260 25	+27 31	84	- 24.7	43.8	18	11	+2
June	99.5	80.1	143 55	-29 05	367.9	+132	109.7	3	13	-3
July	79.3	69.6	116 15	-29 18	399.3	- 2.7	71.2	7	23	+2
August	87.2	75.1	118 40	-22 18	492.3	+130.6	96.6	22	25	+3
September	58.7	51.1	128 10	- 8 16	887.7	+517.4	234.7	2	21	+1
October	105.4	81	214 30	+42 32	40.2	-162	18	18	12	-4
November	104.6	79.1	232 55	+68 35	41	- 86.1	29.3	27	7	-5
December	88.5	67.6	190 30	+31 34	52.4	- 7.3	15	4	14	+5
Annual	1,456.1	1,129.0	2,288 05	+82 17	2,435.1	+477.0	234.7	IX, 2	143	+3

CATALOGUE OF PHILIPPINE EARTHQUAKES, 1914.*

Date.	Time of occurrence (Greenwich mean time).	Place.	Probable origin or epicenter.		Approximate extensions of the shaken area.		Intensity (Rossi-Forel).	Remarks.	
			ϕ	λ	Longer axis.	Shorter axis.			
	<i>h. m.</i>		$^{\circ}$	$^{\circ}$	<i>Km.</i>	<i>Km.</i>			
Jan.	6	13 18	14.0 N	121.0 E	100	100	III-IV	Registered at Manila.	
	6	15 52					III	Do.	
	8	5 20					III	Do.	
	11	13 09					III	Do.	
	11	13 40	10.7 N	124.5 E			IV	Do.	
	11	21 03					IV	Do.	
	12	12 26	18.1 N	121.0 E	200	90	IV	Do.	
	14	4 39					V	Preceded by rumbling sounds. Registered at Manila.	
	18	10 47	10.7 N	124.5 E			III	Registered at Manila.	
	20	16 44	13.4 N	124.5 E	250	190	V	Registered at Manila. Rumbling sounds.	
	20	51	5.7 N	121.8 E			IV-V		
	23	20 11					III		
	23	13 47	6.8 N	123.3 E	250		IV-V	With rumbling sounds.	
	28	19 17					III		
31	20 06	15.3 N	121.8 E	300	100	V			
Feb.	2	5 31					III	Registered at Manila.	
	8	5 11					II-III		
	13	20 15					III		
	14	7 40	17.5 N	120.2 E			III	Registered at Manila. Repeated at 7 ^h 45 ^m , intensity III.	
	14	21 55					III		
	16	4 50	10.7 N	124.5 E			IV		
	16	21 30					II-III		
	19	5 45	5.7 N	121.8 E			III-IV		
	20	4 28	9.0 N	126.5 E	300	120	VI-VII	Registered at Manila and Batavia. Repeated 9 ^h , 38 ^m intensity III.	
	22	12 04					III		
	24	11 52	7.7 N	123.4 E	500	500	V-VI	Registered in the Far East.	
	24	17 45					III-IV		
	24	21 50					II-III	Registered at Manila.	
	25	11 55					III		
26	4 49					III			
26	12 40	8.8 N	122.7 E	200		IV-V			
28	6 48					III-IV	Registered at Manila.		
Mar.	8	4 55					II-III		
	11	17 40					II-III		
	16	22 45	12.9 N	126.0 E	1,000	300	VII	Registered in the Far East.	
	17	6 49	12.9 N	126.0 E			III-IV	Registered at Manila.	
	17	16 57			300	210	V	Registered in the Far East.	
	19	21 26			150	80	III		
	21	15 09					IV	Registered at Manila.	
	22	14 30					IV		
	22	18 16			400	190	V	Registered in the Far East.	
	26	13 29	10.7 N	124.5 E			IV-V		
	26	7 26					IV	Repeated at 7 ^h 32 ^m , intensity III. Both registered at Manila.	
	28	13 59	10.7 N	124.5 E			V		
	Apr.	1	22 13	16.3 N	120.3 E	130	60	III	Registered at Manila.
		2	17 50	13.8 N	120.3 E			III	Do.
8		21 25					IV		
9		16 58					III-IV		
16		19 55					III	Do.	
17		10 54	13.4 N	123.4 E	90	90	IV	Do.	
18		3 47	18.5 N	122.3 E	120	100	III	Do.	
20		22 45					III		
25		14 39	18.7 N	121.2 E	250	180	VI	Registered in the Far East.	
29		4 38	18.7 N	121.2 E			III		
May	5	15 30					IV		
	19	0 31	19.0 N	120.8 E	280	70	IV	Registered at Manila.	
	20	14 48	15.7 N	121.8 E	280	150	III-IV	Do.	
	22	9 54	13.8 N	120.3 E	110	50	III	Do.	
	29	20 10					III		
June	2	15 10					III		
	3	6 15					III		
	4	15 35	9.5 N	121.4 E	450	200	IV		
	6	0 11					IV		
	8	11 03					III		
	25	3 06					III		
	25	5 25					III-IV		
	25	7 33					III		
	29	10 50					IV		
	30	15 56	18.0 N	121.2 E	300	180	IV	Registered at Manila.	
	30	17 05	9.0 N	125.5 E			IV	Do.	

* See explanation in Monthly Bulletin of the Weather Bureau for December, 1910, page 445.

Catalogue of Philippine earthquakes, 1914—Continued.

Date.	Time of occurrence (Greenwich mean time).	Place.	Probable origin or epicenter.		Approximate extensions of the shaken area.		Intensity (Rossi-Forel).	Remarks.
			ϕ	λ	Longer axis.	Shorter axis.		
	<i>h. m.</i>		$^{\circ}$	$^{\circ}$	<i>Km.</i>	<i>Km.</i>		
July	1	4 00					III	
	3	7 44					II-III	
	4	15 40					III-IV	
	5	16 11	12.2 N	125.8 E	250	90	IV-V	
	10	1 18					IV	
	10	18 27					III	
	11	0 05	17.6 N	120.3 E	220	70	III-IV	
	11	23 00					III	
	13	17 45					V	
	15	23 58					IV	
	19	4 55	7.7 N	123.4 E	300	200	V	
	19	17 10	9.0 N	124.2 E			IV-V	
	25	20 21					IV	
	25	21 00					III	
Aug.	2	19 15					III-IV	
	2	19 24					III	Registered at Manila.
	3	4 17	18.0 N	121.7 E	150	100	V-VI	Registered at Manila. Repeated at 12 ^h 24 ^m , intensity IV.
	4	23 57					III	
	12	19 38					III	Registered at Manila.
	17	19 43					III-IV	Do.
	17	22 10					III	
	19	11 53	17.9 N	121.0 E	300	180	V	Registered at Manila.
	25	14 00					III	
	26	7 04	18.0 N	121.7 E			IV	Registered at Manila. Repeated at 18 ^h 40 ^m , intensity III.
	29	17 21					III	
	31	7 53					III	
Sept.	3	19 15					IV	
	4	1 36					II	Repeated at 1 ^h 54 ^m .
	4	12 07					III	
	5	15 30					III-IV	
	11	2 49					III	
	12	10 03	9.1 N	125.3 E			V-VI	Registered at Manila.
	16	2 51					III	
	17	12 46	11.9 N	123.4 E	600	300	V-VI	Registered at Manila. Many aftershocks, intensity III-IV. Registered at Manila.
	22	15 37					III	
	23	16 45					III	
	27	19 27					II-III	
	28	20 49					III	Repeated at 22 ^h 50 ^m .
	30	22 21	13.0 N	125.1 E			III-IV	Registered at Manila.
Oct.	6	8 30					IV	Do.
	13	15 50					IV	
	15	1 09					III	
	19	4 15					III	
	21	22 03					III	
	23	6 22	5.0 N	126.5 E	500	400	V	Registered over the world.
	26	12 59	7.8 N	125.0 E	300	180	IV	Registered at Manila.
	27	13 40					III	
	28	20 34					IV	
	31	13 01					III-IV	Do.
Nov.	1	1 36	10.7 N	124.5 E			V	Registered at Manila.
	1	5 50	18.2 N	120.3 E	200	80	IV-V	Do.
	4	9 30					II	
	16	8 57					IV	
	17	7 47					III	Do.
	19	3 43	18.0 N	121.7 E	180	100	IV	Do.
	23	18 55					IV-V	
	24	11 57	18.9 N	140.0 E			III	Registered in the Far East.
	25	6 35					III	
	27	18 14					III	Repeated at 7 ^h 20 ^m on the 28th, intensity II-III. Registered at Manila.
	28	4 27					III	
	29	4 45					III-IV	
	30	16 26	9.0 N	126.5 E	200	120	IV	Registered at Manila. Repeated at 17 ^h 30 ^m , intensity III.
Dec.	6	8 09					IV	
	7	12 23					III	
	10	18 31	5.5 N	125.0 E	500	300	IV-V	Registered in the Far East.
	14	22 26	11.8 N	125.9 E	300	150	V-VI	
	15	19 56					III	
	16	1 54					IV	Repeated at 2 ^h 35 ^m and 2 ^h 40 ^m , intensity III.
	16	3 58			300	300	IV-V	
	16	17 36					III	
	19	19 25	15.9 N	121.1 E	220	150	IV	
	25	9 23	18.0 N	121.7 E	180	100	IV	
	28	11 49					III	
	28	14 39	7.4 N	124.7 E	250	90	III	
	30	8 28					III	
	31	14 32					III	

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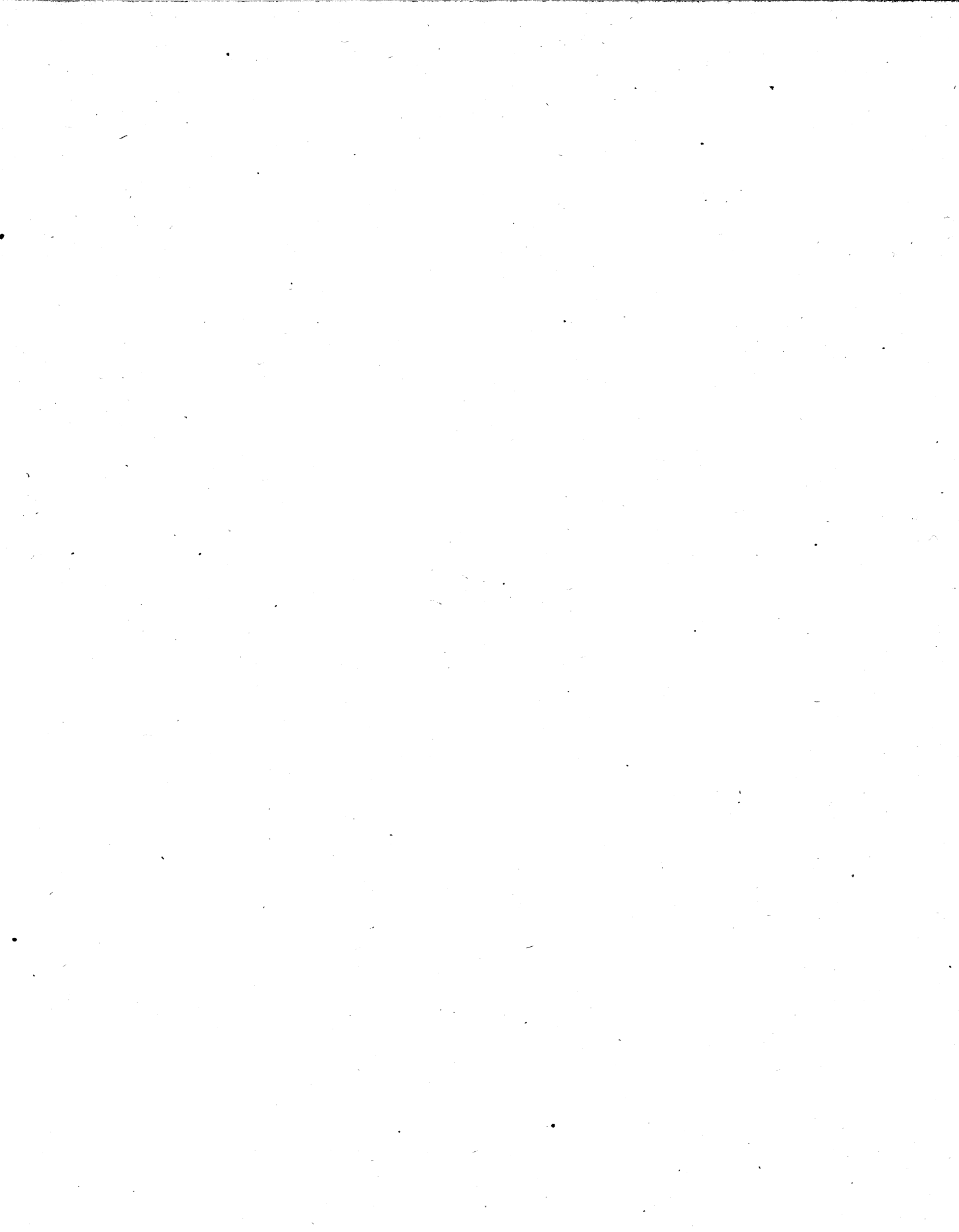
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