OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

Meteorological observations at Honolulu, May, 1900.

The station is at 21° 18′ N., 157° 50′ W.
Hawaiian standard time is 10h 30m slow of Greenwich time. Honolulu local time is 10h 31m slow of Greenwich.
Pressure is corrected for temperature and reduced to sea level, and the gravity correction, —0.06, has been applied.
The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.
The rainfall for twenty-four hours has always been measured at 9 a. m. local or 7:31 p. m. (not 1 p. m.), Greenwich time, on the respective dates.
The rain gage, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

Date.	Pressure at sea level.	Temperature.		During twenty-four hours preceding 1 p. m., Greenwich time, or 2:29 a. m., Honolulu time.									Total rainfall at 9 a. m., local time.
				Temperature.		Means.		Wind.		Average cloudiness.	Sea-level pressures.		
		Dry bulb.	Wet bulb.	Maximum.	Minimum.	Dew-point.	Relative humidity.	Prevailing direction.	Force.		Maximum.	Minimum.	
	*	†	†			‡	‡		§				
1	30.05	65	63.5	80	64	58.7	67	n.	2	2	30.08	29.99	0.02
2	30.05	71	64	76	64	62.3	73	nne.	3	3	30.10	30.01	0.01
3	30.07	72	63.5	78	68	59.7	62	ne.	4	4	30.11	30.03	0.00
4	30.04	73	64	79	71	61.0	64	ne.	4	4	30.12	30.02	0.00
5	30.04	72	65	81	72	61.3	62	ne.	4	4	30.08	29.99	0.01
6	30.04	73	66	79	71	61.0	62	ne.	4-6	3-3-4	30.07	29.97	0.00
7	30.06	73	65.5	80	72	62.7	66	ne.	5	3	30.11	30.02	0.02
8	30.04	72	64	79	72	61.0	62	nne.	5	3	30.11	30.02	0.00
9	30.02	71	64	80	72	59.3	59	ne.	4	5	30.07	30.04	0.01
10	30.03	70	66.5	80	71	61.3	64	ene.	4	3-7	30.08	29.97	0.07
11	30.07	72	67	78	69	66.5	81	ene.	3	9	30.09	30.01	0.05
12	30.09	72	65	80	70	64.5	71	ne.	3-4	4	30.12	30.04	0.00
13	30.05	70	68	82	64	61.5	63	nne.	3	2	30.11	30.03	0.01
14	30.03	68	66	83	70	65.3	73	ne.	3-0	8	30.08	30.02	0.01
15	30.03	72	66	82	67	65.5	76	ene.	2	8	30.07	30.00	0.30
16	30.04	73	66	81	70	64.5	70	ne.	2-4	5	30.08	30.00	0.11
17	30.08	73	67.5	81	71	64.3	71	ne.	2-4	3-8	30.12	30.03	0.15
18	30.05	71	66	81	70	64.5	68	ne.	3	2	30.14	30.04	0.07
19	30.02	72	66	80	70	64.3	71	ne.	3	4	30.10	30.01	0.01
20	30.03	70	66	81	70	63.5	67	ne.	3-0	4	30.04	29.94	0.01
21	30.03	74	67	83	67	63.5	66	ene-ne.	3-1	4	30.01	29.93	0.02
22	30.02	74	67	82	73	65.3	68	ene.	4	3	30.08	29.98	0.00
23	30.00	74	67.5	81	74	65.0	68	ne.	5	8	30.07	30.01	0.01
24	29.96	73	65	83	73	64.7	69	ne.	4-2	3-9	30.05	29.93	0.10
25	29.97	73	67	81	70	63.0	64	ne.	4	6	30.00	29.95	0.09
26	30.03	73	67	81	71	65.0	68	ne.	2-4	6	30.05	29.97	0.10
27	30.02	73	66	80	71	65.0	69	ne.	2-4	6	30.09	30.01	0.14
28	29.96	71	67	82	71	63.7	66	ne.	3	1	30.05	29.97	0.10
29	29.94	72	67	82	68	65.0	72	ne.	2	6	29.98	29.91	0.04
30	29.93	74	68	82	70	64.7	67	ne.	3	1	29.96	29.89	0.02
31	29.95	74	67	83	73	66.0	68	ne.	4	3	30.02	29.90	0.02
Sums.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.60
Means.	30.024	72.0	65.9	80.8	70.4	63.5	67.6	.....	3.2	4.4	30.072	29.989	....
Departure.	+0.008	.....	.....	.....	.....	0.0	—2.7	.....	.....	0.0	.....	.....	—1.40

Mean temperature for May, 1900 (6+2+9)+3=74.9°; normal is 74.2°. Mean pressure for May (9+3)+2 is 30.029; normal is 30.021.
*This pressure is as recorded at 1 p. m., Greenwich time. †These temperatures are observed at 6 a. m., local, or 4:31 p. m., Greenwich time. ‡These values are the means of (6+9+2+9)+4. §Beaufort scale.

OREGON WEATHER AND BERING SEA ICE.

By E. A. BEALS, Forecast Official and Section Director Weather Bureau, dated June 26, 1900.

Referring to the article Oregon Weather and Bering Sea Ice, in the April number of the MONTHLY WEATHER REVIEW, I believe the thread of coincidence between these to be very slender; it is not altogether lost, if instead of using the average dates the vessels were in the ice, the date of the first vessel's emergence therefrom is taken, as was done by me in the March report of the Oregon Section.

The following tables gives the data thus tabulated, which not only shows, under the five year groupings, a slight excess in temperature, but a quite marked deficiency in precipitation, instead of the reverse, as published in the MONTHLY WEATHER REVIEW.

It would seem to me that the date of the first vessel's emergence from the ice is a better representation of the ice condition than that obtained by taking a date based upon the average time a varying number of vessels, differing in construction and motive power, were encompassed by ice.

Years.	Earliest emergence from ice.	May rainfall at Portland.	May mean temperature at Portland.
	Date.	*Inches.*	°
1890	122	1.08	60.6
1891	150	1.83	59.9
1892	139	0.80	59.0
1893	149	2.30	54.4
1894	134	1.09	55.5
1895	146	3.42	55.9
1896	139	3.55	52.2
1897	127	0.90	61.4
1898	136	1.78	56.6
1899	135	3.16	51.1

EARLY YEARS.

Years.	Average date of first emergence from ice.	May rainfall at Portland.	May mean temperature at Portland.
	Date.	*Inches.*	°
1890	122	1.08	60.6
1897	127	0.90	61.4
1894	134	1.09	55.5
1899	136	3.16	51.1
1898	136	1.78	56.6
Average..	131	1.60	57.0

LATE YEARS.

1896	139	3.55	52.2
1892	139	0.80	59.0
1895	146	3.42	55.9
1893	139	2.30	54.4
1891	150	1.83	59.9
Average..	145	2.38	56.3

LOCAL STORM AT SPRINGFIELD, MO.

By J. S. HAZEN, Observer, Weather Bureau.

The storm of wind and rain which passed over Springfield, Mo., Sunday forenoon, June 17, 1900, exhibited so many unusual and striking features that a brief description of the weather conditions preceding and during the storm may prove of value.

The maximum temperature before the storm was 82°, but the air impressed one as being much warmer. The close and muggy condition made exertion of any kind difficult. Many people remarked the oppression and difficulty in breathing. The day was an excellent storm breeder, and the observer added to the morning weather report "conditions threatening."

The day opened with a low bank of heavy cumulus clouds, apparently very thin, and extending along the northwestern horizon, but with no precursor of a storm in the shape of upper clouds.

By 8:30 a. m., the sky was perhaps 75 per cent obscured, and a light rain fell from 8:30 to 8:45 a. m. The clear sky could be seen, however, in the interstices between the clouds even while the rain was falling.

The shower gave no relief from the oppressive condition, and by 9:30 a. m. a cloudless sky, a broiling sun, and steaming earth added to the inconvenience and suffering of sweltering humanity.

At 11 a. m. a second bank of clouds was observed near the northwest horizon. By 11:30 a. m. this bank of clouds had become so threatening as to be noticeable. The sky was at

this time probably eight-tenths obscured with heavy cumulus and stratus clouds; the round lumpy cumulus clouds were underneath the more compact stratus formation. No whirling motion was observed, and no attention would likely have been paid the storm, had it not been for the intense inky blackness of the clouds and their steady progression against the wind which was blowing at the rate of about 14 miles per hour from the southeast; the clouds were moving directly from the northwest and very rapidly.

A heavy downpour of rain began at 12:06 p. m., with sky now entirely overcast, but the wind still from south to southeast. At 12:16 p. m. the wind suddenly shifted from south to northwest, and increased in velocity from 12 to 50 miles per hour in less than five minutes, reaching a maximum velocity of 63 miles per hour, and an extreme velocity of 75 miles per hour at about 12:30 p. m. The cable connecting the anemometer to the self-register was broken at 1 p. m., and no record was obtained until after 4 p. m., but the gale continued until about 2 p. m., with but slightly diminished intensity. By 3 p. m., however, the wind had fallen to 8 miles per hour, and had changed to the southeast.

The rain literally came down in sheets, and the storm probably comes as near to reaching the dignity of a cloud-burst as any rainfall ever observed here. There was no preliminary sprinkle as a curtain-raiser, but the curtain was pulled aside and the rain literally poured; 3.02 inches fell from 12:06 to 12:45 p. m., and the sky became so dark that gas was lighted in churches and offices.

The following barometer readings will show that the fluctuations in the atmospheric pressure were larger than ordinary:

Time.	Temperature.	Barometer.	Time.	Temperature.	Barometer.
	°	*Inches.*		°	*Inches.*
12:05 p. m.....	81.0	28.646	12:30 p. m.....	80.0	28.523
12:10 p. m.....	81.0	28.656	12:45 p. m.....	80.0	28.640
12:20 p. m.....	81.0	28.650			

At about 12:30 p. m. a heavy trap door on the roof of the Government building was thrown open with sufficient force to break a new quarter-inch cord; the windows and doors were all closed at the time, showing very strong outward pressure. The windows of two buildings near this one had their sashes blown out at about the same time.

The electrical display was vivid but not more than ordinarily severe. The storm was entirely local in extent, although from the amount of rain and the time the gale lasted it would appear impossible that the stupendous energy could have been confined to a prescribed locality.

PROF. P. E. DOUDNA.

By F. CAJORI.

Meteorology has lost a promising investigator in the person of Pearl Eugene Doudna, who at the time of his death held the position of assistant professor of mathematics in Colorado College. Mr. Doudna died at Colorado Springs on the 6th of last January. For five years he had been in charge of the voluntary meteorological station maintained by Colorado College. During the last few months of his life he was engaged in arranging for publication the local meteorological data, reaching back over many years. With the help of a few students the task was completed the day after the beginning of his last illness.

Mr. Doudna published, in Vols. VII and VIII of Colorado College Studies, a paper entitled Equations of Motion of a Perfect Liquid and a Viscous Liquid, which displays power in original research and is well worthy of examination on the part of specialist on this subject.

Mr. Doudna was born in Richland County, Wis., in 1868. He graduated from the University of Wisconsin in 1894 and was made fellow in mathematics at his alma mater. In 1895 a serious illness compelled him to resign. He went to Colorado Springs and became connected with Colorado College. For five years he taught mathematics with signal success. He interested several students in meteorology, and it was his plan during the coming year to offer a regular course on this subject.

HALO AT DETROIT, MICH., MAY, 1900.

By JOHN K. HOOPER, Observer Weather Bureau.

An optical phenomenon which was observed at Detroit, Mich., the morning of May 19, 1900, is deemed sufficiently interesting to meteorologists generally to record at length, because of its remarkable distinctness, and the beauty and novelty of its design. While halos of different radii are common at Detroit, optical phenomena of this magnitude and brilliancy are of rare occurrence.

It brought forth numerous startling theories as to its origin and forecasts of events to occur, and proves again that mediæval superstitions are not outgrown; it seemed as if all who saw it besieged the Weather Bureau station with inquiries, the telephone bell ringing continually during the exhibition.

The phenomenon was first noted at 11:15 a. m., seventy-fifth meridian time. It then consisted of two complete circles of 22° and 45° radii around the sun. The former was of vivid brightness, red on the inside, changing to yellowish white at the outer edge; it was doubled also, the circles but a fraction of a degree apart, yet showing the separation plainly, intersecting each other at points directly above and below the sun, bearings north-northwest—south-southeast. The circle of 45°, which contained all the colors of the spectrum, though the red predominated, was not as bright.

Soon after the phenomenon was first observed the latter grew faint at the point immediately above the sun; it faded evenly along both the east and west portions, and at 11:30 a. m., when about 90°, had disappeared, a white circle, with a radius of 22°, became visible, having for its center the upper intersection of the double inner circles, cutting those and passing through the sun but forming no parhelia.

The maximum was reached at 12 noon. At 12:15 p. m., when more of the circle of 45° had faded, there appeared three white segments, the apparent radius of each 45° convexly in contact with the inner halo, one bearing directly north, the others east and west, and the first forming a faint parhelion at its junction with that circle. At this time the complete white circle had faded materially. By 1 p. m. the white portions of the design had vanished, as had nearly all of the 45° halo, except a small arc directly under the sun. From this time the balance of the design grew indistinct, and by 1:30 p. m. all but a faint partial halo of 22° had disappeared. At 2 p. m. it had vanished altogether.

The sunrise was obscured by alto-stratus cloud formations, and this type prevailed during the morning. At 10:30 a. m. a huge mass of alto-stratus was noted approaching from the west, and by 11 a. m. the edge of the mass was in the vicinity of the sun. The clouds were decidedly grayish in color and smooth in texture, overspreading the sky toward the west. Much of the gray color had disappeared by 12:30 p. m., and the smoothness was less noticeable from that time. By 1 p. m. the mass showed signs of disintegration, and at 1:30 p. m. large patches of blue sky were in view in all directions; by 2 p. m. only small broken patches of cloud remained.