reorganization of the constitution of universities, involving their transition from the function of personal education to the higher function of creative work. The English universities are now essentially an aggregate of colleges, each of which is mainly devoted to personal education. The ideal of a university, as here entertained, would make the coming university an association of colleges of research for the benefit of mankind as a whole. In the English university the several colleges cover essentially the same ground and are duplicative in their work and competitive in their relations. In the ideal university the colleges would occupy distinctive fields and be supplementary and stimulative toward each other and in no sense duplicative. Their primary function would be creative work for all mankind rather than didactic or disciplinary work for individuals.

6. *Endowments for independent institutions of research.*—The preceding discussion has related essentially to universities. Aside from organizations under governmental patronage, universities are at present the chief agencies of research. It is doubtless quite within the truth to place to their credit by far the largest amount of creative work done independently of government patronage. None the less, there is, to my view, a large and special place for independent institutions of research and endowments for such independent institutions are invited by their promise of fruitfulness. Every university has its special relations with some portion of the social organism by which it is fostered and to which, because of that fostering, it is in special bonds. While this relationship of support and consequent bondage is one of greatly preponderating good, it is not without its moiety of trammeling and limitation. In order to fill out the full complement of institutions suited to the most effective promotion of creative work, another class of institutions not subject to these relations is needed. These needed institutions might indeed likewise have their own special relationships with their own limitations and trammelings, but they should none the less fill a place not occupied by existing universities, nor likely to be occupied by them. More than this, these independent institutions of research should stand in relations of wholesome competition to the universities and by representing a different phase of endeavor should thereby contribute to the broadening of the sum total of influences at work for the promotion of research.

7. *Endowments for the higher coordination of research.*—Whatever may be the development in any of the institutions to which the phenomenal generosity of American men of means have contributed, or may yet contribute, it must still remain true that for an indefinite time the whole field of research can not be effectively cultivated by any institution, and there must be a large need for adjustment and cooperation, that the energies of research may be distributed to the greatest advantage. Even if it were possible for any institution to reasonably attempt the whole field, cooperation and coordination in research need to be cultivated to prevent wastage by unnecessary duplication and to give the greatest and best results by the adjustment of work to work. At the present stage of development provision for cooperation is eminently desirable and endowments devoted to this end give promise of being preeminently productive. The ideal scheme of coordination contemplates the correlation of talent and equipment in all the institutions devoted to research without regard to institutional relations. It should be as free as human nature permits from predilection toward one of institutional organization rather than another. It should be its function to develop, to use, and to coordinate talent, effort, and equipment wherever it may be, quite regardless of institutional connection, or locality, or of other matters than its possibilities of fruitfulness in creative work.

It need not be remarked here that we seem to be on the threshold of this great realization, and it is not too much to hope that each of the other forms of endowment will, in some large measure, appeal to the generosity and appreciation of American men of wealth.

HAWAIIAN CLIMATOLOGICAL DATA.

By CURTIS J. LYONS, Territorial Meteorologist.

OBSERVATIONS AT HONOLULU.

The station is at 21° 18′ N., 157° 50′ W. It is the Hawaiian Weather Bureau station Punahou. (See fig. 2, No. 1, in the MONTHLY WEATHER REVIEW for July, 1902, page 365.)

Hawaiian standard time is 10^h 30^m slow of Greenwich time. Honolulu local mean time is 10^h 31^m slow of Greenwich.

The 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 is measured at 9 a. m. local, or 7.31 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.

Meteorological Observations at Honolulu, March, 1903.

Date.	Pressure at sea level.	Temperature.		During twenty-four hours preceding 1 p. m. Greenwich time, or 1:30 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	30.01	66	60	73	59	52.7	63	nne.	2	4-1	30.09	29.99	0.00
2	29.99	65	60	74	61	56.5	67	ne.	2	2	30.06	29.95	0.00
3	30.00	60	59.3	73	64	58.5	73	ne.	3	5-1	30.05	29.94	0.04
4	29.99	60	59	75	59	59.3	80	ne.	2-0	5-2	30.04	29.94	0.01
5	29.99	59	57.5	76	58	59.0	76	e-se.	1-0	5-2	30.03	29.93	0.00
6	29.99	64	62.5	78	57	59.3	76	se-ne.	1-0	3-0	30.04	29.94	0.00
7	30.00	60	58	78	64	62.5	80	s-n.	1-0	3-0	30.05	29.95	0.00
8	29.98	64	61.5	78	60	59.7	79	sw-n.	1-0	1-0	30.05	29.95	0.00
9	30.01	69	63.5	78	60	61.7	77	sw.	0	1-3	30.04	29.94	0.00
10	30.08	65	57.3	76	65	60.3	72	sw-ne.	1-3	5-2	30.09	30.00	0.00
11	30.08	65	56	73	64	52.7	60	nne.	3-4	2	30.12	30.04	0.00
12	30.02	67	59.5	73	65	52.3	59	ne.	4-3	2-0	30.12	30.01	0.00
13	29.95	64	61.5	76	65	57.5	65	ne.	3	5-1	30.03	29.94	0.00
14	29.89	68	66.3	76	62	62.3	78	sw.	1-0	6-10	29.99	29.88	0.01
15	29.79	67	66.3	78	68	66.3	86	sw.	1-0	10	29.92	29.80	0.54
16	29.82	63	62	76	66	64.0	86	sw-n.	1-0	10-4	29.87	29.77	0.01
17	29.86	58	56.5	70	62	58.5	81	nw-ne.	1-0	10-8	29.93	29.85	0.00
18	29.94	59	55.5	72	57	53.7	67	nw-n.	1-3	10-1	29.95	29.87	0.02
19	29.99	64	55	73	56	53.3	67	nne.	3	3	30.02	29.92	0.00
20	29.99	61	54.5	72	63	50.0	58	nne.	3-1	5	30.04	29.95	0.00
21	29.93	57	55.7	72	58	51.5	65	nne.	3	3	30.02	29.95	0.00
22	29.82	58	57	72	56	56.3	82	sw-n.	1-0	0-8	29.95	29.81	0.00
23	29.81	65	62.5	73	57	58.5	76	sw-w.	0	10	29.88	29.78	0.00
24	29.88	62	61	74	65	61.3	80	w-sw.	0	10-5	29.89	29.81	0.00
25	29.89	58	56.5	77	61	59.3	73	w-n.	3-0	0-10	29.95	29.86	0.00
26	29.86	59	57	76	58	55.5	72	sw-w.	2-0	0-8	29.94	29.82	0.00
27	29.90	63	57.5	75	58	55.3	70	nw-w.	2	0-5	29.94	29.85	0.00
28	30.00	66	59	75	57	55.5	70	ne.	3-4	7-1	30.04	29.90	0.01
29	30.09	66	60	73	64	53.7	61	ne.	4	3-0	30.13	30.00	0.00
30	30.10	65	57.5	73	65	57.5	70	ne.	5-3	3	30.13	30.06	0.17
31	30.10	66	59.5	72	62	53.0	62	ne.	4-2	4	30.15	30.08	0.22
Sums													1.03
Means	29.690	63.0	59.2	74.5	61.3	57.5	72.3		1.8	4.2	30.017	29.916	
Departure	—.047					—4.0	+0.3			—0.4			—2.73

Mean temperature for March, 1903, $(6+2+9)\div 3=67.3$; normal is 70.9. Mean pressure for March, 1903, $(9+3)\div 2=29.970$; normal is 30.017.

* 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 $(6+9+2+9)\div 4$. § Beaufort scale.

Maximum thermometer set at 9 p. m. and minimum at 2 p. m., local time.

Mean temperature table.

Stations.	Elevation.	Mean max.	Mean min.	Cor. av'ge.
	Feet.	°	°	°
Pepeekeo	100	73.1	64.8	68.2
Waimea	2,730	70.5	54.2	61.6
Kohala	521	74.3	62.6	67.7
Nahiku	1,600			
Waiakoa	2,700	71.3	51.7	60.8
Ewa Mill	50			
United States Magnetic Station	50	78.2	59.0	67.9
United States Experimental Station	350	75.8	63.0	68.7
W. R. Castle	60	78.0	55.0	67.2
Tantalus	1,725			
Hilo	40	77.2	64.0	69.9
Waikiki	15	75.2	62.6	68.2

Rainfall data for March, 1903.

Stations.	Elevation.	Amount.
HAWAII.		
HILO, e. and ne.	*Feet.*	*Inches.*
Waiakea	50	3.55
Hilo (town)	100	.....
Kaumana	1,250	6.49
Pepeekeo	100	7.71
Hakalau	200	.....
Honohina	300	.....
Puuohua	1,050	15.93
Laupahoehoe	500	10.81
Ookala	400	8.37
HAMAKUA, ne.		
Kukaiau	250	11.60
Paauilo	300	9.31
Paauhau	300	9.05
Honokaa (Mill)	425	9.42
Honokaa (Meinicke)	1,100	.....
Kukuihaele	700	8.70
KOHALA, n.		
Awini Ranch	1,100	11.17
Niulii	200	4.61
Kohala (Mission)	521	5.21
Kohala (Sugar Co.)	270	3.66
Hawi, Mill	700	4.70
Puakea Ranch	600	2.98
Puuhue Ranch	1,847	2.78
Waimea	2,720	2.91
KONA, w.		
Holualoa	1,350	2.95
Kealakekua	1,580	4.13
Napoopoo	25	0.56
Hoopuloa	1,650	2.54
KAU, se.		
Kahuku Ranch	1,680	.....
Honuapo	15	4.23
Naalehu	650	4.42
Hilea	310	6.00
Pahala	850	.....
Moaula	.....	.....
Volcano House	4,000	6.14
PUNA, e.		
Olaa, Mountain View (Russel)	1,690	6.17
Kapoho	110	7.78
Pahoa	600	8.72
MAUI.		
Lahaina	40	.....
Waiopae Ranch	700	3.05
Kaupo (Mokulau), s	285	2.45
Kipahulu, s	308	.....
Nahiku, ne	800	10.20
Nahiku	1,600	.....
Haiku, n	700	4.50
Kula (Erehwon), n	4,500	2.08
Kula (Waiakoa), n	2,700	1.45
Puuomalei, n	1,400	4.61
Paia	180	2.92
Haleakala Ranch	2,000	3.59
Wailuku, ne	250	1.69
OAHU.	*Feet.*	*Inches.*
Punahou (W. B.), sw	47	1.03
Kulaokahua (Castle), sw	50	0.38
Makiki Reservoir	120	0.44
U. S. Naval Station, sw	6	0.44
Kapiolani Park, sw	10	0.35
College Hills	175	0.98
Manoa (Woodlawn Dairy), c	285	1.54
Manoa (Rhodes Gardens)	360	2.73
School street (Bishop), sw	.....	.....
Insane Asylum, sw	30	0.64
Kamehameha School	75	.....
Kalihi-Uka, sw	485	2.43
Nuuanu (W. W. Hall), sw	50	0.67
Nuuanu (Wyllie street)	250	0.81
Nuuanu (Elec. Station), sw	405	0.87
Nuuanu (Luakaha), c	850	2.55
U. S. Experiment Station	350	0.60
Laniakea (Nahuina)	1,150	0.95
Tantalus Heights	1,360	2.05
Waimanalo, ne	300	0.80
Maunawili, ne	300	1.95
Kaneohe	100	1.55
Ahuimanu, ne	350	2.87
Kahuku, n	25	1.13
Waialua	37	0.98
Wahiawa	900	0.74
Ewa Plantation, s	60	0.51
U. S. Magnetic Station	45	0.34
Waipahu	200	.....
Moanalua	15	0.60
KAUAI.		
Lihue (Grove Farm), e	200	2.02
Lihue (Molokoa), e	300	1.65
Lihue (Kukaua), e	1,000	1.68
Kealia, e	15	0.38
Kilauea, ne	325	1.66
Hanalei, n	10	2.52
Waioli	10	1.64
Haena	15	2.63
Waiawa	32	0.62
Eleele	150	.....
Wahiawa (Mountain)	3,000	1.40
McBryde (Residence)	850	1.26
Lawai (Gov. Road)	450	1.24
Lawai, w	225	1.68
Lawai, e	800	1.20
Koloa	100	2.06
Delayed February reports.		
Hoopuloa	.....	1.80
Pahala	.....	2.64
Moaula	.....	3.83
Puuomalei	.....	10.58
Wyllie Street	.....	5.87

NOTE.—The letters n, s, e, w, and c show the exposure of the station relative to the winds.

GENERAL SUMMARY FOR MARCH, 1903.

Honolulu.—Temperature mean for the month, 67.3°; normal, 70.9°; average daily maximum, 74.5°; average daily minimum, 61.3°; mean daily range, 13.2°; greatest daily range, 21.0°; highest temperature, 78°; lowest, 56°.

Barometer average, 29.970; normal, 30.017; highest, 30.17, 31st; lowest, 29.77, 15th; greatest 24-hour change, that is, from any given hour on one day to the same hour on the next, 0.17; lows passed this point on the 15th and 22d; highs on the 10th and 31st.

Relative humidity average, 72.3 per cent; normal, 72.0 per cent; mean dew-point, 57.5°; normal, 61.5°; mean absolute moisture, 5.32 grains per cubic foot; normal, 6.05 grains; dew on grass, 17 mornings.

Rainfall, 1.03 inches; normal, 3.76; rain record days, 9; normal, 18; greatest rainfall in one day, 0.54, on the 15th; total at Luakaha, 2.55; normal, 14.26; at Kapiolani Park, 0.35; normal, 3.19.

The artesian well water fell during the month from 35.25 to 34.85 feet above mean sea level. March 31, 1902, it stood at 34.05. The average daily mean sea level for the month was 9.59, the assumed annual mean being 10.00 feet above datum. For March, 1902, it was 9.85.

Trade wind days, 15, (4 NNE.); normal, 18; average force of wind during daylight, 1.8, Beaufort scale. Average cloudiness, tenths of sky, 4.2; normal, 4.6.

Approximate percentages of district rainfall as compared with normal: South Hilo, 25; North Hilo, 62; Hamakua, 100; Kohala, 80; Waimea, 57; Kona, 130; Kau, 95; Puna, 90; Maui, 60; Oahu, 20; Kauai, 30.

Kohala dew point average, 59.3°; relative humidity, 75 per cent; Magnetic Station, 58° and 70 per cent.

The month has been on the whole a remarkable one, being marked by low barometer, low dew-point, and low temperature, being as cold as February which was the coldest month on record for twenty-five years. Also by unusually light winds for March, and with the exception of March, 1889, the lightest rainfall on record for the station.

Moderately heavy surf, 7th, 18th, and 31st. Lightning, none. Earthquakes, Hilo, 13th, 6 p. m., 23d, 11:25 p. m.; Waimea, 13th, 6:15 p. m.; Kohala, 15th, 6:15 a. m. Snow very much diminished on Mauna Kea and Mauna Loa. Solar haze.

MARCH WINDS.

By B. C. WEBBER, Acting Director Meteorological Service of Canada, dated Toronto, April 20, 1903.

As the impression appears to be somewhat general in Canada that March is a month of excessive wind mileage and at the same time of very cold winds, a review of what has actually occurred during the past thirty years in regard to these matters in Ontario, Quebec, and the Maritime Provinces will perhaps be of some interest. Thirty years is not a very long period, but is probably of sufficient length to give approximately the prevailing characteristics of the month.

From March, 1874, to 1903, both inclusive, we find that the number of gales[1] occurring in Ontario was 48 less than in the corresponding series for December, 38 less than in January, and 25 less than in February. In the Province of Quebec the numbers for the same period were 48, 56, and 28, and in the Maritime Provinces 37, 69, and 27.

As gales, as a rule, continue for at least one and not infrequently for two or more days, the large diminution of the number of gales in March must necessarily mean a considerable decrease in the number of days with high winds compared with the number of days of high winds occurring during the three preceding months. It might here be noted that the much smaller number of gales in February than in January is in part accounted for by the lesser number of days in February, taken, of course, in conjunction with the gradual decrease of stormy weather as the season advances toward spring. It may be suggested that when a high wind sets in in March it is likely to continue longer than at any other season of the year, but there is nothing in the general movements of high and low pressure areas to warrant such a supposition. As to the winds being of excessive coldness, temperature records for a long series of years prove March in Ontario to be from 6° to 10° warmer on the average than in February. In Quebec March is 9° warmer and in the Maritime Provinces 7° warmer than in February. Such a large difference in the average mean temperature between the two months must give fewer cold winds in March than in February. We also find, on comparing records again, that the snowfall of March is very much less than during the preceding winter months.

We are all familiar with the old English saw, "If March comes in like a lion it goes out like a lamb," or vice versa. This saying has been apparently somewhat perverted, for a reference to an old book styled "Weather Folk-lore" quotes the following: "March comes in like a lion and goes out like a lamb." "March comes in with an adder's head, but goes out like a peacock's tail." Turning again to the records of the past thirty years we see that in Ontario March went out rough

[1] Presumably the author means days with gales.—C. A.