

CO₂ and producing changes which result in making bread palatable and digestible. Other fermentations, however, sometimes occur.

Sticky or sour bread is due to lactic acid bacteria. These are associated with low-grade flour. The germs of these bacteria often lie dormant until essentials, such as warmth and moisture, necessary to their growth, are provided and they can then develop. Injurious germs also appear with yeast. This is sometimes overcome by the use of hops, which assists true yeast to overpower poor yeast. Dirty utensils and troughs harbour injurious bacteria. All crevices and cracks are teeming with unseen life, which reproduce enormously when given favorable conditions.

Musty or mouldy bread is usually noticed only after bread has been cut. This is due to damp flour in which fungi or mould has developed. Bags, containers, &c., holding the flour should be thoroughly scalded and scoured before being used for a fresh supply.

The same procedure should be carried out if bread is what is termed "ropy", or when tiny red marks appear. These, too, are the effects of wild yeasts, which have found their way into the dough.

METEOROLOGICAL NOTES.

(By R. J. McConnell,* *Department of Agriculture, Rabaul.*)

To the average planter and miner, as he fills in his monthly rainfall and climatic statistics, it probably seems that the whole business is useless and that the results of his observations only give rise to small-talk and to stock some Government archives. But to-day the weather bureau is an integral part of any successful community and although the observations of a single observer may have little value, the means of a large number of observations taken at selected points are of great value.

In temperate climates, where the weather is subject to sudden changes, bringing frost, heavy rain with hail, &c., ignorance of climatic statistics may spell ruin to the farmer. Many citrus and vegetable crops have been lost through farmers ignoring climatic predictions and being caught by cold spells.

In tropical agriculture it is essential to know the rainfall of a place before successful planting can be attempted and for crops which require protection, such as coffee and cacao, it is equally necessary to have information on prevailing winds and their comparative velocity.

New Guinea, with 8 major reporting stations and 103 minor reporting stations, is rapidly building up an efficient weather organization both for the benefit of the agriculturist and aircraft. The results of observations taken during 1939 at the Rabaul observatory in the Botanic Gardens are appended.

For comparative purposes, other meteorological data for Rabaul are to be found in the following issues of the *New Guinea Agricultural Gazette*:—

1936	..	..	..	Volume 2, Number 1, Page 31.
1937	..	..	..	Volume 3, Number 1, Page 27.
1938	..	..	..	Volume 4, Number 3, Page 23.
1938	..	..	..	Volume 4, Number 4, Page 58.
1939	..	..	..	Volume 5, Number 3, Page 8.

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GENERAL CLIMATOLOGICAL DATA.

Month.	Barometer mean for month, corrected to M. S. L. and standard gravity and temperature.	Amounts of clouds. Mean of 9 a.m. and 3 p.m. observation.	Number of clear days.	Highest barometer readings (corrected) 9 a.m. reading.	Date.	Lowest barometer readings (corrected) 3 p.m. reading.	Date.
January ..	29.755	6.5	16	29.850	18.1.39	29.663	27.1.39
February ..	29.773	7.1	7	29.895	19.2.39	29.647	3.2.39
March ..	29.764	7.5	5	29.827	30.3.39	29.651	6.3.39
April ..	29.778	6.5	9	29.887	1.4.39	29.680	15.4.39
May ..	29.796	5.1	14	29.906	10.5.39	29.680	19.5.39
June ..	29.815	5.9	13	29.925	18.6.39	29.686	29.6.39
July ..	29.831	4.3	15	29.950	24.7.39	29.740	3.7.39
August ..	29.765	5.6	15	29.890	31.8.39	29.649	18.8.39
September ..	29.837	5.8	18	29.969	7.9.39	29.710	18.9.39
October ..	29.812	6.9	14	29.912	3.10.39	29.703	30.10.39
November ..	29.771	6.3	14	29.863	16.11.39	29.658	30.11.39
December ..	29.801	5.9	14	29.893	27.12.39	29.697	3.12.39
Average ..	29.791	6.1	12.8	29.897	..	29.680	..
Extremes ..	29.837 September	7.5 March	18 September	29.969	7.9.39	29.647	3.2.39

TEMPERATURE.

Month.	Mean of the Maximum Thermometer Temperature.	Mean of the Minimum Thermometer Temperature.	Average Monthly Temperature.	Maximum Thermometer Highest Temperature. Reading.	Date.	Minimum Thermometer Lowest Temperature. Reading.	Date.	Mean of Thermometer Temperature on Grass.	Lowest Thermometer Temperature on Grass.	Date.
January ..	90.7	73.5	82.1	93.9	22.1.39	71.2	11.1.39	71.5	68.2	11.1.39
February ..	88.9	73.8	81.3	92.6	14.2.39	71.0	26.2.39	72.2	69.0	27.2.39
March ..	88.4	73.4	80.9	91.3	27.3.39	71.2	28.3.39	72.3	69.5	28.3.39
April ..	89.3	74.0	81.6	93.4	15.4.39	72.3	3.4.39	72.5	69.9	3.4.39
May ..	88.9	73.9	81.4	91.7	19.5.39	72.0	1.5.39	72.2	69.5	27.5.39
June ..	88.5	73.8	81.1	91.0	7.6.39	72.1	3.6.39	72.3	69.5	3.6.39
July ..	88.7	72.8	80.7	90.5	17.7.39	70.3	25.7.39	70.9	67.5	17.7.39
August ..	88.8	73.5	81.1	92.7	30.8.39	70.0	27.8.39	71.7	68.9	4.8.39
September ..	89.8	73.6	81.7	92.3	20.9.39	72.1	9.9.39	71.5	69.5	29.9.39
October ..	90.3	73.6	81.9	94.1	15.10.39	70.9	8.10.39	71.8	69.0	28.10.39
November ..	90.8	74.1	82.4	94.9	13.11.39	71.0	24.11.39	72.4	69.0	24.11.39
December ..	90.4	73.4	81.9	94.4	31.12.39	71.0	29.12.39	71.5	68.8	29.12.39
Average ..	89.5	73.6	81.5	92.7	..	71.3	..	71.9	69.1	..
Extremes ..	90.8 November	72.8 July	80.7 July	94.9	13.11.39	70.0	27.8.39	70.9 July	67.5	17.1.39

HUMIDITY AND RAINFALL.

Month.	Humidity.			Rainfall Monthly 1939.	Average Rainfall since 1914.	Greatest Monthly Rainfall.	Year.	Least Monthly Rainfall.	Year.	Wet Days Monthly 1939.	Wet Days Average since 1914.	Greatest Fall in 24 hours.	
	Mean 9 a.m.	Mean 3 p.m.	Mean of All Readings.									1939.	Date.
January ..	79.0	72.0	75.5	9.40	14.13	37.74	1916	4.77	1918	15.0	20.8	3.99	2.1.39
February ..	79.0	72.0	75.5	6.65	10.44	23.54	1923	3.38	1921	21.0	13.1	1.91	4.2.39
March ..	83.0	75.0	79.0	6.60	9.42	22.23	1919	3.91	1920	26.0	19.5	0.74	7.3.39
April ..	83.0	72.0	77.5	13.14	9.80	18.57	1925	0.93	1937	21.0	18.0	3.85	24.4.39
May ..	79.0	72.0	75.5	7.53	5.17	11.27	1930	0.74	1932	17.0	13.3	2.61	1.5.39
June ..	79.0	72.0	75.5	5.91	3.52	7.78	1923	0.79	1914	17.0	12.7	2.89	16.6.39
July ..	87.0	72.0	79.5	6.70	5.59	18.00	1930	0.09	1914	16.0	14.7	2.28	25.7.39
August ..	79.0	72.0	75.5	6.21	4.40	12.45	1937	0.36	1924	16.0	14.8	2.39	24.8.39
September ..	75.0	72.0	73.5	3.15	3.65	7.15	1921	0.32	1914	12.0	12.5	0.74	30.9.39
October ..	75.0	68.0	71.5	6.35	5.25	11.86	1928	0.62	1914	17.0	12.7	1.08	22.10.39
November ..	76.0	76.0	76.0	3.55	6.30	14.00	1921	1.73	1913	16.0	15.7	0.58	25.11.39
December ..	75.0	72.0	73.5	6.88	10.19	16.22	1919	3.66	1933	17.0	18.3	2.74	1.12.39
Average ..	79.1	72.3	75.7	6.84	7.32	..	..	..	..	17.6	15.5	2.15	..
Extremes ..	83.0	76.0	79.5	13.14 April	14.13 January	37.74 January	1916	0.09 July	1914	26.0 March	20.8 January	3.99 January	2.1.39