

Notes on Weather Reporting Stations in Australia and New Guinea.

The following notes designed to assist forecasters in interpreting weather reports from stations in the Australia - New Guinea Area are based on conversations between F/Lt. J.F. Gabitos and various officers of the R.A.A.F. Meteorological Service, notably F/Lts W.J. Gibbs, J.D. Williams, P. Squires, F/O J. Cassidy, S/Ls Macky and B. Newman. They do not purport to be exhaustive.

Frequent references are made to high level stations. Sea level pressures reported from all these are subject to uncertainties in the height correction. At night, especially when a pronounced ground inversion is present, use of the screen temperature involves too great a density for the fictitious air column below the station, resulting in too high a value for the "sea level" pressure. Likewise with high surface temperatures in the afternoon the computed sea level pressure is too low. For a station at 1000 feet a change in surface temperature of 10°F makes a change in apparent sea level pressure of 0.7 mb.

AUSTRALIA.

- 003 Wyndham: Barometer low; arbitrary correction of +1.0 mb. normally made before being broadcast. Located in gorge running N-S at altitude 23'; with peak rising above 1000 ft. within two miles to east; surface winds unrepresentative, normally confined to N'ly and S'ly.
- 006 Hall's Creek: Barometer considered high; arbitrary correction of -1.2 mb. normally made before being broadcast; station at high level (1400 ft) so sea level correction uncertain. Station fairly representative of surroundings.
- 011 Broome: Observations representative. Surrounding area low-lying, generally below 100 ft within 30-40 miles of station.
- 018 Port Hedland: Surroundings fairly low (below 100-300 ft) within 15-20 miles of station.
- 027 Onslow: Local tendency for southerly surface wind.
- 033 Carnarvon: N-S line of low hills 2-4 miles E of station divided by gap (river gorge) ENE of station; good exposure for winds from western semicircle.
- 039 Mundiwindi: High level (1840 ft); sea-level pressure correction therefore uncertain.
- 042 Mackatharra: Barometer low; arbitrary correction of +1.7 mb. normally made before being broadcast. High level (1676 ft); sea level pressure correction therefore uncertain.
- 057 Perth: N-S scarp rises fairly abruptly to 600-1000 ft. about 10 miles inland from Perth (about 15 miles from coast).
- 058 Pearce: 23 miles NNE of Perth; situated at 160 ft. at foot of N-S scarp rising to 600-900 ft 1-2 miles east of station; low country (100-300 ft) westward to coast.
- 065 Cape Leeuwin: On point facing SSW at southern end of line of low hills running N-S about 1-5 miles in from coast; ridge rises to 700 feet about 4 miles from station.
- 066 Katanning: High level (1016 ft); sea level pressure correction therefore uncertain.
- 068 Albany: Barometer about 1 mb. low. Situated in hollow with hills to E and W. Line of hills rising to 500-700 ft. extend from W through S to SE of station within 5-8 miles.

- 068 Albany Cont'd. Surface wind considered useless for analysis; often reports W2-3 at surface while W gale blowing aloft.
- 072 Esperance: Barometer believed to be $\frac{1}{2}$ -1 mb. high.
- 087 Kalgoorlie: High level (1247 ft.), sea level pressure correction therefore uncertain. Barometer believed by some forecasters to be about $1\frac{1}{2}$ mb. high.
- 093 Rawlinna: Barometer low; arbitrary correction of +1.7 mb. normally applied at Melbourne.
- 098 Forrest: Apparent discrepancy between pressures at Forrest and 134 Cook due to difference in time of observation (Western Australian reports are one hour later than remainder of country).
- 101/102 Darwin: Good representative exposure. Fairly flat open country within 50-60 miles of Darwin; further south land rises fairly abruptly.
- 105 Groote Eyelandt: Station at seaplane base on lagoon at NNE corner of island; land rises to 600 ft. in centre of island, about 18 miles from station. Reports considered completely representative with winds from N semicircle and quite good for other directions.
- 109 Brock's Creek:
Barometer unreliable, $1\frac{1}{2}$ -4 mb. low.
Station in broken hilly country.
- 114 Alice Springs: High level (1900 ft.); sea level pressure correction therefore uncertain; believed by some forecasters to be $1-1\frac{1}{2}$ mb. high but this might often be orographical effect. Station situated in valley with E-W trend in hilly country; hill rising to 3300 ft. 4 miles from station; high land consisting of several parallel E-W ranges (3000-4000 ft.) extends from SW through N to NE of station. Surface winds considerably distorted; likewise upper winds below about 5000 ft.
- 134 Cook: Pressure difference compared with 098 Forrest due to difference in time of observation. Good exposure on Nullarbor Plain with low flattish country for at least 50-100 miles in all directions.
- 148 Port Augusta: Situated in N-S river valley with N-S range of hills rising fairly abruptly about 5 miles E of station, and reaching 2500-3000 ft. about 10-15 miles from station; high ground also west of station reaching 1000 ft. within 10 miles and extending round to SSW of station. Strong tendency for low level winds to be deflected to N-NNW or S.
- 160 Cape de Couedie: Situated on small spur jutting out to SW from SW corner of Kangaroo Island. Ground rises to 700 ft. within two miles of station and obscures the sector NNW through NE to ENE.
- 167 Parafield: 10 miles NNE of 168 Adelaide; exposure essentially similar.
- 168 Adelaide: Low level winds seriously deflected by range of hills just east of station. Crest line at 1500-2000 ft. lies NNE-SSW from SSW of station through E to NNE of station; hill reaching 2400 ft. 7 miles E of station. N-NW winds usually deflected at low levels to NE.
- 175 Robe: Barometer high, amount uncertain.
- 204 Karumba: Station at flying boat base at mouth of Norman River; surrounding country flat. Good representative report.

- 209 Georgetown: High level (1000 ft.); sea level pressure correction uncertain. Located in valley approx. NW-SE on western side of Great Dividing Range.
- 210 Palmerville: Fairly high level (700 ft.); pressure rather unreliable. On western side of Great Dividing Range, surrounded by hills.
- 211 Mount Surprise: High level (1487 ft.); sea level pressure therefore unreliable. Situated on western side of Great Dividing Range, 30 miles from main crest line (3000 ft.).
- 212 Cooktown: Situated opposite gap in line of hills paralleling coast; hills rise to 1500 ft. $1\frac{1}{2}$ miles due south of station, 3700 ft. at 25 miles S, and 1200 ft. at 5 miles north. Winds from SE quarter considerably reinforced locally; winds from easterly quarter deflected to southeasterly. Much orographical cloud and precipitation; should not be mistaken for frontal.
- 215 Cairns: Backed by hills rising generally to 3500-5000 ft. within 2-10 miles of coast. Considerable amounts of orographical cloud and precipitation with onshore winds, masking fronts. Considerable deflection of low level winds and local reinforcement of SE'lies.
- 216 Willis Island: Low reef 20 feet or so above sea. Excellent exposure.
- 218 Cardwell: Ranges immediately to west of station rising to 3600 ft. within 8 miles; Hinchinbrook Island extends from E. to SSE of station and rises 3650 ft. Southeasterly winds strongly reinforced at station. Much orographical cloud and precipitation with winds from easterly quarter, tending to mask fronts.
- 219 Townsville: Station situated at north end of N-S gap in Leichhardt Range formed by Suttor and Burdekin River Systems. This valley permits aircraft to reach Townsville by the inland route via Charleville or Longreach when the SE'lies give poor weather along the coast. Southerly winds reach Townsville readily through gap.
- 224 Cloncurry: Some reports from Post Office, some from airfield; one of these pressures believed to be $\frac{1}{2}$ -1 mb. high, but no certainty which is being used. Situated in N-S valley; tendency for S'ly katabatic drift.
- 227 Boulia: Pressures unreliable, taken from barograph, but possibly replaced by mercury barometer by now.
- 229 Richmond: Barometer believed to be about $1\frac{1}{2}$ mb. low.
- 235 Longreach: Barometer believed to be about $\frac{1}{2}$ mb. high.
- 243 Pine Islet: Good exposure.
- 251 Lady Elliott Island: Good exposure.
- 263 Charleville: Fairly open country surrounding station.
- 271 Goondiwindi: Barometer possibly low.
- 277 Amberley: 25 miles SW of Brisbane; in valley, somewhat sheltered on eastern side by low hills; ranges reaching 2500-5000 ft. extend from SE through S, W, and N to NNE of station. Passing of fronts from W, SW or S not readily recognisable owing to marked Fohn effect. Pressure appears slightly variable compared with Brisbane.

- 278 Brisbane: Situated about 10 miles from coast of Moreton Bay, intervening ground fairly flat; considerably protected on west and south by ranges (2500-5000 ft) extending round to SSE of station; somewhat protected on eastern side by Stradbroke Island (700 ft) and Moreton Island (900 ft). Reporting Station at Weather Bureau on low hill in City with good outlook. Frontal passages often masked by Fohn effect. In southerly streams Brisbane often has clear sky while showers are passing 30 miles off coast.
- 279 Archerfield: 8 miles SSW of Brisbane; conditions essentially similar.
- 285 Bourke: Barometer sometimes appears $\frac{1}{2}$ mb high.
- 287 Rose Bay: Conditions essentially similar to 326 Sydney. 1600Z pilot balloon is from here (sometimes bears number 326 in collectives).
- 290 Coonabarabran: High level (1673 ft); sea level pressure therefore subject to error.
- 292 Dubbo: On western side of main ranges (870 ft); has tendency for morning easterly and afternoon westerly breeze.
- 307 Wagga: In valley lying approximately E-W (612 ft). Winds considerably distorted by topography. Tendency for morning easterly and afternoon westerly.
- 308 Cootamundra: 1108 ft.
Tendency for morning easterlies and afternoon westerlies.
- 310 Albury: Conditions considerably influenced by topography. Station in valley running approximately E-W. Tendency for morning easterly and afternoon westerly.
- 313 Armidale: Near top of range (3215 ft).
Sea level pressure subject to large error on account of height. Upper winds unrepresentative below 6000 ft.
- 321 Newcastle: Barometer considered unreliable (Rathmines 322 used in preference). Land fairly flat for 10-15 miles around station, but Hunter River Gap through Great Dividing Range lies WNW from Newcastle causing winds from W semicircle to reach station mainly as NW-WNW'ly.
- 325 Richmond Airfield: 30 miles NW of Sydney, in valley, at foot of scarp where hilly country begins. Hills to the west rise to 1500 ft within eight miles and 3500 ft within 20 miles. Upper winds from westerly quarter show considerable sheltering effect up to 3000-4000 ft. Sometimes when winds aloft have turned WSW after frontal passage low level winds still show N'ly. Radiation fogs fairly common (Sydney 326 pilot balloon observation is actually from Radar station near here).
- 326 Sydney: "326" synoptic reports from Weather Bureau near south end of Harbour Bridge; station generally representative and with good outlook. "326" upper wind reports from Radar Station near Richmond and subject to marked sheltering effects below 4000 ft with westerlies.
- 327 Mascot Airfield: About 8 miles S of Sydney 326, in southern outskirts of City, on flat ground only a few feet above estuary (Botany Bay). Exposure good.
- 331 Canberra: High level (1837 ft); sea level pressure therefore subject to error. Station situated in basin or valley lying approximately NW-SE, with high country in all directions; observations seriously affected by topography. Upper winds unrepresentative below about 7000 ft; surface winds tend to be deflected into NW'ly or SE'ly-E'ly. (Cont'd over).

- 331 Canberra: Frontal passages not readily recognised owing to local distortions.
(Cont'd).
- 340 Mildura: Barometer considered unreliable (variable correction).
- 341 Horsham: Somewhat protected by ranges to south lying WSW-ENE and averaging 2500-3500 ft; hills to 2600 ft at 24 miles from station and 3800 ft at 45 miles; generally low country to northward.
- 348 Echuca: In generally low open country of Murray River Basin, separated from south coast by ranges from 1500-4000 ft 40-60 miles from station.
- 356 Omeo: High level (2140 ft); unrepresentative, situated in mountainous country rising to 4000-6000 ft.
- 361 Cape Otway: Range of hills extends from NW to NE of station with crest 1500-2000 ft. 15 miles away. Good exposure in other directions.
- 365 Laverton Airfield: 13 miles SW of Melbourne 367 and 5 miles from coast of Port Phillip Bay, in flat open grass country without any hills of consequence within 15 miles.
- 366 Essenden Airfield: 8 miles NNW of Melbourne 367, in flat grass country; land slopes gently upward to northward from about 10 miles away; Ranges 2000-3000 ft 25 miles to north of station.
- 367 Melbourne: Reports from Weather Bureau situated on slight rise in city with excellent outlook; surrounding country flat plains for 10-20 miles. Ranges 30-40 miles to north to 2000-3000 ft.
- 373 Wilson's Promontory: Situated on southeast tip of Promontory which consists of a block of high land 25 miles long (N-S), 10 miles wide (E-W) joined by a narrow low isthmus stretching NWward to the mainland. Hill 1740 ft $1\frac{1}{2}$ miles NW of Station shelters it from W through NW to NNE; winds non-representative for W'ly-N'ly flow.
- 379 Gabo Island: Station on small 170 ft island 1 mile south of mainland; line of hills (N-S) rising above 1000 ft ends at coast NNW of station. Winds considerably distorted in vicinity of station; sometimes northeasterly or northerly reported when general airflow westerly; frontal passages often masked thereby.
- 382 Stanley: On narrow peninsula jutting northward from coast. Winds seriously distorted in vicinity. Station often reports light southeasterly when general flow is northwesterly.
- 384 Cape Sorell: Mountainous country (4000-5000 ft) along whole of western side of Tasmania causes marked effect on pressure.
- 389 Eddystone Point: Pressures affected by high country up to 5000 ft inland.
- 391 Swansea: Sheltered by hills; winds unrepresentative.
- 394 Hobart: On south bank of Derwent River in NW-SE valley. Mount Wellington rises to 4165 ft 4 miles SW of station. Surface winds quite unrepresentative; upper winds badly distorted below 5000 ft.
- 397 Cape Bruny: Station on SW corner of South Bruny Island (1930 ft). Sea horizon extends from SW through S to ESE. Mainland 8 miles distant from station, rises to 4000-4500 ft inland. Pressures considerably affected by orographical effects.

- 721 Batchelor: 340 ft. 45 miles SSE of Darwin, near foot of hilly country extending further inland.
- 771 Horn Island: Station at 50 ft on N side of island, 5 miles in diameter, rising to 340 ft near south side.
- 772 Lowood: Airfield in valley at 200 ft, 34 miles W of Brisbane and 20 miles NW of Amberley. Considerably protected by hills.
- 853 Hamilton Reach: Flying boat base, on Brisbane River, about six miles below Brisbane. Surrounding country generally low and flat for several miles.

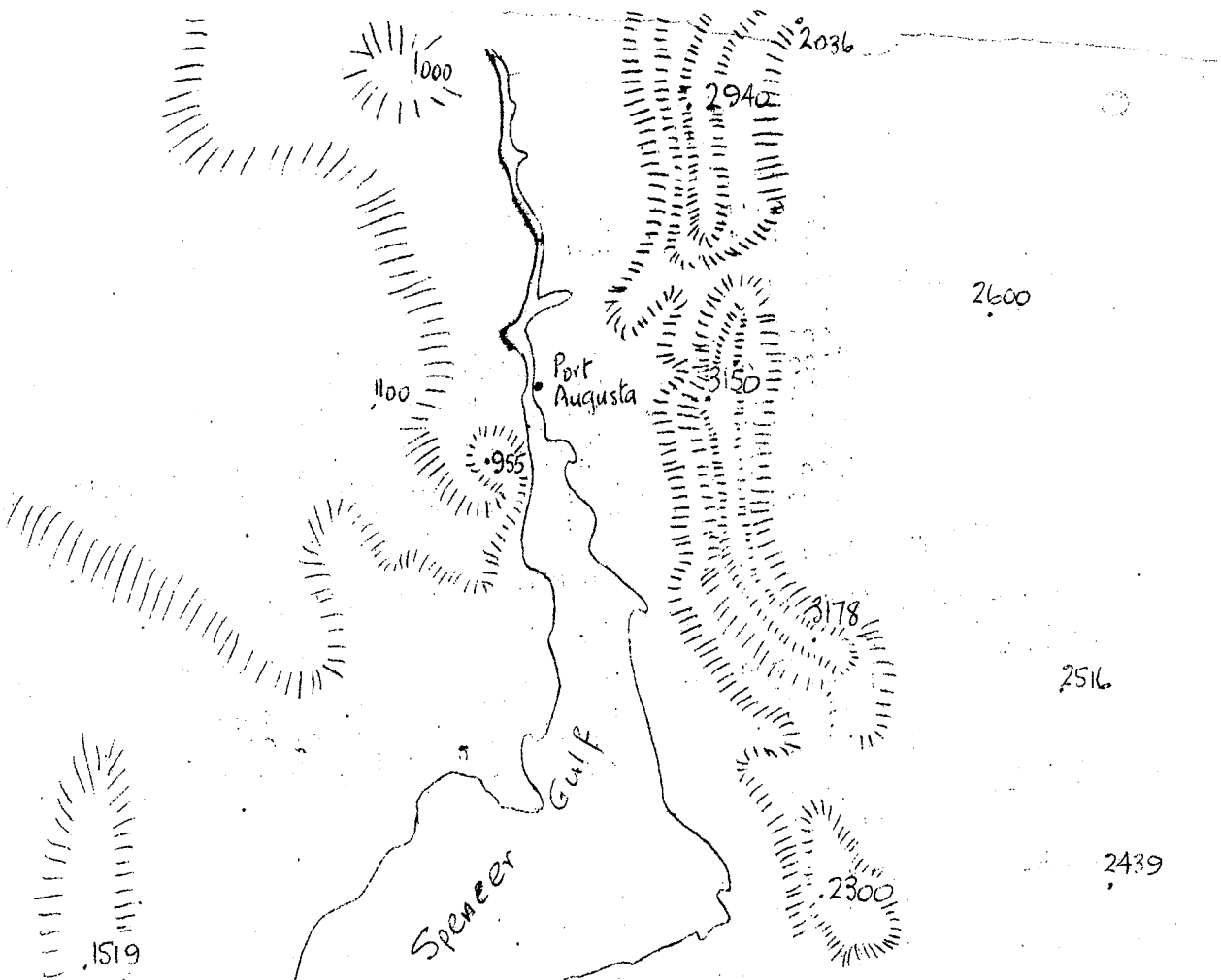
NEW GUINEA REGION.

- 180 Talasea: Station at 320 ft on eastern side of Willaumez Peninsula, jutting N from N coast of New Britain; ranges 3000-3800 ft extend whole length of Peninsula, crest 4 miles from station. Winds unrepresentative; reports generally of doubtful value owing to orographical effects.
- 182 Wewak: On coast at 20-30 ft; pressure should be satisfactory when station established. Ranges WNW-ESE to 4000 ft 5 miles south of station.
- 183 Kikori: On generally low-lying delta country. Land rises abruptly from 25-30 miles N of station to form range lying WNW-ESE 6000-8000 ft, crest 40-50 miles away. Low country to westward. S'ly-SE'ly winds readily cause rain at station. Reports reliable, prepared by experienced civilian observer. (Either Kikori or Kerema takes pressure from barograph; pressure from that station unreliable; other does not report pressure.)
- 184 Kerema: Fairly flat near station, and low country to NW; inland to NE ranges rise abruptly (4000 ft 15 miles NE of station). Reliable reports from experienced civilian observer. (See note under 183 re pressures).
- 185 Wau: High level (3450 ft); sea level pressure therefore unreliable. Station in valley running approximately NNW-SSE, with ranges 9000-10000 ft 8-10 miles distant both to E and W of station. Reports of doubtful value owing to orographical effects.
- 186 Buna: Station near sea level; pressure satisfactory. Conditions much affected by Owen Stanley Range to west. Strong tendency for E'ly sea breeze in afternoon, land-breeze at night.
- 187 Misima: Island 23 miles long, 2-6 miles wide, lying E-W; hills throughout length 1400-3400 ft.
- 189 Gasmata: On south coast New Britain; main range to 4000-6000 ft 20-25 miles to N; hill 3200 ft 8 miles NE.
- 190 Madang: Station when established will be near sea; exposure should be satisfactory.
- 191 Salamaua: N-S range to west, crest 8000-10000 ft 17 miles W of station. Winds considerably deflected in vicinity. Pronounced funnelling effect of Markham Valley between 13000 ft Finnisterre Range and 14000 ft Owen Stanley Range often produces violent NW'ly winds with severe turbulence in Salamaua-Lae vicinity. Pilot balloon reports often do not indicate the strong winds aloft as balloons commonly lost when passing out of the more moderate winds below 3-4000 ft. Weather often clear in lower Markham Valley during NW'lies while thunderstorms are visible over Finnisterre Ranges to N and NW.

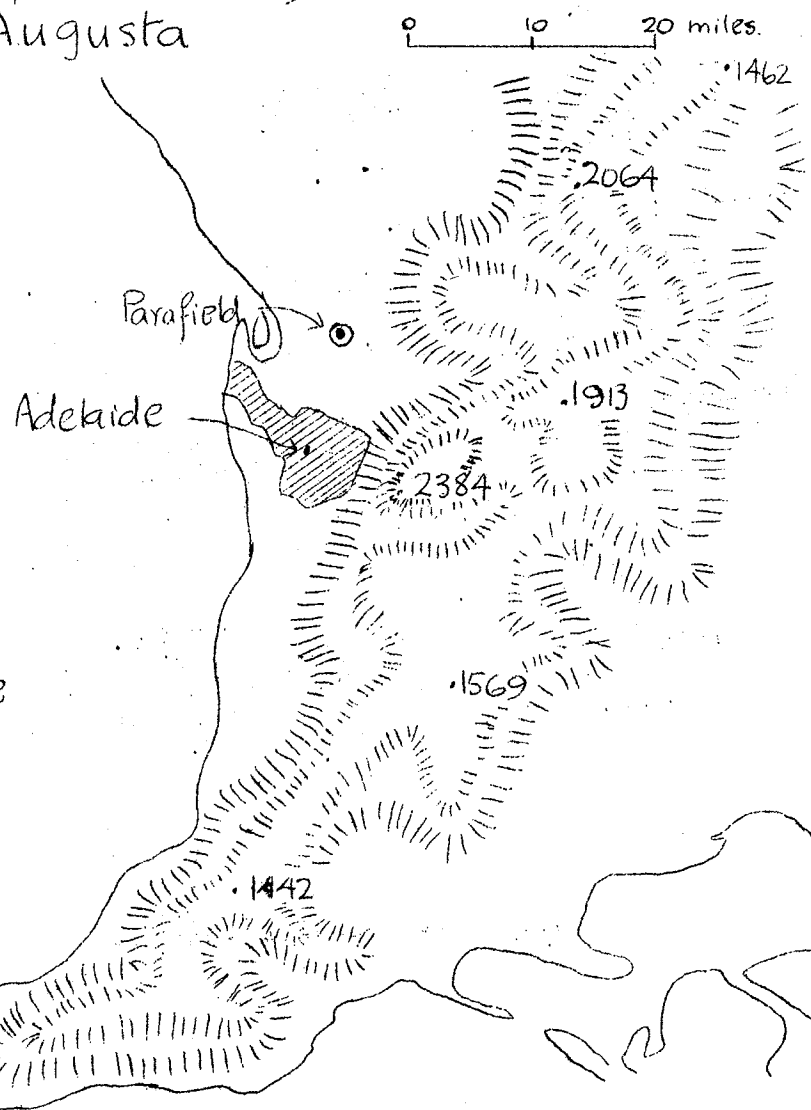
- 192 Daru: Mercury barometer and low level (26 ft); pressures reliable. Located on mud flats with flat country (mainly 50-100 ft) for 100 miles around. Experienced civilian observer; reports reliable.
- 193 Kokoda: At 1000 ft in deep valley (approx. N-S) 10 miles E of crest of Owen Stanley Range; approached from Port Moresby through 7500 ft gap between 13000 ft peaks. Orographical effects very pronounced.
- 194 Port Moresby: Poor location with hills rising steeply behind station. Similar to 195 (below).
- 195 Port Moresby Airfield: Two miles E of 194. Mercury barometer with several spares under constant check; 194/195 probably best pressure in New Guinea. Hills rise steeply to 1000-1500 ft behind station. Winds from W'ly quarter tend to be deflected to NW'ly. In SE'ly-S'ly winds 194/195 have much low cloud (especially at night) lining the hills while Wards 866, Bamona 862 and Laloki 710 on inland side of hills remain clear. 194/195 have many more thunderstorms in SE season than 866/862/710. Port Moresby has its heaviest rains in E'ly-ENE'ly streams when W'ly sea breeze develops on lee coast and large Cb develop over Owen Stanley Ranges and drift over Port Moresby in late afternoon. This section of coast from Kerema to Hood Point subject to "Guba" squalls; these occur in fairly homogeneous WNW'ly or NW'ly air streams deeper than 15000 ft, having speeds 25-30 knots; surface wind drops during evening, possibly with inversion forming above Katabatic drift down from Mountains, but later (usually after midnight) NW'ly breaks through to surface again with violent squall which can be heard approaching from sea; squall sometimes accompanied by line of Cb, thunder and heavy precipitation, but sometimes weather remains clear.
- 197 Robinson River: Mercury barometer but readings appear faulty; more reliable pressure from 867 Cape Rodney 20 miles to west. Surroundings fairly flat for 10-15 miles then ranges rise abruptly.
- 199 Kalumadau: On western portion of Woodlark Island, at 410 ft on western side of 740 ft hill; hill 12 miles to S to 1350 ft. Reports considered unrepresentative. Guasopa Airfield on opposite side of island (SE corner).
- 400 Gusap: In upper Ramu Valley with 10000-13000 ft Finnisterre Range lying WNW-ESE to northward and 12000-14000 ft Owen Stanley Range lying WNW-ESE to southward. Marked distortion of winds.
- 401 Lae: Near mouth of Markham Valley. Pressure satisfactory. Winds much influenced by funnelling effect of Rama-Markham Valleys (see notes on 191 Salamaua).
- 402 Finschhafen: Winds abnormally strong due to NW-SE funnel effect of Vitiaz Strait between Huon Peninsula (7000-13000 ft) and New Britain (4000-7000 ft).
- 403 Cape Gloucester: Fairly good observing station on point jutting northwards. Hills to 6600 ft 6 miles S of station.
- 404 Arawe: Good observing point on south coast; although winds abnormally strong due to funnel effect of Vitiaz Strait.
- 700 Sevenmile: (20 ft), 5 miles NE of 195, Port Moresby Airfield, but separated by line of hills 1000-1500 ft. See note on 866 and 710.

- 707 Bulolo: At 1800 ft 11 miles down valley (NNW) from Wau 185 (see notes).
- 710 Laloki: 9 miles NNE of Port Moresby, separated from coast by 1000-1500 ft hills. Sheltered from much coastal low cloud in SE'ly-S'ly winds.
- 711 Milne Bay: Station near sea level on NW corner of Milne Bay, open to E-ESE, but surrounded by hills in all other directions. 3000-4000 ft range lying E-W along N side of Bay joins 3000-6000 ft SE'ward extension of Owen Stanley Range lying E and S of Bay. Much orographical cloud and precipitation in SE'ly winds, when only approach is from SW via Mullins Harbour and 1500 ft gap through Owen Stanley Range. Mercury barometer; pressure considered reliable.
- 712 Fall River: Another station in same camp as 711 Milne Bay.
- 713 Bena Bena: High level 5500 ft, with mountainous country on all sides.
- 858 Nadzab: Weather central in Markham Valley. Finnisterre and Owen Stanley Ranges on both sides up to 13000 ft. Winds and weather seriously influenced by topography, especially by funnel effect of Ramu-Markham Valleys.
- 859 Kiriwina: On flat atoll (maximum height 150 ft). Excellent exposure; conditions generally representative of open sea.
- 860 Dumpu: At 1000 ft in Ramu Valley. Reports seriously influenced by surrounding mountains. Pressures unreliable.
- 862 Bomona: 8 miles NNE of Port Moresby, at 250 ft. See notes on 866 Wards.
- 866 Wards Strip: 4 miles N of Port Moresby but separated therefrom by line of hills at 1000-1500 ft. Sheltered from much of low cloud and precipitation reported by Port Moresby in SE'ly or S'ly weather.
- 867 Cape Rodney: U.S. Station on S. coast; moderately low ground for a few miles inland before ranges rise steeply. Pressure believed more reliable than 197 Robinson River.
- 868 Dobodura: 13 miles from coast, on NE side of Owen Stanley Ranges. Fairly low level; pressure believed fairly reliable.
- 870 Goodenough Island: Reports from airfield on NE side of island. Station near sea level; pressures probably reliable. Island mountainous, rising to 8400 ft 8 miles WSW of station. Conditions seriously influenced by topography. Often reports SE'ly at surface when general wind NW'ly or W'ly.
- 967 Merauke: Near sea level in low swampy country. Land substantially flat for 100 miles around. Station often receives heavy rains with onshore winds, but these believed due not to any orographical effect but to N Hemisphere fronts or troughs, or similar disturbances.

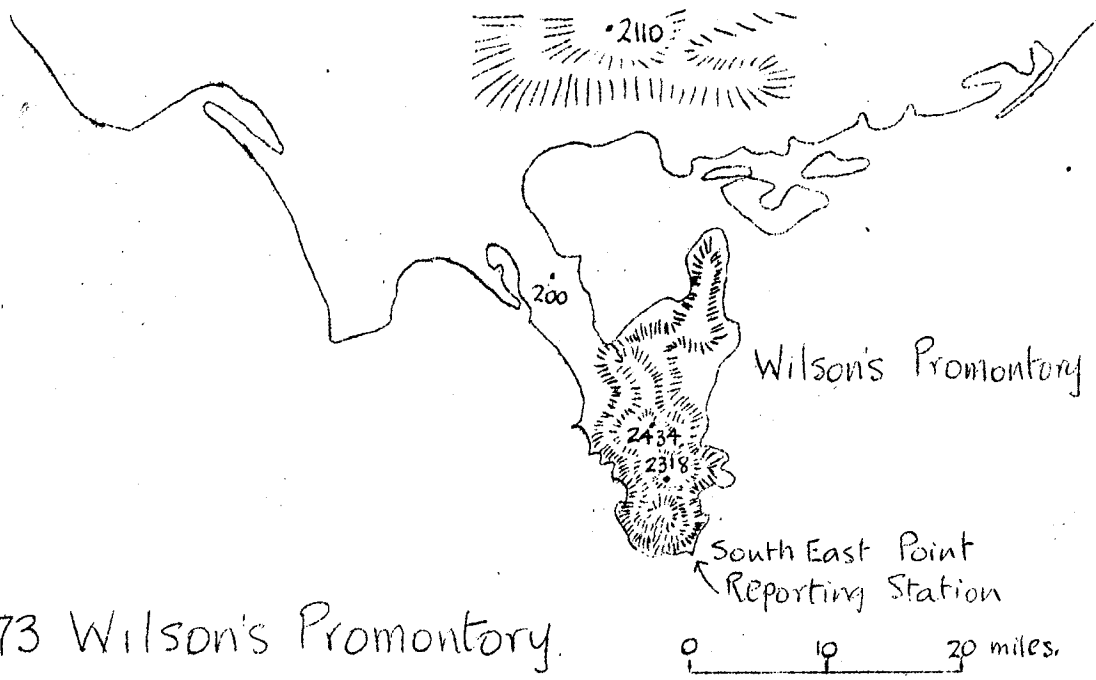
Wellington.
April, 1944.



148 Port Augusta

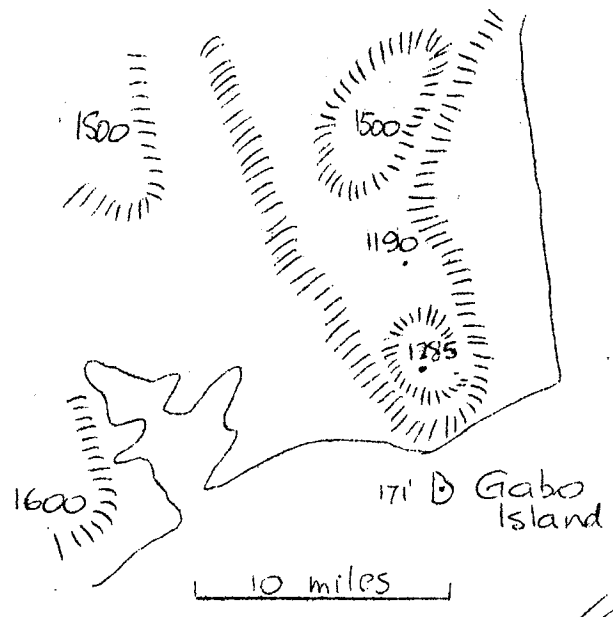


167 Parafield and 168 Adelaide

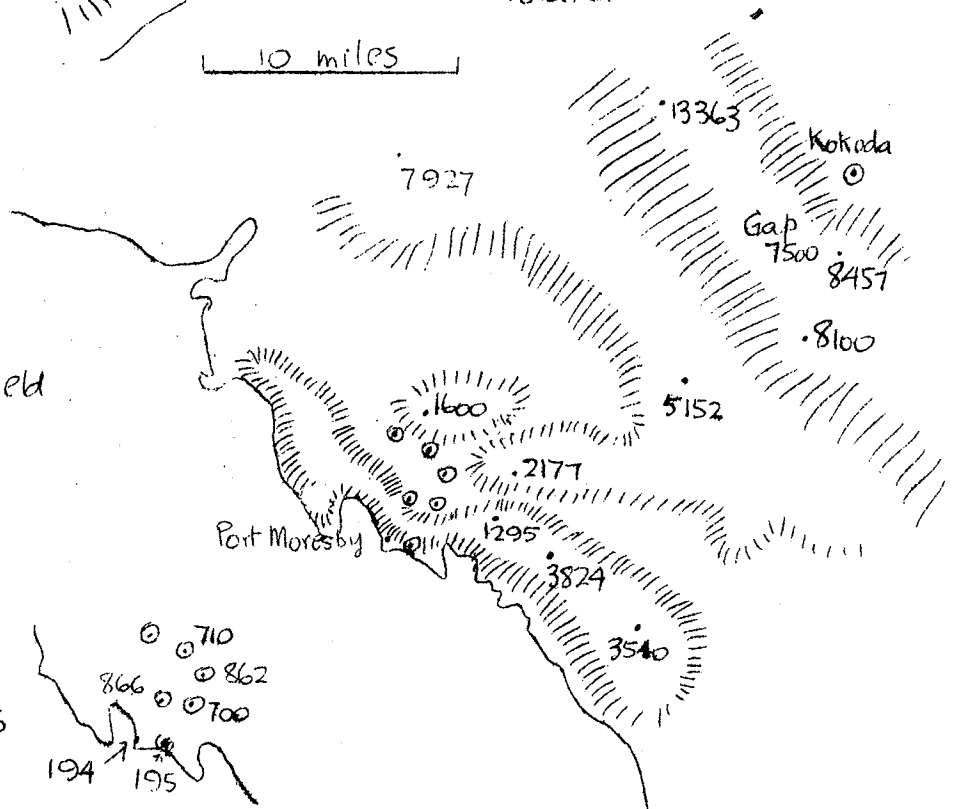


373 Wilson's Promontory.

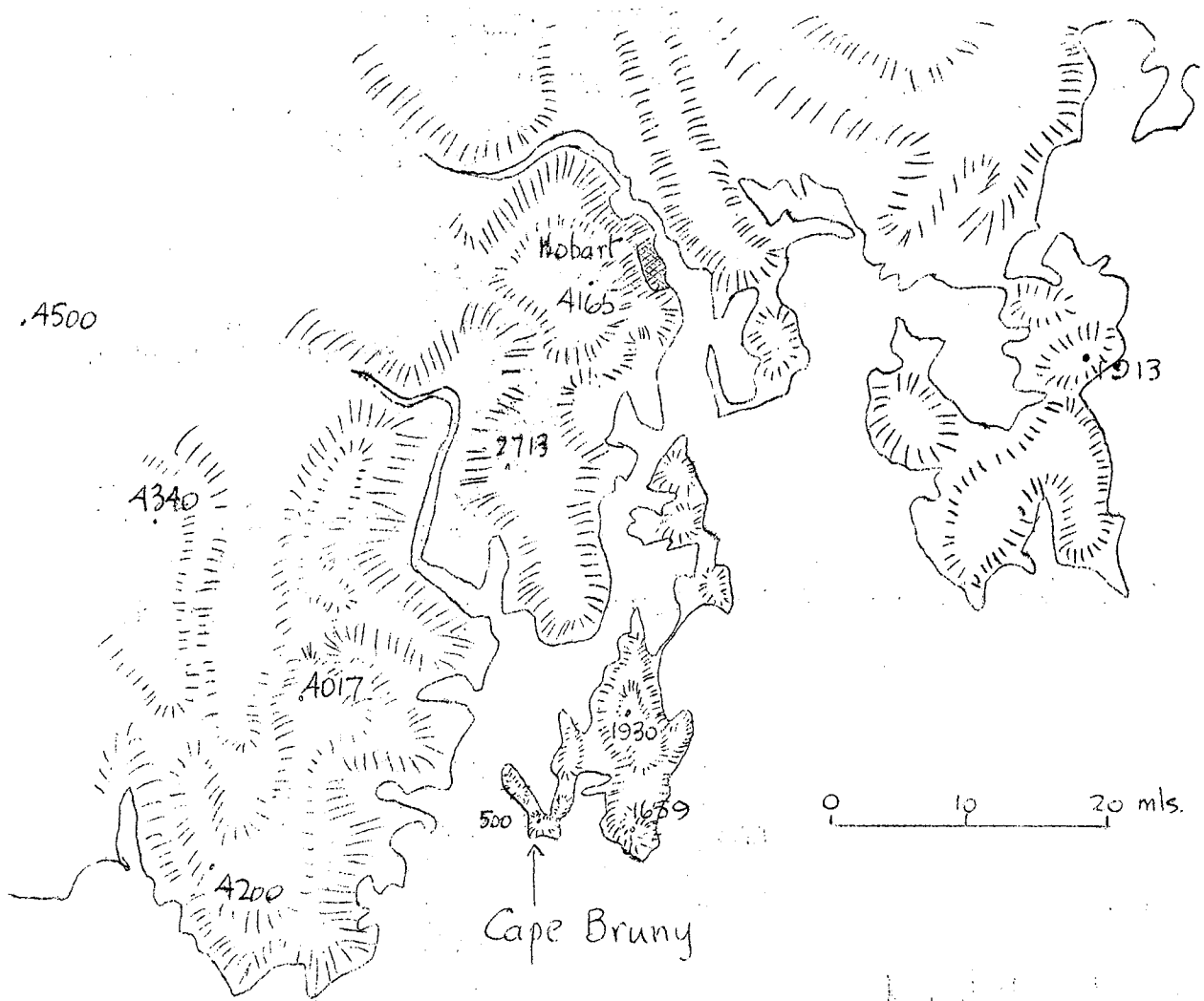
379 Gabo Island (approximate only)



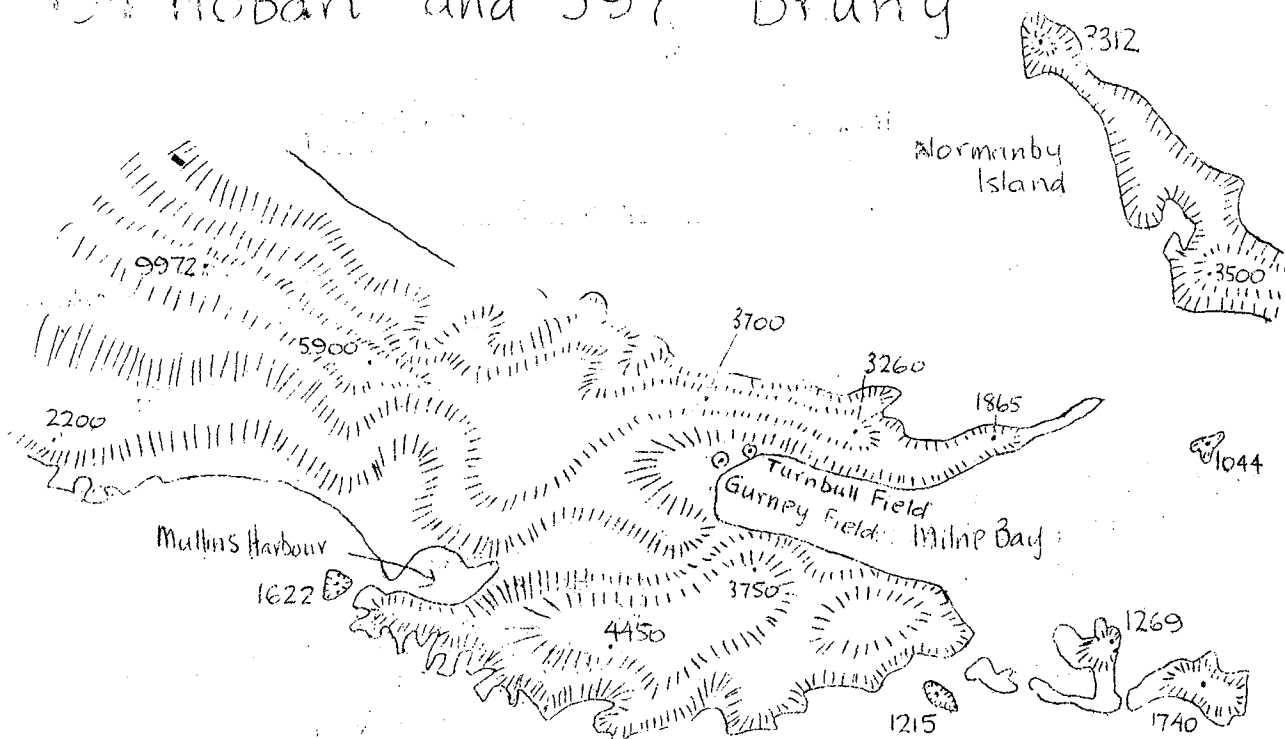
- 194 Port Moresby
- 195 Pt. Moresby Airfield
- 700 Seven Mile
- 710 Laloki
- 862 Bomona
- 866 Wards



Key to stations



301 Hobart and 397 Bruny



711 Milne Bay