

Big Blow Up North

An idea of the extreme isolation of some parts of the coastline of Australia is given by a message, which reached the Minister for Home and Territories (Mr. Poynton) in Sydney yesterday.

The message came from the Administrator of the Northern Territory, and gave particulars of a tremendous hurricane, which overwhelmed Vanderillon's Island as long ago as January 9. Vanderillon's Island is one of the fertile Sir Edward Fellow group, in the Gulf of Carpentaria. The nearest mainland settlement to the group is Boorooloola, and, on the map, the distance seems short. But the news did not reach Darwin until February 6, when it was sent by mail to Sydney. That mail only reached Darwin yesterday, and the news was immediately telegraphed to Sydney.

**A HISTORY OF TROPICAL CYCLONES
IN AUSTRALIA'S NORTHERN TERRITORY**

KEVIN MURPHY

It appears from the message that such a settlement as existed on the island, which Vanderillon's group was settled by a few practically some main-land blacks—had been destroyed, wiped out. The cutter Avis was given ashore, and have been demolished. The provisions destroyed, The cutter Avis was given ashore, and battered against the mangroves until she was stove in and sank. The cutter's dinghy was thrown high upon the tops of the mangroves, and was recovered after the storm by cutting down the trees.

Markwell and Lake were the only two white men on the island. Markwell's cutter was wrecked, and Lake became moon blind. It had not been that the yawl Pat weathered the storm, and arrived from Thursday Island with provisions, the people on the island starved.

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Big Blow Up North

(A History of Tropical Cyclones in Australia's
Northern Territory)

by

KEVIN MURPHY

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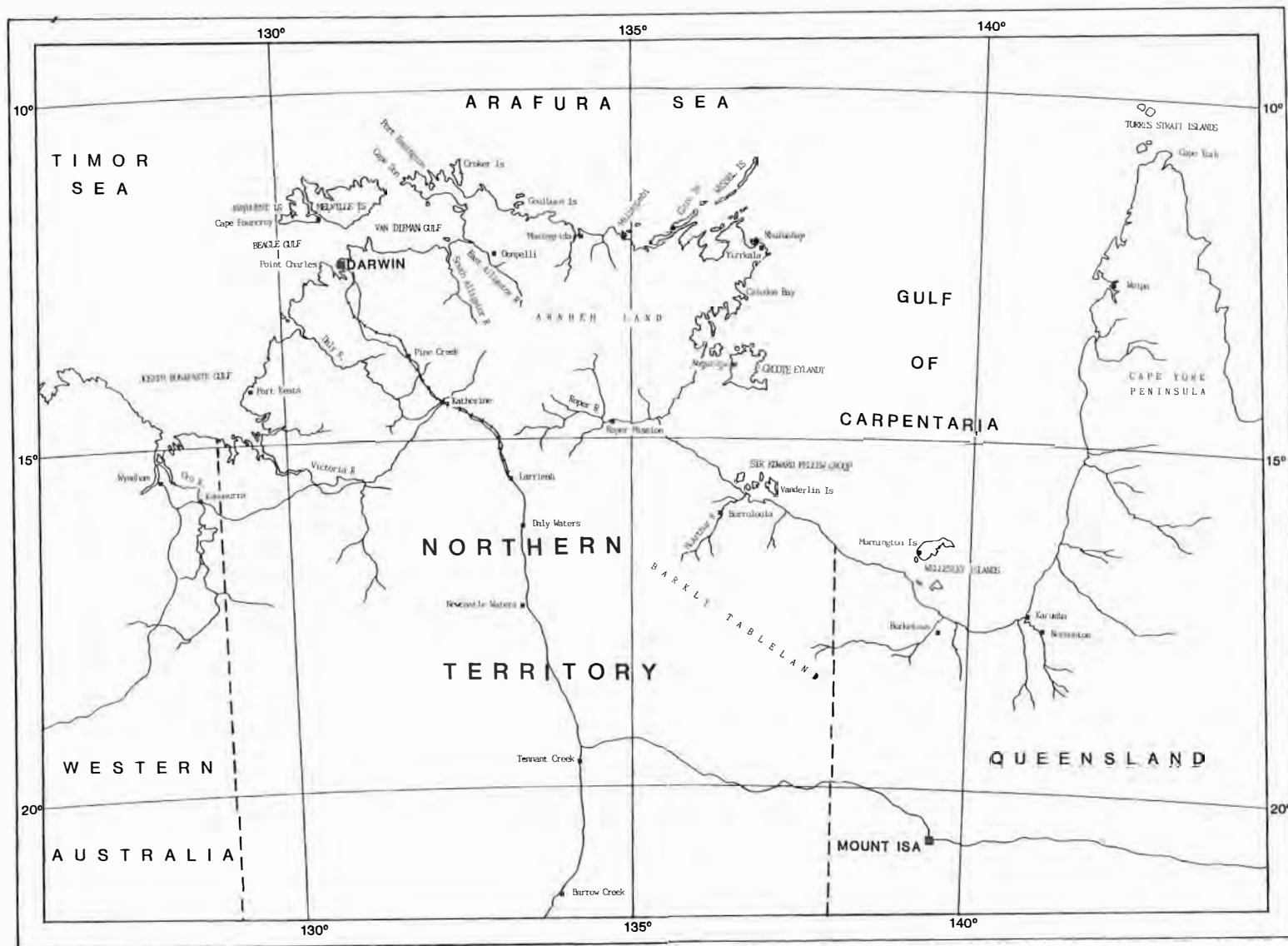
G. L. DUFFIELD, Government Printer of the Northern Territory

CONTENTS

	List of photographs	VII
	Map of Northern Territory cyclone coasts	VIII
	Foreword	IX
	Preface	X
Chapter 1	First Experiences	1
Chapter 2	The Great Hurricane	11
Chapter 3	An Active Decade	19
Chapter 4	The Saga of s.s. <i>Douglas Mawson</i>	27
Chapter 5	Darwin Revisited	35
Chapter 6	The Great Roper Flood	41
Chapter 7	The Post-War Period	47
Chapter 8	Evolution of a Cyclone Warning System	51
Chapter 9	Tracy	55
Chapter 10	Kathy	65
	Notes and References	73
	Select Bibliography	80
	Appendices:	
1	Cyclone Chronology	82
2	Tracks of some Notable Cyclones	90
3	Shipping Casualties — 1897 Cyclone	91
4	Shipping Casualties — Cyclone Tracy	92

LIST OF PHOTOGRAPHS

1. H M sloop *Pelorus* stranded at Port Essington in 1839.
2. H M sloop *Pelorus* in more peaceful circumstance.
3. The scene at Port Essington after the hurricane in 1839.
4. Charles Point Lighthouse, September 1895.
5. Remnants of Chinatown, Palmerston, January 1897.
6. Damage to Mercantile Building, Palmerston, January 1897.
7. Allen's Warehouse, Palmerston, January 1897.
8. Cape Don Lighthouse which "shook alarmingly" during the March 1919 cyclone.
9. s.s. *Sir John Forrest* rode out a hurricane in the Gulf in 1919.
10. s.s. *Douglas Mawson* lost with all hands at Easter 1923.
11. Tree damage at Groote Eylandt after the 1923 cyclone.
12. The mission house at Emerald River, Groote Eylandt before the March 1923 cyclone.
13. The mission house at Emerald River, a jumbled ruin after the 1923 cyclone.
14. The Warder's residence at Fannie Bay Gaol, Darwin, March 1937.
15. Windmills were not designed for cyclonic winds, Darwin, March 1937.
16. Cyclone damage at Channel Island Leprosarium, Darwin, March 1937.
17. Cavenagh Street, Darwin, March 1937.
18. The mission lugger *Holly* on the Roper River.
19. Bathurst Island school after the 1948 cyclone.
20. Tracy by satellite, 9 a.m. Christmas Day 1974.
21. Tracy by radar, over Darwin.
22. The devastation of Tracy in the northern suburbs of Darwin.
23. A picture with a story, Darwin after cyclone Tracy.
24. HMAS *Arrow*, one of the many casualties in Darwin harbour during Tracy.
25. Death of a Dakota, Darwin Airport, December 1974.
26. Enhanced infra-red satellite picture of Kathy at landfall.
27. The prawn trawler *Newfish I*, stranded on Willi Islet.
28. Complete devastation of forest on Southwest Island, one of the Sir Edward Pellew Group.
29. Centre Island weather observer Max Wiese, with the Cyclone Kathy wind record rescued from the wrecked anemometer.



FOREWORD

Kevin Murphy is one of a specialised group in the Bureau of Meteorology, who eat, breathe, and live tropical cyclones.

His painstaking work provides a consolidated account of the more destructive, often lethal cyclones, since the earliest days of settlement.

Prior to the advent in the 1960s of the weather satellite — the ubiquitous “spy in the sky” — the record of tropical cyclones around Northern Territory shores is quite sketchy. Kevin has helped fill some of the gaps. Only with an extended historical perspective is it possible to gauge the chances of the rarer, very severe cyclone, re-occurring. As Kevin brings some of her shadowy forebears into focus, we are left with no illusion that cyclone Tracy was unique.

We who live and work around the Territory’s usually tranquil shores must understand the ability of the sea and atmosphere, very occasionally, to collaborate, and wreak havoc beyond our experience. This work is essential reading for environmental and social scientists, engineers, counter disaster workers, seafarers, teachers and all those who manage people and assets in the north.

Rex Falls
Regional Director
Bureau of Meteorology
Darwin

November 1984

PREFACE

A tropical cyclone is defined by the Bureau of Meteorology as “a synoptic scale cyclonic rotational low pressure system of tropical origin, in which 10 minute mean winds of at least gale force (63 km/h) occur, the belt of maximum winds being near the system’s centre”. Many early references to “cyclones” or “cyclonic weather” relate to other types of weather events, such as thunderstorms or monsoon gales. This has in the past given rise to some confusion in listings of tropical cyclone occurrences. In the following account, the terms “tropical cyclone” or “cyclone” are used exclusively in the sense of the above definition. Occasionally, the term “hurricane” has been used, which is defined here as a severe tropical cyclone.

The Bureau of Meteorology has been compiling detailed case histories of tropical cyclones in the Australian region since about 1960. Prior to this time the record, especially in the Northern Territory, was very skimpy. A lot of historical material existed, but was scattered far and wide in libraries and archives throughout Australia.

The first of my two aims in undertaking this project then was to accumulate as much historical material as possible relating to the subject, in order to expand and enhance the scientific record. Lengthy and detailed records of tropical cyclones are vitally important for planning purposes for a wide range of activities in coastal and offshore areas. The second aim was to write an historical account highlighting the effect of tropical cyclones on the progress of settlement in the Northern Territory.

The project would not have been completed without the generous assistance of the Northern Territory Government, through one of their annual minor history awards, for which I am most grateful. Many other people have assisted my research including, in various centres, staff members of libraries and archives who on all occasions have been most courteous and helpful. I thank the various libraries and private individuals who granted permission to publish photographs. I am most indebted to Ms Alvea Christiani and Ms Glorriane Swift who between them patiently typed several versions of the manuscript. Although the work was carried out mostly in my own time, the Bureau of Meteorology has been most indulgent in making additional time available, and I especially thank the Regional Director in Darwin, Mr Rex Falls, for his encouragement.

Kevin Murphy

November 1984

CHAPTER 1

First Experiences

For many thousands of years tropical cyclones have been unleashing the forces of wind, rain and sea upon the shores of northern Australia. But the recorded history of tropical cyclones in the north commences with white settlement of the area.

For at least two centuries before the first Europeans built their homes on the north coast, Macassan fishermen from the Celebes had been visiting these shores annually to gather trepang, or sea slug.⁽¹⁾ Each year they sailed their praus southward with the northwesterly winds of the early wet season. After fishing the shallows off northern and eastern Arnhemland for several months, they would then return home when the southeast trade winds became established in April or May. It would seem inevitable that on occasions a tropical cyclone would cause the Macassans to be blown far off course or, worst still, to perish. In addition to these itinerant fishermen, Dutch, Portugese, British and French navigators each in their turn visited northern Australia. Some historians suggest that the Chinese may have preceded them all.⁽²⁾

However it was the British, fearing imminent Dutch moves towards settlement of the north coast, who first established the garrison settlement of Fort Dundas in September 1824, under the leadership of Captain J. G. Bremer. The site eventually chosen was on Melville Island near the northern end of the narrow Apsley Strait which separates the sister islands of Bathurst and Melville. Unfortunately the choice was not a happy one, the site being surrounded by mangrove swamps. Sickness, friction with the Tiwi people, and extreme isolation soon made life a misery at the new settlement. To add to their woes, a severe storm struck the islands early in April 1827. The new commandant, Major J. Campbell described the aftermath in a report to the Colonial Secretary:

“My returns of the 24th of March will show the then state of the gardens, but I am sorry to state that our exertions have been nearly all rendered vain by a very severe gale or tempest on the 2nd of April, accompanied with torrents of rain. It commenced a little after midnight on the first, and lasted without any abatement of its violence until after sunset on the 3rd. It threw down all our fences, either broke or rooted up mostly every fruit tree, destroyed a great part of our only present vegetables, the Bringit, completely destroyed all the corn that was planted in November and December, and unroofed all our huts and sheds.

The sea rolled in with such violence that it swept away the wharf, foundered and deprived us of a new boat, and stove in the bottom of our only remaining one. I am happy to say that neither the Anne or Isabella sustained any injury, although the latter drove within a few yards of the rocks".⁽³⁾

The loss of all their fresh vegetables and the destruction of the fruit trees must have been a cruel blow to the struggling settlement, and morale, which was already at a low ebb, would have sunk even lower.

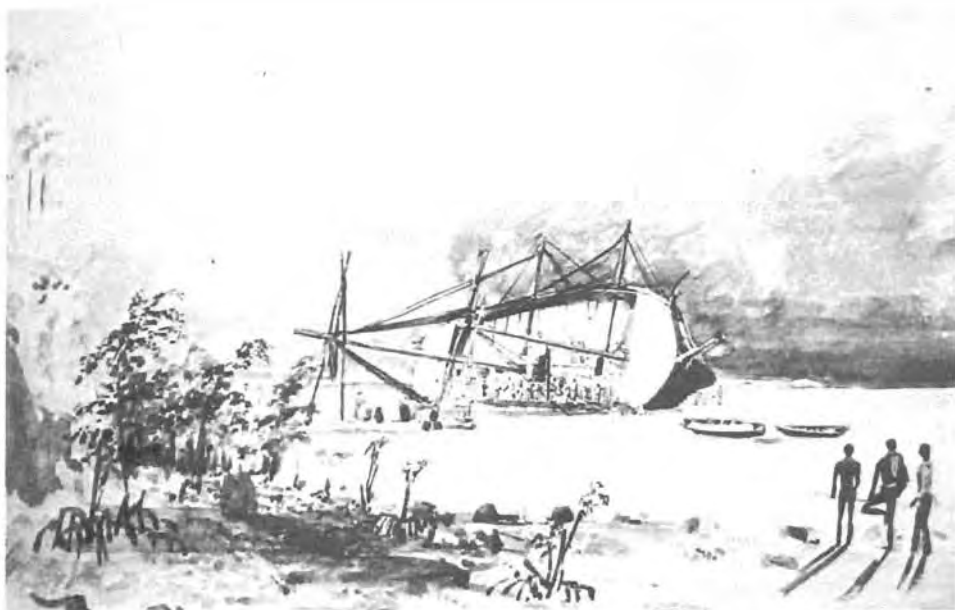
A second settlement, that of Fort Wellington at Raffles Bay on the Cobourg Peninsula, was established in June 1827. This location had a much healthier aspect than Fort Dundas, and under the leadership of Captain Collet Barker who took it over in September 1828 the new settlement was progressing well. Nevertheless under orders from London both settlements were abandoned during 1829.

For a time the British lost interest in northern Australia. However by 1838 sufficient pressure was brought to bear for a new attempt at settlement to be made. In November of that year Captain Bremer established a new township of Victoria at Port Essington, a site that had been enthusiastically recommended some twenty years before by hydrographer Phillip Parker King.

The Port Essington settlement progressed reasonably well during its first twelve months.⁽⁴⁾ However, little more than a year after its birth, the Victoria township was devastated by a severe tropical cyclone. In mid-November 1839 increasing showers and thunderstorms were signalling the approaching wet season. In the harbour were Royal Navy sloops *Pelorus* and *Britomart*. The latter was soon to depart for Sydney and the crew were busily engaged in loading stores.

The weather began to change on Sunday, 24 November when the wind blew from westerly quadrants, and the skies were cloudy and threatening throughout the day. In the evening the settlement was buffeted by westerly squalls, accompanied by heavy rain, thunder and lightning. Monday the 25th dawned in similar fashion, with the wind changing to a brisk southerly which brought intermittent rain squalls.

At 4 p.m. *Pelorus* struck her top gallant masts and housed the flying jib boom in preparation for the impending storm. *Britomart*, anchored nearby, quickly followed suit. Crewmembers working ashore hurried to complete their tasks and return to their ships. By nightfall, *Pelorus* had raised her boats and begun to batten down. *Britomart* was a little slower, and only succeeded in hoisting the whaleboat after a difficult struggle. By now the barometer was falling rapidly, and the wind had increased to a galeforce southeasterly.



1. H M sloop *Pelorus* stranded at Port Essington in 1839.
(Painting by Owen Stanley, Mitchell Library).



2. H M sloop *Pelorus* in more peaceful circumstance.
(Mitchell Library).



3. The scene at Port Essington after the hurricane in 1839 — a painting by Owen Stanley. (Mitchell Library).

At 8.30 p.m. *Britomart's* cutter sheared its stem bolt and hurtled off into the darkness. The wind was rising to a tremendous hurricane from the east, and the men were unable to hear each other speak as the seas thundered and the wind screeched around them. *Pelorus* lost her cutter and then the sheet anchor jammed. The vessel was rolling alarmingly and shipping heavy seas. Near 11 p.m., with the barometer plummeting to 965 millibars and the hurricane reaching its peak, *Pelorus* suddenly parted her small bower anchor and began to lose ground. As two guns and two rockets were fired off, the sea smashed the jollyboat. Finally, at midnight she struck heavily on the shore under Minto Head, and the seas began breaking over her.

The crew of *Britomart* had seen the distress signal from *Pelorus* as she drove close by, but apart from answering with a blue light nothing could be done. Besides, they had their own problems. The pounding seas had wrenched away their jollyboat and the ship was driving in the storm. The wind shifted to all parts of the compass before tearing in with renewed vigour from the north. At this fresh onslaught *Pelorus* fell over on her starboard beam with the topmast under the water and her crew clinging to the weather rigging. By 3 a.m. the change of wind had caused *Britomart* to run right over her anchors and to lie broadside to the wind and tide. The ship was still driving, and the land was perilously close. But relief was at hand, for soon after conditions began to ease. At daylight an inverted Ensign was raised on the port whisker boom of *Pelorus*. With the sea now much quieter, the whaleboat was despatched from *Britomart* to take the crew from the stricken vessel. ⁽⁵⁾

The scene ashore at the settlement was one of complete devastation. Everywhere the trees had been either uprooted or stripped of their foliage. All the gardens lay in ruin, and many of the stores and provisions had been lost or rendered useless, including those previously salvaged from the wreck of the naval storeship *Orontes*.⁽⁶⁾ The cottages were either levelled to the ground or left uninhabitable by the tempest. The solidly-built pier was totally destroyed, as was the newly erected church. The Government House, a sturdy building on stone piers, had been bodily removed about nine feet from its foundations. Most other buildings were demolished or badly damaged.⁽⁷⁾ The boathouses were gone, and of the twenty boats between the settlement and the ships-of-war, only the whaleboat and gig aboard *Britomart* remained.

Continuing rain squalls only served to heighten the misery felt by those who beheld this scene of utter desolation.

A mustering of the ships company found that eight men from *Pelorus* had perished. During the height of the storm the sea had risen some ten and half feet (3.2 metres) above the high water springs level,⁽⁸⁾ so that afterward at low tide *Pelorus* was high and dry and buried nine feet (3 metres) in the mud, which was perfectly flat all around her.

Meanwhile, some five hundred kilometres away to the southwest, Commander J. C. Wickham and his crew aboard HMS *Beagle* were busy exploring the middle reaches of the Victoria River.⁽⁹⁾ Lieutenant John Lort Stokes relates that he had perceived an unusual turn in the weather during the forenoon of 25 November when instead of the northwesterly sea breeze, a moderate easterly was present. Although the barometer showed nothing untoward, the weather at sunset was very gloomy. At midnight, as the hurricane was tearing the heart out of the Port Essington settlement far away to the northeast, rain began to fall at the Victoria River. Throughout the following day and night, squally easterly winds blew, and heavy rain fell out of dense masses of grey clouds. Then on the 27th, the weather gradually cleared, leaving a cloudless blue vault at sunset.

A week later *Beagle* returned to the mouth of the Victoria. A party went ashore on the southern headland, and the men were surprised to discover a great number of dead turtles. Stokes was at a loss to explain such a phenomenon, “. . . unless we suppose them to have been thrown up by some earthquake wave”.⁽¹⁰⁾ He duly named the spot Turtle Point. Of course the week before, Stokes was in a relatively sheltered spot some sixty kilometres up river, and so was unaware that a cyclone had passed southward through the Bonaparte Gulf, causing great upheaval. Otherwise he may have concluded that the hapless turtles had been hurled upon the shore by the pounding seas.

During the days that followed the hurricane all at Port Essington were employed in erecting temporary shelters, salvaging what stores remained —

either on board *Pelorus* or scattered about the shore, and in making preparations to refloat *Pelorus*. However the latter task proved to be a long and extremely laborious exercise, and took in all nearly three months.⁽¹¹⁾

The cyclone had apparently formed over the warm waters of the Arafura Sea to the east of the Cobourg Peninsula.⁽¹²⁾ The swathe of tree damage crossed the peninsula from southeast to northwest, passing directly over the settlement.⁽¹³⁾ After crossing the peninsula it is likely that the storm turned southwest and moved rapidly through the Bonaparte Gulf. Far to the northwest at Koepang, there was a strengthening of the westerly monsoon on the 26th as the cyclone headed towards the Australian west coast.⁽¹⁴⁾

The effect of the hurricane on morale at this tiny, isolated community must have been traumatic indeed. The stark nakedness of the trees and the eerie silence in a place devoid of birds and animals would have served to exacerbate the physical discomforts suffered as a result of that terrifying night. It also takes a long time for the natural countryside to recover from such an event. Almost a year later, the naturalist John Gilbert complained in a letter to colleague John Gould that his collections were restricted by the distinct lack of quadrupeds and birds in the Port Essington district.⁽¹⁵⁾

At the settlement recovery was slow. Food was severely rationed during the several months that it took for relief supplies to arrive. The cyclone had destroyed or badly damaged much of the available building material so that only limited restoration work was possible until more material arrived. The wet season rains also slowed the work but quickened tempers.

The British laboured on for eleven years at Port Essington. But they could never really come to terms with the tropical climate, and their vision of a successful trading port had not materialised. On 1 December 1849 the British sailed away from the township of Victoria and never returned.

For about the next fifteen years northern Australia was left to its original inhabitants. However interest gradually grew among pastoralists in Adelaide in the wide expanses of the north, as explorers penetrated the country and sent back glowing reports. Leichhardt (1844-45), Gregory (1855-56) and finally John McDouall Stuart who in 1862 captured the imagination of the country by his epic crossing of the continent from south to north, all set off expansionist moves in Adelaide which culminated with the annexation of the Northern Territory to South Australia in July 1863.

South Australia's first attempt at occupation of her new lands came in April 1864 when B. T. Finniss sailed north to establish a settlement at Escape Cliffs on Adam Bay, near the mouth of the Adelaide River. The venture was a dismal failure and after little more than two and a half years the expedition was recalled. In 1869 a new attempt was made, and on 5 February, Surveyor-General George Goyder, with 120 hand-picked men, landed at Port Darwin and began laying out the township of Palmerston.

Meteorological observations at the infant settlement were commenced on 6 March 1869 by Dr Robert Peel, surgeon, assisted by survey draughtsman John Bennett. This task was taken over by J. A. G. Little upon his arrival in Palmerston in August 1871 to take charge of the Overland Telegraph Office. Little was to hold this office for the next thirty-five years. He was most meticulous in all that he did and was instrumental in laying the foundation of a long unbroken record of weather observations in Darwin, one which continues to this day.⁽¹⁶⁾

At the time of his arrival in Palmerston the construction of the overland telegraph had run into serious difficulties, and it became necessary for Little to travel to the Gilbert River in Queensland, the nearest terminus of the existing telegraph, to contact the Superintendent of Telegraphs in Adelaide, Sir Charles Todd. The section of his journey across the Gulf of Carpentaria to Normanton was completed in *Larrakeah*, a partly-decked whaleboat of 15 tons, which had been used extensively at the Escape Cliffs settlement. After travelling to the Gilbert River on horseback to contact his chief the return journey across the Gulf was commenced on 29 December 1871. During the crossing the party ran into a cyclone and for three days the small craft was tossed about in heavy seas with the occupants expecting at any moment to be swamped. The mast was sprung and the gear suffered badly, but they eventually arrived unscathed at the mouth of the Roper River.

After assisting with the arrival of relief stores to the construction parties Little arrived back in Palmerston in April 1872. Four months later the line was complete, and it was he who sent the first message across the continent to Adelaide on 22 August. In another three months the submarine cable was finished and the transmission of messages between England and Australia commenced.

During his long and varied career in the north, J. A. G. Little was an imposing figure who became a very prominent citizen. At times his strong will made enemies, and surrounded the man in some measure of controversy. Nevertheless his vitality and dedication to duty were evidenced by the fact that he undertook annually an inspection (mostly on horseback) of his section of the telegraph line which stretched from Darwin to Attack Creek, a distance of some 960 kilometres.⁽¹⁷⁾ This was no mean feat for a man who tipped the scales at seventeen stone (108 kg).

During the early years of settlement at Palmerston, those marooned colonists had much to learn about coming to terms with the tropical climate. Few would have previously been tested by the high humidity of a tropical wet season. Their houses, their clothing, in fact their whole lifestyle had been fashioned in more temperate latitudes. How many among them would have before witnessed such spectacular displays of nature's forces that are provided by the huge electrical storms that herald the beginning of the rainy

season. A series of these storms burst in upon the town during the second week of January 1878.⁽¹⁸⁾ The onslaught culminated on the 14th with a thunder squall which roared in and flattened all of the more flimsy dwellings, and badly damaged most of the others.

This squall apparently came from a long way south, for buildings at the Katherine station were unroofed, and a correspondent from Yam Creek reported that his cottage almost took flight in the storm. He solemnly added that the white ants had since deserted the building, considering it too dangerous a place to reside! This humourist further declared that these Northern Territory gales were nothing compared with what he had experienced in Fiji. On one occasion a plough that was left in a furrow was blown 200 metres on to his neighbour's land. After that episode he dug several holes, like shallow graves to jump into for protection. During a subsequent hurricane this device saved his body, but he lost all the hair off his back!

The beginning of the wet season over the next three years was quite vigorous on each occasion, with northwesterly gales and driving rain lashing the town, usually arriving shortly after the new year. However January 1882 gave the settlers a taste of more sinister forces, when a tropical cyclone passed close by.

“We have annually about this time to chronicle the effects of the change in the monsoon, and this year has proved no exception to the rule. On Saturday last (15th Jan) the barometer began to fall steadily, and a strong breeze from the northwest set in, with intermittent rain, warning the observant to batten down and make all snug. The wind increased to a gale on Sunday, and continued all day; at six a.m. the framework of the new building in course of erection by the E. S. and A. C. Bank fell, breaking several of the castings, and considerably damaging the masonry. The barometer continued falling rapidly, and at three p.m. on Monday stood at 29.351, (994 mb) the lowest we remember having seen it in the Territory. About this time the wind veered⁽¹⁹⁾ round to the west and west-southwest, and the gale reached its height, blowing with terrific squalls of almost hurricane force, sufficiently strong to lead one to suppose that —

Either there is civil strife in Heaven,
Or else the world, too saucy with the gods,
Incenses them to send destruction.

Throughout the night was heard the crash of falling trees, with here and there the roof of some iron house. In the morning we noticed that the building erected by the Northern Territory Times Company had completely succumbed to the force of the gale; half of the private residence of Mr Allen was gone; the roof of M. J. Solomon's store had blown on to Brown's building and bonded

store, considerably damaging the latter; Mr Straton lost half his roof; Mr Solomon's stables, and Messrs Skelton's and Allen's fences, were also blown down. The gaol fence was only saved by being well strutted at the outset of the gale. The usual number of Chinese and Malay huts were demolished. In the Camp the roof of the Government carpenter's shop was entirely removed. On Tuesday morning the gale had considerably abated, and every Chinaman who could hold a plank or drive a nail was hard at work. The rainfall for the three days was nearly nine inches."⁽²⁰⁾

Many a tale of hardship is often accompanied by its lighter side. The story circulated the community after the storm of one solid citizen who was awoken during the gale by the clatter of iron on his stable roof. He duly climbed up and began weighting down the loose sheets with heavy logs and stones. After about twenty minutes toil in the drenching rain, a sudden flash of lightning revealed that he had industriously pinned down the only three sheets of iron left, the remainder of the roof having departed for parts unknown some hours previously. Needless to say our disgusted citizen offered a "prayer" to the wind and retired to drown his sorrows.⁽²¹⁾

CHAPTER 2

The Great Hurricane

At the beginning of January 1897 the skies over Port Darwin were dark and threatening and there were intermittent showers. However this was not the normal northwesterly monsoon, for on the first few days of the new year the winds were light and variable, and on 5 January an easterly breeze set in, and this was a most unusual circumstance. The showers persisted, and the easterly wind gradually gathered strength.

During the afternoon of the 6th, the barometer began to fall and it became apparent that a storm was approaching. At the Charles Point Lighthouse, 25 kilometres across the harbour from the town of Palmerston, Hugh Christie, the head lightkeeper, busied himself with the necessary preparations. The cutter was anchored securely and covered with canvas at an inlet some distance from the lighthouse. The dinghy also was made well secure.

The drama of the night that followed is graphically portrayed in Christie's report to the Government Resident:

"The wind however became stronger as the night advanced, and at 8 p.m. the barometer was 29.20, at this time I went down to see the dinghy, but could see nothing, the tide being too high. At 10 p.m. I attempted to go down again, but was fairly beaten back by the force of the wind, the glass had then fallen to 28.60, branches of trees were flying about and the houses as well as the lantern were wet with rain driving in.

At midnight the glass had fallen to 28.40 and the wind increased in force. The lead ridging of the store flew off as well as one corner of ridging of the 2nd keepers cottage. At 45 past 1 a.m. the 2nd keeper and myself went to the Lantern, Benison on watch, light and machinery working well, the glass then stood at 28.36 (960 mb). During a lull in the storm we went down to the beach but could find no trace of dinghy, at 2.30 a.m. 2nd keeper went on watch, the glass had then risen to 28.42 and the wind which had before been blowing from E to ESE veered to north and finally from W to SW, when shortly before 3 a.m. the full force struck us, the front part of my roof with verandah was torn off and thrown over the cliff into the sea. The ridge of 2nd keepers cottage torn off and every house was filled with water.

Inside the house was a chaos of flying books, papers, photographic items etc. and outside was flying iron, stones and trees. I made for the lighthouse and had great difficulty in getting to it.

The 2nd keeper I found holding on to the lamp cylinder to prevent it being broken by the violent vibration of the structure. The way it oscillated was alarming, and our greatest anxiety was, that the Lens would shake out of their settings. However, I am glad to say, the Lighthouse is not injured . . .”⁽¹⁾

The eye of the hurricane had passed over Charles Point between 2 a.m. and 3 a.m. At Palmerston, it was a little over an hour later. The residents of that frontier town were huddled in terror in their flimsy dwellings, many of which were beginning to disintegrate.

The correspondent of the *Northern Territory Times and Gazette* captured the scene:

“From a fairly stiff blow about 8 p.m. the wind gradually increased to hurricane force by 11.30 or midnight, and from that [sic] on till nearly 5 o’clock it raged with terrific fury. . . .

The cyclone reached its highest pitch between 3.30 and 4.30, and in that hour it was impossible for human beings to stand erect against it. The crash of buildings and rattle of iron and timber falling about, combined with the blinding rain and roaring of the tempest, was an experience which those who underwent it will never forget to their dying day. Strongly built houses collapsed like houses of cards; roofs blew bodily away; lamp and telegraph posts were bent or torn up; immense beams of timber were hurled away like chaff; trees were uprooted; in many instances large houses were lifted bodily from their foundations and deposited ten and twelve feet away; and in short the night was one of terrifying destructiveness that made the stoutest heart quail. How it was that hundreds were not killed outright is one of those inscrutable mysteries which will never be explained. . . .

When daylight broke on Thursday morning the scene presented was one of indescribable chaos and desolation. Words cannot do justice to the awful spectacle of ruin and devastation. Nothing but jumbled up heaps of broken and twisted material represented what the day before were comfortable and in some cases handsome buildings. . . .”⁽²⁾

In the telegraph office, postmaster J. A. G. Little meticulously recorded the meteorological events as they happened:

“On afternoon of Wednesday 6th the weather had become so very stormy with barometer very low and falling rapidly, that it was deemed advisable to send special advices to the Government Astronomer, Adelaide. The wind at that time was blowing from E to NE. During the night the weather became much worse with torrents of continuous heavy rain, barometer still falling rapidly, wind E to NE. At midnight barometer was 29.468, at 3 a.m. on Thursday 7th reading was 28.982, the wind blowing with hurricane force from NE. At 4 a.m. reading was 28.784 (975 mb). Ten

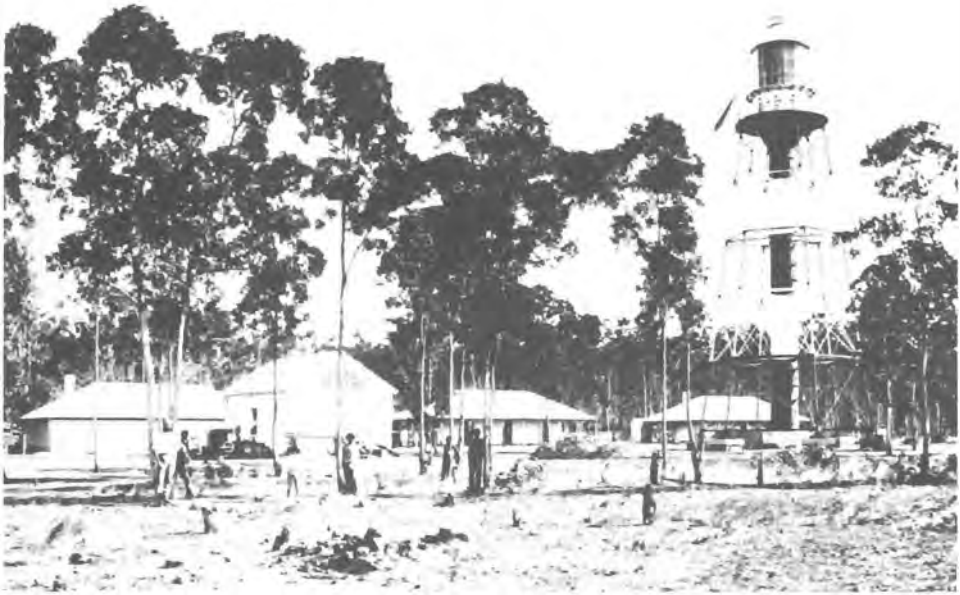
minutes afterward wind suddenly changed to NW, W and SW blowing with even greater force than before; barometer commenced to rise rapidly immediately after the sudden change of wind. At 4.10 a.m. reading was 28.800, at 5 a.m. 29.140 and at 6 a.m. 29.460. . . . Wind continued to blow hard from NW during morning of 7th with very heavy squalls of rain, but moderated a great deal during the afternoon.

From 9 p.m. 6th to 9 a.m. 7th — that is a period of 12 hours — rain recorded was 11.670 inches (296 millimetres). . . .”⁽³⁾

At the height of the storm Little asked employee Dudley Kelsey to climb a ladder outside to see if the telegraph wires were still intact. With sheets of corrugated iron whistling overhead, Kelsey understandably refused point blank. Later, when Kelsey’s concern for his family made him venture to leave, his boss beseeched him not to go, saying he was risking life and limb in doing so. Kelsey retorted that he had not been so concerned when asking him to climb the pole.⁽⁴⁾

The town of Palmerston lay in ruins. Very few buildings had escaped severe damage whilst all too many were totally destroyed. Chinatown which accounted for a large portion of the population at that time was flattened. All the Chinese business houses were wiped out, and of the 150 to 200 dwellings only a handful remained. A large section of the community had been rendered homeless, and with poor hygiene and saturated clothing, many began to come down with fever. In the harbour the pearling fleet had been decimated. Altogether 19 vessels were either sunk or stranded amongst the mangroves. Of these, six were totally wrecked, five were never found, and the remaining eight were later raised or refloated and repaired. (See Appendix 3). In addition many smaller craft were lost. The loss of life had been surprisingly light considering the extent of destruction to property. On the water 15 men perished, whilst at least 13 other townspeople lost their lives, many as a result of the fever which affected most of the populace, more or less, in the days that followed the hurricane.

At the Fannie Bay Gaol half of the prison roof — rafters, battens and all — had blown away. Many of the buildings had suffered damage. The lookout tower had been partially uprooted, and was leaning groggily against the gaol. The prison cells were all wet, with water pouring in everywhere, and to add to the woes of the bedraggled inmates, they were locked in their cells until the wrecked fence could be repaired!⁽⁵⁾ Immediately outside the township the destruction was just as bad. At the Botanical Gardens the curator’s residence had been razed, and the Holtzes and their infant child had spent a terrifying three hours in the bush at the mercy of the storm. The overnight destruction of many years’ labour of love in the gardens was heartbreaking. A vast area of forest around Palmerston had been devastated:



4. Charles Point Lighthouse, September 1895.
(National Library)



5. Remnants of Chinatown, Palmerston, January 1897.
(South Australian Archives)



6. Damage to Mercantile building, Palmerston, January 1897.
(South Australian Archives)



7. Allen's Warehouse, Palmerston, January 1897.
(South Australian Archives)

“Between Palmerston and Rapid Creek the destruction of timber was appalling. Thousands of trees were torn up by the roots; others were snapped off like carrots, and others again, though left standing, were shorn of their leaves. The road to the creek was choked with timber, and the whole character of the country out there has been changed by the thinning of the forest.”⁽⁶⁾

Across the harbour at Charles Point, Mr Christie reported a similar circumstance:

“At daylight the effects of the hurricane were only too apparent, our garden and fence being razed to the ground. While the whole forest is denuded of leaves, thousands of trees being torn up or broken off. Such a scene of devastation I’ve never witnessed.”⁽⁷⁾

Aboriginals arriving at the lighthouse during the next few weeks reported similar deforestation all the way down to Point Blaze, some 65 kilometres to the southwest, including the off shore islands. They arrived at Charles Point in some distress, for the country which provided all their natural food was now barren.⁽⁸⁾ Mr Christie had to seek assistance from the Government Resident in providing rations to feed them. Besides the loss of fences and gardens, the verandah and half the roof of Mr Christie’s house had been torn off and flung over the cliff. The cottage of his brother Henry was only slightly damaged, but both residences were saturated throughout, and everyone had to sleep in wet clothing for two days. The dinghy had been crushed by a cave-in of the cliff face, and the cutter suffered a large hole in her starboard side. All the beacons which the Christies had spent many hours installing around the promontory had disappeared completely, and the beach was strewn with rubbish, dead fish, birds and even an opossum. The extraordinary force of the hurricane winds had stripped trees of their bark and had even stripped the paint off the lighthouse window frames.

Far to the northeast, near Cape Don, the schooner *Florence* had run aground. Her skipper, Charles Gore reported that after leaving Palmerston a few days before the hurricane, he had encountered galeforce northerly winds and heavy seas near Cape Don on the afternoon of 6 January. He had run for shelter to a small bay about five kilometres east northeast of Cape Don. All went well until about 10 p.m. when the wind changed and the vessel began to drag its anchor. A second anchor was let go but still she drove before the storm. By 3 a.m., with the relentless seas threatening to dash the craft on the reef, the skipper slipped the cables and ran the schooner on to a sandy beach.⁽⁹⁾

South of Palmerston, the tree damage was in evidence some 70 kilometres or more down the railway line.⁽¹⁰⁾ Torrential rains fell over a large area of the Top End. At Pine Creek, 11.26 inches (286 mm) fell on the 7th; Burrundie reported 6.15 inches (157 mm) also on the 7th and the McKinlay River there rose 5 metres. Record floods were reported at many places, and

severe washaways occurred along the railway. It was estimated that it would take the repair gangs of some 200 men upwards of five weeks to reopen the line.

News of the disaster quickly reached Adelaide, with Postmaster Little able to get intermittent messages through, and northbound cables being relayed via Roebuck in Western Australia. Immediately after the storm the Government Resident, Mr Justice Dashwood, wired Premier Kingston in Adelaide to request permission to import twelve Chinese carpenters from Singapore via s.s. *Darwin* which was about to leave that port for Palmerston.⁽¹¹⁾ Dashwood reported:

“ . . . It is difficult indeed to give you an idea of the condition of the town. The day before the cyclone it consisted of neat, wellbuilt houses and had a prosperous appearance in every respect. Now it consists of heaps of ruins, all over the streets iron, timber and debris of all kinds are lying in indescribable confusion. Those whose houses have been fortunate enough to escape total destruction are eking out an existence in the part which remains standing but which in most cases affords them very little shelter and is quite inadequate to protect them from the elements. For two or three days after the storm, scarcely a person in the place had dry clothing to put on or a dry bed to sleep in but notwithstanding this, I am happy to say that on the whole the health of the people is pretty good though many are suffering from the effect of the exposure and fever supervening. I fear however this state of things may not be maintained when further rain sets in”⁽¹²⁾

Permission for the importation of Chinese was refused, and Dashwood was told to come up with some other suggestion for the rebuilding program. Assistance was forthcoming much closer to home when a dozen carpenters arrived on the train from Brocks Creek Mine on 17 January. Eventually four experienced carpenters under the charge of a Mr Venables arrived on the first steamer from Adelaide, to effect repairs to government buildings other than the Railways and Telegraphs. Trouble arose, however, when the Government Resident, being dissatisfied with the progress of the repairs, tackled Venables who replied that he took his orders from his boss in Adelaide. Dashwood demanded to see his contract, and when this was refused, reported the man's insubordination to the Adelaide administration. His complaint seemed to fall on deaf ears, even though Venables' contract clearly stated that he was to answer to the Government Resident in Palmerston.⁽¹³⁾

The total cost of damage by the hurricane was generally estimated as at least 150 000 pounds. Recovery was rapid in some respects, slow in others. On the anniversary of the disaster the local press sounded an optimistic note

by indicating that the business community had bounced back and that future prospects looked bright.⁽¹⁴⁾ Physical signs remained for many years. A former resident returned to Palmerston in 1904 and reported that traces of the cyclone were still much in evidence. Nearly every building was fenced with battered galvanised iron which had been torn off the house roofs by the great gale.⁽¹⁵⁾

For the survivors of that night, the memory took a long time to dim. About fifteen months later, in late March 1898, a westerly gale blew for two days in Palmerston, and the pressure fell to 994 mb. The nervous residents spent two sleepless nights half expecting the worst to again happen, as the wind whistled through their town.⁽¹⁶⁾ However this time the cyclone that was developing in the Bonaparte Gulf was to spend its fury elsewhere, as it moved down the west coast and tore through the town of Cossack in Western Australia, wreaking havoc upon shipping and causing over 30 000 pounds worth of damage to the township.⁽¹⁷⁾

CHAPTER 3

An Active Decade

The Northern Territory entered the twentieth century on a despondent note. The pastoral industry, which had offered so much hope during the boom years of the 1880s, was in a continued depressed state.⁽¹⁾ Practically all attempts at agriculture had been a dismal failure. The pearling industry, which had reached a peak in 1899, went into a decline which accelerated after a drop in the price of pearlshell around 1905. To make matters worse the turn of the century saw an unprecedented drought in the north. The 1899-1900 wet season was the driest on record, and the following two seasons were little better. Within a few years of Federation in 1901 the decision had been made to transfer control of the Northern Territory to the Commonwealth Government, and although this did not come to pass until 1911, there was little incentive for innovation in the South Australian administration of the Territory during this period.

A significant event, in the context of this story, was the establishment by Act of Parliament of the Bureau of Meteorology in 1908. At this time the responsibility for matters meteorological in the Northern Territory was transferred from the Government Astronomer in Adelaide to the Commonwealth Meteorologist in Melbourne.

Reports of tropical cyclones during this decade are practically non-existent. However the next ten years, from 1910 to 1919, was a very active period. At least seven cyclones affected the Darwin region, and three severe cyclones came within 70 kilometres of the town. Four cyclones of this period are described in the following pages.

In February 1915 a pearling fleet was operating just east of Croker Island. On the 25th two luggers belonging to Captain H. C. Edwards of Darwin, *Leila* and *Afric*, riding at anchor off Oxley Island were overtaken by a cyclone. The easterly gale became so strong that the crew of *Leila* hove up the anchor and promptly cut down the mast. The vessel was blown across to the vicinity of Cape Croker where conditions became dead calm. They were in the eye of the cyclone. Their respite was short-lived before the hurricane burst in from the northwest hurling the lugger onto Darch Island where she was wrecked. Luckily the crew landed safely in a dinghy in which they made their way to Bowen Straits about a week later.

Six of A. E. Jolly & Co's luggers had taken shelter in Malay Bay where they missed the full force of the blow. On their way back to Bowen Straits on 8 March they picked up part of the mast and the mainsail belonging to *Afric*. They saw no sign of the lugger or her crew of six.⁽²⁾

At Croker Island the auxiliary yawl *Pat* belonging to the Croker Island Development Company, and their lugger *Essington* were driven ashore, but neither sustained very much damage. On the afternoon of the gale, a small cutter, *Jane B*, had set out from Trepang Bay on the Cobourg Peninsula. On board were two "kanakas" and 13 Aboriginals making up a trepang fishing outfit bound for King River, just east of Goulburn Island. Just after leaving the harbour they ran into the full force of the cyclone. Although stripped of sail the cutter was driven for miles before the hurricane. As the wind veered towards the land the crew attempted to steer the vessel towards a bay. However, tremendous seas converging into the entrance of the bay quickly swamped the craft. Of the fifteen occupants, only nine made it to the shore. Drowned were two old men, two boys and two girls.

Two other pearling luggers went missing in the storm.⁽³⁾ *Opal* belonging to A. E. Jolly & Co. had left the pearling grounds for Darwin two days before the storm. The lugger *Harriet* with a crew of three was believed to have been in the Port Essington area. She was under hire from Capt Edwards to Jimmy Kafor, a "kanaka" and well-known local identity.⁽⁴⁾

On Bathurst and Melville Islands the cyclone struck late on the 25th. The barometer dropped ten millibars in half an hour and the wind blew with great violence, especially between 1 a.m. and noon on the 26th. It started from the southwest and drew gradually around to the northeast. Around 250 mm of rain fell in the space of eight hours.⁽⁵⁾ Buildings were damaged and many large trees were blown down. At Sam Green's sawmill on Melville Island the ketch *Maggie* which had been loaded with 20 tonnes of cypress pine for Darwin was blown ashore.⁽⁶⁾ Little effect of the storm was felt in Darwin. Darwin Harbourmaster, Captain F. Mugg, who travelled to the Bowen Straits shortly after the storm, reported that from the appearance of the countryside, Croker Island had received the full force of the cyclone. Much of the timber had been destroyed and trees were stripped of their foliage. In fact, it was evident from a distance that the whole coastline from Danger Point to Cape Don had been similarly affected.⁽⁷⁾

Just before Christmas of the same year a cyclone moved out of the Joseph Bonaparte Gulf and bore down on Charles Point, just west of Darwin. Thousands of trees were uprooted or broken off by the severe gale, as the pressure fell to 977 millibars at the lighthouse. Fortunately the station itself escaped with little damage, although the gardens were destroyed. The surrounding forest was left almost impassable with fallen timber and the

trees left standing were bare poles. The Aboriginals in the vicinity reported that the islands to the southwest at the mouth of Bynoe Harbour suffered similar devastation.⁽⁸⁾

The cyclone passed to the north of Darwin and crossed the coast at Shoal Bay late on 23 December. Conditions in Darwin were not as severe as at Point Charles, however the wind approached 90 kilometres per hour and considerable damage was caused in the harbour. A large portion of the stone-faced embankment leading to the jetty was washed away. The Customs launch *Spray* and a lugger sank at their moorings. Another lugger disappeared without trace, and the launch *Bulwarra* and schooner *Defender* were both damaged.⁽⁹⁾

At Charles Point 470 mm of rain fell over a three day period including nearly 200 mm on the 23rd. Less than half that amount fell at Darwin. Heavy rains and flooding occurred inland as the decaying cyclone swung southward towards the Pine Creek area. Alfred Giles from the Bonrook Station reported nearly eleven inches (265 mm) on Christmas eve. On the same day 364 mm was dumped on Brocks Creek. This torrential rain produced the biggest flood ever seen on the Fergusson River, and the railway line between Darwin and Pine Creek was washed away in several places.

On Sunday 1 April 1917, a small tropical cyclone passed just to the north of the Darwin township. The previous day had been gloomy with fairly frequent rain squalls during the evening. Rain continued through the night as the wind shifted southerly. Just before daylight there was a noticeable increase in the wind to a gale force southeasterly, and between 7 a.m. and 10 a.m. the storm reached its peak with rapid squalls approaching hurricane force. The glass had fallen to 996 millibars.⁽¹⁰⁾

Many of the townsfolk sheltering from the tempest recalled the great hurricane just over twenty years earlier and were fearful of a repetition of that event. It was not to be, however, for after 10 a.m. the wind rapidly abated. Nevertheless rain squalls continued from the northeast for most of the day.

A large number of trees had been uprooted and the town was littered with broken branches and building debris. Two houses had been completely demolished, as had that large roofless enclosure, the Don Stadium. Many outbuildings had been destroyed and numerous roofs and verandahs had been torn down. On the harbour several boats were blown into the mangroves, but there were no serious casualties. North of the town tree damage was more severe. The scenic road to East Point had been rendered impassable by scores of fallen trees. The greatest destruction of the bush could be observed from the railway line between six and sixteen kilometres from town. The old house at Rapid Creek which had survived the 1897 hurricane had received some damage.⁽¹¹⁾

The government oil launch *Lone Hand* encountered the cyclone near Quail Island. During the height of the storm she was forced to jettison most of her cargo. Further down the coast a large Chinese sampan belonging to Man Fong Lau capsized and was driven ashore and wrecked about eight kilometres north of Point Blaze. All three crew members were drowned.

Little effect of the cyclone was felt at Bathurst and Melville Islands, although 200 mm of rain fell there on the two days before the storm. At Charles Point 245 mm fell on the Sunday and Monday; in Darwin 193 mm fell in the same period, which boosted the wet season total to a record 2212 mm.⁽¹²⁾

Early in March 1919 a depression began to form near Wyndham in the southern reaches of the Joseph Bonaparte Gulf. Steady rain set in at Wyndham at about 4 a.m. on the 3rd. By 3 p.m. that afternoon the pressure had begun to fall and the breeze had swung round to a brisk southerly. The rain was now a continuous downpour. At 7 a.m. the following morning the wind had strengthened to a strong gale and the barometer now stood at 991 mb. The newly-formed cyclone continued to intensify as it began to move northward on its trail of destruction. The Wyndham township had been drenched with 440 mm of rain in less than 40 hours.⁽¹³⁾

Further north in Darwin the first inkling of the approaching storm came about noon on the 5th when the northwesterly monsoon shifted around to the north. Then sometime after 2 p.m. fierce rain squalls burst in from the northeast. By nightfall the wind had increased to a gale which gathered further strength through the night. Around 3 a.m. the barometer had fallen to 992 mb. Next morning the gale had shifted to the southeast whence it continued for most of the day, eventually blowing itself out overnight from the southwest. The rainfall in Darwin for the two days was 250 mm.⁽¹⁴⁾ Damage in the township was rather superficial. However on the harbour the galeforce winds and rough seas had a more serious effect. The pearling lugger *Cameo* and the sailing boat *Maggie* were both sunk. The mission lugger *St Francis* from Bathurst Island had been washed onto rocks in Frances Bay and several smaller boats were lost. A good deal of erosion occurred around the foreshore, with about 15 metres of the stone approaches to the government jetty being washed away.⁽¹⁵⁾

Over at Charles Point Lighthouse the cyclone was somewhat more intense with hurricane force winds being experienced overnight. The roof was torn off the blacksmith's shop and the ridge capping from the oil store. A dinghy was badly damaged and the cliff eroded by the heavy seas. The lighthouse and equipment were undamaged however and the residents were all safe and well.⁽¹⁶⁾

The Bathurst Island Mission took the full brunt of the storm. Most of the mission buildings, gardens and plantations were flattened by the

cyclone.⁽¹⁷⁾ In charge of the mission was Father Francis Xavier Gsell (later Bishop of Darwin). He described the catastrophe thus:

“. . . . During the night the wind and rain doubled in fury as the seas thundered on the beach. . . . Towards 10 o'clock, trees began falling and it was not long before our more fragile buildings collapsed. That awful night wore on until, at five o'clock in the morning, the elements seemed even more frenzied as more trees and huts fell. Finally a tidal wave came rushing in and carried away the lot Sitting on a tree trunk at 10 o'clock the next morning, I contemplated the full force of the disaster. There was only one description — a clean sweep”⁽¹⁸⁾

A baby was drowned when his mother was swimming with him across a creek swollen by the flood waters.

The tidal wave that Father Gsell spoke of was the storm surge which occurred as the cyclone passed over the mission, and hurricane force southerly winds piled the seawaters into the shallow, funnel-shaped entrance to the Apsley Strait. The sea rose more than five metres⁽¹⁹⁾ above its normal level, washing away wreckage caused by the hurricane, and hundreds of logs from the sawmill as well. Father Gsell estimated the overnight rainfall at 250 mm; the sea had taken the rain gauge away also. News of the devastation at the mission did not reach Darwin till a fortnight later. The mission lugger *St Francis* was in Darwin when the cyclone struck. With rations running low, and fears mounting that *St Francis* had been lost in the storm, several Aboriginals made the trip across to the mainland in a canoe.

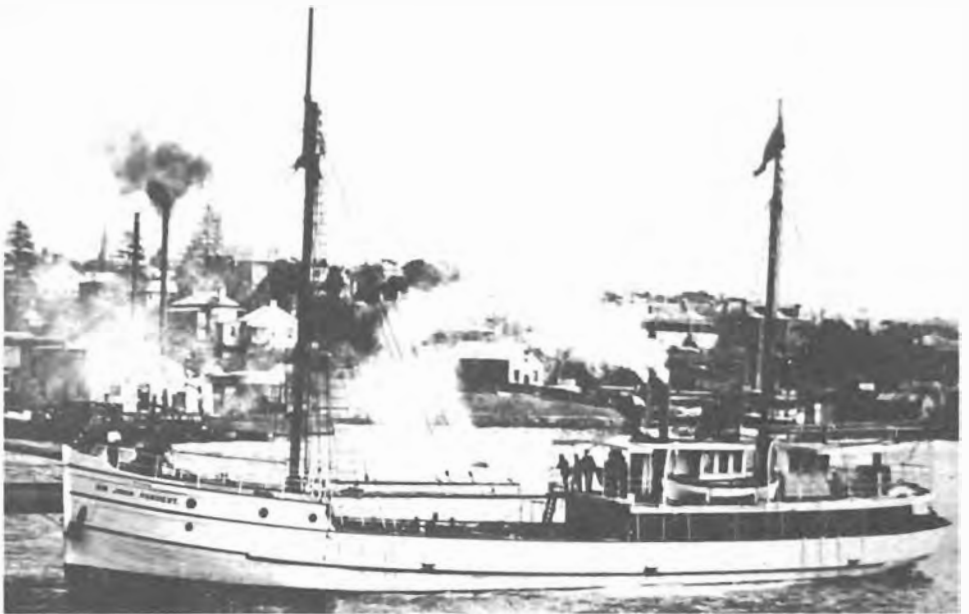
Meanwhile the cyclone had continued on, in a more easterly direction now, across Melville Island and the Cobourg Peninsula just south of Cape Don. At Cape Don Lighthouse was Hugh Christie who had experienced the 1897 hurricane at Charles Point. He reported that thousands of trees were uprooted and the remainder were denuded of leaves. The pressure fell to its lowest point of 986 millibars at 3 p.m. on the 6th. The wind commenced in the north-northwest and gradually swung round through west to southwest. The force of the hurricane was such that the lighthouse (a reinforced concrete structure 35 metres high) was swaying alarmingly, so much so that the machinery would not work, and on four occasions the mercury (upon which the light balanced) spilled over the sides of the trough.⁽²⁰⁾

The cyclone was beginning to weaken as it moved eastwards along the north coast. Although there were cyclonic winds and 160 mm of rain in two days at the Goulburn Island Mission, no significant damage was reported.

However a few days later the storm was apparently rejuvenated by the warm waters of the Gulf of Carpentaria, for when the coastal steamer *Sir John Forrest* returned to Darwin from Borroloola on 20 March, the passengers had an exciting tale to tell:



8. Cape Don Lighthouse which "shook alarmingly" during the March 1919 cyclone.
(S. Gillard)



9. *Sir John Forrest* rode out a hurricane in the Gulf in 1919.
(Mitchell Library)

“. . . Shortly after clearing the river, and whilst at anchor behind one of the islands of the Sir Edward Pellew group, a terrific hurricane sprang up, which undoubtedly would have caused our destruction if it had not been for the highly commendable management of the vessel, and the reliability of the engines.

All through the night of the 12th March the vessel lay to, with two anchors and a hundred fathoms of chain out, and both engines going. In spite of this, however, at times we dragged, and were in danger of being smashed to pieces on a rocky island that was very close under our stern. Still nothing more could be done. The sea was tremendous, and one was unable to see more than a hand's length from the vessel's side.

By daylight on the morning of the 13th the hurricane was at its height. The wind was appalling — one continuous rush and roar — one could almost actually see it. At this time the position became so critical that the passengers were told to have their lifebelts handy.

The vessel was now right in the middle of it. The wind was terrific — amazing; The very force of it flattened the sea. We could only await the issue? Would the anchor chains hold out? Would the engine keep her up to it? They did, and everything else stood the test well. The crisis was over, and still we had another danger to overcome.

As soon as the wind lulled the sea became a veritable boiling pod (sic); and our vessel had to be manoeuvred most skillfully to avoid being thrown on her beam ends. However, after several hours of this, we managed to travel out of it, and our proximity to the rocks, and before sunset that day we had anchored in a much safer position and the hurricane had spent itself. It was an experience I do not think any one on board, would care to undergo again

. . . .”(21)

CHAPTER 4

The Saga of s.s. Douglas Mawson

On 9 January 1921 a severe cyclone struck Vanderlin Island the largest of the Sir Edward Pellew group in the southern Gulf of Carpentaria. Living on the island at that time was a former well-known Melbourne journalist James T. Beckett, with his wife and son. Beckett had taken up a substantial lease about twelve months earlier and was working trepang and growing coconuts and other tropical plants.⁽¹⁾

The hurricane winds blew for seventeen hours with great violence, completely demolishing the station buildings, fences and gardens. The cutter *Avis* was driven ashore and battered against the mangroves until she was stove in and sank. The cutter's dinghy was hurled high up into the tops of the mangroves and could only be retrieved afterwards by chopping down the trees.

There were two other white men on the island — Markwell and Lake. Markwell's lugger *Iolanthe* had also been damaged, being wedged in a fissure on the coast with a hole through the hull. The Beckett family had lost all their provisions in the storm, and only for the fact that the yawl *Pat* had battled through the gale from Thursday Island and had arrived soon afterwards with a few provisions, all would have starved.

Beckett eventually reached Borroloola on 6 February and sent a letter to the Administrator in Darwin. The situation was desperate, for the Borroloola Store was out of everything, and all the surrounding stations which depended on their stores coming through Borroloola, were similarly situated. The mail did not reach Darwin until 21 March, some ten weeks after the cyclone. This was the first word that the outside world had of the disaster and gives some idea of the extreme isolation of this tiny community.⁽²⁾

Other communities which suffered similar isolation were those of the various church missions. The first mission in the Northern Territory was opened by the Jesuits at Rapid Creek in 1882. They went on to found three further missions in the Daly River area between 1886 and 1891.⁽³⁾ However, one by one these closed, and the Jesuits left the Territory altogether in 1899. The next enterprise was by the Anglican Church Missionary Society when it established the Roper River Mission in 1908. The Catholic Church returned to the scene when the French missionary Father F. X. Gsell

commenced his long career at Bathurst Island in 1911. The Methodist Overseas Mission joined the crusade by opening the Goulburn Island Mission in 1916. This was followed by further settlements at Milingimbi (1918), Elcho Island (1922), and Yirrkala (1934). The Anglicans spread their work to Groote Eylandt in 1921 and Oenpelli in 1925.

All of the missionaries at those isolated outposts lived a harsh and lonely life. In many cases their only link with civilisation was a small sailing vessel which took weeks and even months if the weather was bad, to make the return journey to Darwin for stores and mail. Each of these communities suffered, to a greater or lesser degree, the effects of tropical cyclones, and several of these stories are related in more detail elsewhere. But none is more colourful than the story of the Easter cyclone of 1923 which visited the Emerald River Mission on Groote Eylandt and which came to be known as the "Douglas Mawson Cyclone".

About 22 March 1923 a cyclone had begun to form in the northern Coral Sea. It slowly drifted northwest towards the tip of Cape York, intensifying as it went. During the 25th to 27th the storm executed a loop through the Torres Strait Islands bringing hurricane winds and doing considerable damage, especially on Darnley Island, where the settlement was practically destroyed.⁽⁴⁾ On Wednesday the 28th the cyclone crossed over its own track and began moving on a steady west-southwesterly path across Cape York and into the Gulf of Carpentaria. Two days earlier the 333 ton coastal steamer, *Douglas Mawson* had completed her delivery of stores to Gulf ports and had departed from Burketown on the return journey to Townsville. The small steamer was making this run for the first time, and only because the regular carrier of mail and stores, s.s. *Kallatina* was laid up for repairs.

After their departure from Burketown none of the passengers or crew comprising twenty souls was ever seen again. *Douglas Mawson* disappeared without trace. Some Aborigines at the mouth of the Coen River later told searchers they had seen *Douglas Mawson* on the Wednesday afternoon steaming northward into very strong winds and a heavy sea; later in the evening the lights of the vessel were seen travelling south before a northwesterly hurricane.

On Good Friday, 30 March, the cyclone was on a direct line for Groote Eylandt, and gaining energy from the warm waters of the Gulf. At the Emerald River Mission on the western side of the island, H. L. Perriman and his helpers were endeavouring to brace up the weir. Over six inches of rain had fallen overnight and the river had flooded over the dam wall. Soon after, the wall collapsed and Perriman hurried to other tasks. A southeasterly gale had been blowing all night and was gradually increasing. By noon the gale had shifted to the south and trees were beginning to come

down. With heavy rain continuing the river was rising steadily. During the afternoon the house began to lean to the north and four diagonal stays were put in to brace it.

By sunset a southwesterly hurricane was blowing and the water was now two and half metres above the jetty. At 7 p.m. the flood had reached the floor of the house and an hour later was over the table. Soon after, the front wall of the store blew in, and with a terrific noise the store roof blew away. About 10 p.m. the floodwaters reached the second floor of the building, and a westerly hurricane of at least 130 km/h was raging. The rest of the roof blew off and the whole building was showing signs of collapse. Peering into the darkness, Perriman could see (probably by the flashes of lightning) a raging sea all around. The great hurricane was now piling the seawaters up against the flooding Emerald River.⁽⁵⁾

In describing the hopelessness of their situation, Perriman simply says:

“ . . . It seems as if our end may come at any moment. We have no light now, water is everywhere and the building is straining with every extra gust of wind. We commend ourselves to God as we may all be separated at any moment, probably trapped under the falling building. We do not feel that God has left us; but has a purpose through it all. The eleven blacks are very good and show no sign of panic. . . .”⁽⁶⁾

Around 1 a.m. the wind shifted to the northwest, gusting to 160 km/h.



10. *Douglas Mawson* lost with all hands at Easter 1923.
(Mitchell Library).



11. Tree damage at Groote Eylandt after the 1923 cyclone.
(H. L. Perriman collection N.T. Archives).



12. The mission house at Emerald River, Groote Eylandt before the March 1923 cyclone
(H. L. Perriman collection N.T. Archives).



13. The mission house at Emerald River, a jumbled ruin after the 1923 cyclone.
(H. L. Perriman collection N.T. Archives).

Some time later the building collapsed to an angle of 45 degrees. The mission folk spent the remainder of that long night clinging to their sinking building in the bitter cold, expecting the worst to happen at any moment. By daylight however the wind and flood had eased considerably and at 10 a.m. they could see the ground again. They gave thanks for their deliverance; but what a scene of devastation met their eyes. The mission house was a jumbled wreck; the garden was obliterated; all the goats had been drowned; the sawmill was badly damaged and many of the logs washed away; much of their stored food was lost or ruined. Trees were down everywhere and not a leaf remained on any of those left standing. Not a bird was to be seen.

Away to the southwest at Roper River Mission the storm reached its peak on the Saturday evening. The wind came first from the southwest, then turned around to the north. But once having crossed the coast, the cyclone's force quickly waned; nevertheless several buildings were unroofed, many trees came down and about 70 goats were lost.⁽⁷⁾

Following the disappearance of *Douglas Mawson* the Queensland Government despatched the government steamer *Relief* with the Mackay Harbourmaster Captain Switzer in charge, to search for survivors or wreckage. The party combed the Gulf shores without success. They did learn however that the storm in which the ill-fated steamer must have been lost had caused the greatest upheaval ever seen in the Gulf. In places

ashore, big trees had been blown down for miles, and flotsam and jetsam were found half a kilometre beyond high water mark.

On 28 April Switzer arrived at Groote Eylandt. He ventured up the Emerald River for three kilometres to the mission and was amazed at the sight which confronted him:

“... the condition of the surrounding country showed that the cyclone must have been of unprecedented violence. Not a leaf was to be seen, while the few trees left standing bore further indication of the violence of the hurricane, in the manner in which the bark had been stripped from the trees. The thoroughness with which the cyclone had performed its unnatural work could not possibly have been surpassed by a huge bushfire. Mere words could not convey the slightest idea of the scene which met the eye everywhere. . . .”⁽⁸⁾

He was relieved to find all alive and well at the mission. But living conditions had been harsh since the cyclone. Fortunately most of their supply of flour had been saved but they had been boiling fish in sea water to try to offset their craving for salt. Since the destruction of their accommodation they had been living in hastily erected temporary quarters; and because all the birds had disappeared from the island the mosquitoes came in a plague and tormented them incessantly.

A new site was chosen for rebuilding the mission further upstream on higher ground, a site which had an escape route to the hills behind.

The cyclone had apparently produced a mighty surge in the sea level right around the southern Gulf. The Shire Clerk at Normanton reported:

“... the breakers were coming into Karumba at Easter mountains high, and of a very dirty, muddy colour. They were the biggest breakers seen for years; they were so strong and the current so rapid that it affected the tides in the town, the flats around being inundated for miles. . . .”⁽⁹⁾

At Burketown the tide rose nearly three metres above normal. Admiral Sir William Clarkson who surveyed the Sir Edward Pellew Islands in May 1923 reported that the water had risen 18 feet (5.5 m) above ordinary spring tides near the mouth of the McArthur River.⁽¹⁰⁾ At the Groote Eylandt Mission the water had risen 23 feet (6.7 m) above the normal level.

A marine board of inquiry was later set up to investigate the disappearance of *Douglas Mawson*. The suggestion that the steamer was unseaworthy was hotly denied by the manager of John Burke Ltd, charterers of the vessel, and he stoutly defended the competence of the skipper Captain Tune who had been sailing those coasts for many years. A great deal of discussion centred around whether or not the vessel carried a barometer and the necessity for having such an instrument. The enquiry concluded that a

barometer was not aboard *Douglas Mawson*, and that had there been one it is unlikely that the vessel would have steamed straight into the face of a cyclone.⁽¹¹⁾

The story of *Douglas Mawson* had a quite amazing sequel. About 12 months after the disaster wreckage was discovered near Mt. Alexander just north of Caledon Bay on the Arnhemland coast.⁽¹²⁾ Some of the bits and pieces which had been washed on to the rocks were later positively identified as belonging to the illfated steamer. Not long after the discovery, the story broke in Darwin that natives in the area had seen survivors land on shore. The men had been murdered and two women were being held captive by other tribesmen.

The story burst into newspapers all over the country. Controversy raged over the authenticity of the tale. So-called experts everywhere were soon expounding their theories on what had happened and offering advice on how a rescue party should be organised. Under pressure from all quarters the Commonwealth Government eventually arranged a rescue expedition to sail out of Darwin on board *Huddersfield*. This three-mast auxiliary schooner of 240 tons and a crew of nine had been recently acquired by the government to run the mails along the north coast. She was supposedly capable of a speed of six knots. The expedition, consisting of soldiers, police and various hangers-on, all armed to the hilt, finally departed Darwin after several false starts on 5 August 1924.

The "snails-pace" departure prompted a very humorous article in the *Northern Territory Times and Gazette* at the time:

"NORTHERN TERRITORY NAVY

Tearing round the Coast at a Speed of A Knot an Hour.

The warship *Huddersfield* despatched by His Majesty's Government with soldiers, police and guns, as an expeditionary force against the King of Carpentaria, cleared the Port of Darwin on Tuesday last at about 2 p.m. At 5 p.m. she swept past Fanny [sic] Bay Jail having accomplished that journey in exactly three hours. On Wednesday evening she was still visible from the lookout at the meatworks . . ."

Some 72 hours after leaving the vessel was sighted near Cape Don, which meant her average speed was around one knot.⁽¹³⁾

The *Bulletin* took up the joke on a rather sarcastic note by quoting a fictitious newspaper report from the future:

"The Expedition Lands

(Reprinted From *The Carpentaria Gazette*, 1960).

A party of wild looking old men, (most of them with long white whiskers) armed to the teeth, have arrived at the city in an

obsolete war vessel. They tell a weird story about being members of an expedition to rescue two white women. They are under strict police observation.”⁽¹⁴⁾

Huddersfield took 14 days to complete the journey of less than 500 kilometres to Caledon Bay. In a series of articles the *Sydney Daily Telegraph* unleashed a scathing attack on the government over handling of the matter, and posed some embarrassing questions over the circumstances surrounding the mail service contract of *Huddersfield*.⁽¹⁵⁾

The expedition returned to Darwin empty-handed on 11 October. In spite of the conviction of the expedition members that there were indeed no “captive women” the controversy continued for many years afterward. In fact, as late as September 1937 a revival of the rumours became so persistent that the Administrator, C.L.A. Abbott, was obliged to ask anthropologist Dr Donald Thomson to report on the matter. Dr Thomson replied that after 2½ years of extensive travels through Arnhemland he could state with complete confidence that the rumours were groundless.⁽¹⁶⁾

CHAPTER 5

Darwin Revisited

For many years the Port of Darwin had a poor reputation among the shipping companies which operated through it. The L-shaped wharf was poorly designed and made loading and unloading a long and tedious process. Added to this, industrial relations between militant unionist labour and port users were anything but harmonious.

Captain A. Donaldson, skipper of the Burns Philp steamer s.s. *Marella*, was one who held little regard for the efficiency of the Darwin wharf, and its workers. He wittily remarked that Darwin's chief imports appeared to be full barrels of beer and empty government officials, whilst the exports were mainly empty beer barrels and full government officials!⁽¹⁾

Donaldson experienced three cyclones during his career at sea, but easily the worst of these was in January 1935, in the Arafura Sea. *Marella* had departed Brisbane on 7 January. Among those on board were Sir Leslie Wilson, then Governor of Queensland, and Lady Wilson. The journey went well as far as Thursday Island. Leaving that port at about 1.30 p.m. on Sunday 13th, the vessel encountered heavy seas, but nevertheless she was expected to dock in Darwin as scheduled on the Wednesday morning.

However during the Tuesday the steamer ran into the full force of a cyclone which was moving eastwards along the north coast. The seas were mountainous, especially in the westerly gales at the rear of the cyclone, where occasional huge rollers moving almost at right angles to the prevailing seas crashed down on the vessel. Sir Leslie had a nasty experience — being almost washed overboard. He, like the rest of the passengers spent the remainder of the journey confined to his cabin. The second engineer, whilst doing some repairs was swept off his feet along the deck for about twenty metres and hurled under one of the motor trucks stowed on deck. Fortunately, apart from some nasty bruising he was none the worse for the experience.

After about eighteen hours the seas moderated, and *Marella* finally limped into Darwin on the Thursday with splintered windows, wrecked doors, battered steelwork and broken air ventilators. Much of the deck cargo had been knocked around; a new motor truck consigned to local merchants A. E. Jolly and Co. being considerably damaged. Seven crew members had been injured and one was hospitalised with a broken leg.⁽²⁾

The cyclone had begun to form in the Arafura Sea not far from Cape Don on about 12 January. On the 13th, 340 millimetres of rain fell at Cape Don

in a fourteen hour period. High winds caused damage to some of the smaller buildings.⁽³⁾ The cyclone moved eastwards and passed north of Milingimbi on the 15th. From there it swerved to the southeast crossing the northeast corner of Arnhemland, and then careered down through the Gulf of Carpentaria. A large number of trees were destroyed during its passage over Groote Eylandt on the 16th.⁽⁴⁾ Fortunately the cyclone swerved south before reaching Mornington Island. However its arrival in the southern Gulf had coincided with spring tides and as a result phenomenal tides inundated large areas of land. The Mornington Island Aborigines were forced to go inland for fresh water supplies, and much of the natural vegetation, not normally subject to salt water, died off as a result of being submerged.⁽⁵⁾

With the coming of the year 1937 few of the residents of Darwin would have possessed first hand experience of a tropical cyclone. It was then 40 years since the Great Hurricane of 1897. Only a few of the older long-time residents would have recollections of that event. The closest reminder had been on April Fools Day in 1917 when a cyclone passed just north of the town, but most houses escaped any major damage. That reminder was just twenty years previous.

So it was that when the Weather Bureau, on 8 March 1937, reported that there was the possibility of a tropical cyclone developing to the north of Bathurst Island, few would have paid more than a passing interest. The following day the cyclone was said to be just north of Bathurst Island with a central pressure below 1001 millibars. The weather in Darwin was dull and overcast with rain through most of the day. On Wednesday 10 March, conditions had deteriorated, and by mid-afternoon it was apparent that the cyclone was moving in a southeasterly direction towards Darwin. The wind was a steady easterly, and the barometer was continuing a gradual decline. But it was not until darkness fell, and the wind increased to a northeasterly gale that the townsfolk came to realise that at last they were going to be visited by another "big one". The storm increased to a peak in the early hours of the morning with the wind swinging around to the northwest and gusting to 158 kilometres per hour.⁽⁶⁾

“. . . and it raged and tore to such vicious purpose that hardly a home or business house in Darwin did not suffer some damage . . . Telephone wires and electric mains were torn down by falling trees and flying sheets of iron, windmills were turned inside out, garden plants and trees were ruined, roads and tracks were obstructed by huge trees. . . .”⁽⁷⁾

By 7 a.m. on the 11th the wind had abated to below gale force, as the cyclone moved inland to the southeast and weakened. The lowest pressure recorded at the Post Office was 982 millibars. The town was a real mess.

Very few buildings had escaped damage. Several homes and business premises had been completely demolished; whilst most others had incurred damage to a varying degree.

Amazingly, only one person was killed. A house near the Daly Street Bridge, which had recently been erected from material obtained from Charles Point Lighthouse, collapsed off its piles and crushed an Aboriginal man sheltering underneath. The family from inside this house took refuge in a neighbour's home, but this also was blown off its foundations. Government buildings suffered badly, especially the older residences at Myilly Point, in which roofing battens were riddled with dry rot.⁽⁸⁾ The Leper Hospital on Channel Island, which took the full blast of the storm, was severely damaged, especially the Curator's Cottage which was uninhabitable. A great deal of the damage was caused by falling trees; hundreds had been uprooted around the Darwin township, and destruction of timber outside the town was widespread. On the west side of the harbour the trees had all been stripped of their foliage.⁽⁹⁾ The road to the quarantine station was blocked by fallen trees. The manager of Humpty Doo Station, who arrived in town on the Friday after the storm, reported that the usual three hour journey had taken him nine hours because of the tangled masses of timber across the track.

During the height of the cyclone huge seas were running in the harbour. Waves were crashing over the cliffs at Myilly Point and at Fannie Bay. Salt spray was carried right through the town to Frances Bay, and afterwards all the remaining greenery went black as if frost-bitten. Eyewitnesses claimed that the sea inundated the road to East Point and also the golf course.⁽¹⁰⁾ In spite of the heavy seas damage to vessels in the harbour was relatively light. Two launches were wrecked and several other boats blown into the mangroves on the southside of the harbour. An old Chinaman, Jimmy Ah Hee who was aboard the ketch *Venture* which was stranded on the mainland west of Shell Island, had spent four days and nights in the mangroves before he was rescued. He was found in a feverish condition after being forced to drink salt water, tormented by sandflies and mosquitoes, and sleeping fitfully in the tops of the trees for fear of crocodiles.⁽¹¹⁾

Grave concern was felt afterwards for the safety of the pearling fleet which was known to be operating off the north coast. If they had taken the full brunt of the cyclone the results would have been disastrous. There was no radio contact with the fleet and it was not until the Monday following that word came through that the boats had run to shelter in the Liverpool River. One lugger rode out the storm at Cape Keith on Melville Island. There the wind blew for several days from the northeast; then on 10 March it changed to a very strong northwesterly. No sleep was had that night and next morning the wind turned to the west and increased its intensity. The boat was dragging its anchor and the rough seas were filling the hold with water.



14. Warder's residence at Fannie Bay Gaol, Darwin, March 1937.
 (Australian Archives Canberra).



15. Windmills were not designed for cyclonic winds — Darwin March 1937.
 (Australian Archives Canberra).



16. Cyclone damage at Channel Island leprosarium — Darwin March 1937.
(Photos 14, 15, 16 reproduced by permission
of Department of Territories and Local Government from
originals held in Australian Archives, Canberra).



17. Cavenagh Street, Darwin March 1937 cyclone damage.
(Bureau of Meteorology).

The crew jettisoned about 25 cases of kerosene. An attempt to cut away the mast failed. Finding it impossible to raise the anchor the crew hurled the chain overboard. The skipper ran the lugger into a creek where they sheltered for another two days before it was safe to venture forth.⁽¹²⁾

Little damage had been suffered by the Bathurst Island Mission. The gardens, including many of the large shady mango trees had been flattened, but otherwise the effects had been superficial. Further west at Cape Fourcroy the cyclone had made a clean sweep of the vegetation.⁽¹³⁾

In spite of the intensity of the cyclone, the rainfall in Darwin was surprisingly light; barely 50 mm in the 24 hours up to Thursday morning (11 March). Heavier falls, however, were reported from further afield. Koolpinyah Station, about 40 kilometres east of Darwin, received 342 mm in five days. Heavy rain was reported from inland communities as the remnants of the storm moved overland to the southeast. Between 120 and 140 mm fell at Mataranka, Tipperary, Burnside and Maranboy Stations on the 12th. At Daly River 150 mm fell in four hours.

The cost of damage to Government buildings in Darwin amounted to 24 000 pounds.⁽¹⁴⁾ Estimates of the total cost inclusive of private premises varied considerably, but may have been around 50 000 pounds. On the brighter side was the fact that for the first time in many years there was work available for the unemployed in Darwin, albeit of a temporary nature. The cyclone received wide coverage in southern newspapers. Some of the stories which appeared contained wild exaggerations, one suggesting that hundreds of Darwin people were injured, another that some 500 men were missing with the pearling fleet. One story even intimated that leprosy and venereal disease were widespread in the town. The reports prompted a deluge of traffic through the Darwin Telegraph Office by concerned relatives wishing to hear further news. So incensed were Darwin residents by this sensationalistic journalism that a special meeting of the Town Council was called. Representatives of the offending newspapers were invited to explain the reasons for their reports. A resolution was unanimously carried:

“That this Council expresses on behalf of the people of Darwin its disgust and indignation at the lying reports appearing in Southern papers purporting to have been transmitted from press correspondents in Darwin; . . .”⁽¹⁵⁾

The resolution went on to condemn individual newspapers for their false reports and their failure to verify these reports prior to publication.

CHAPTER 6

The Great Roper Flood

Conditions along the Roper River during December 1939 had been very dry and for the first time in living memory the river had stopped running. In spite of this the old Aborigines in the area predicted a very heavy wet season and their warnings were soon to be vindicated.

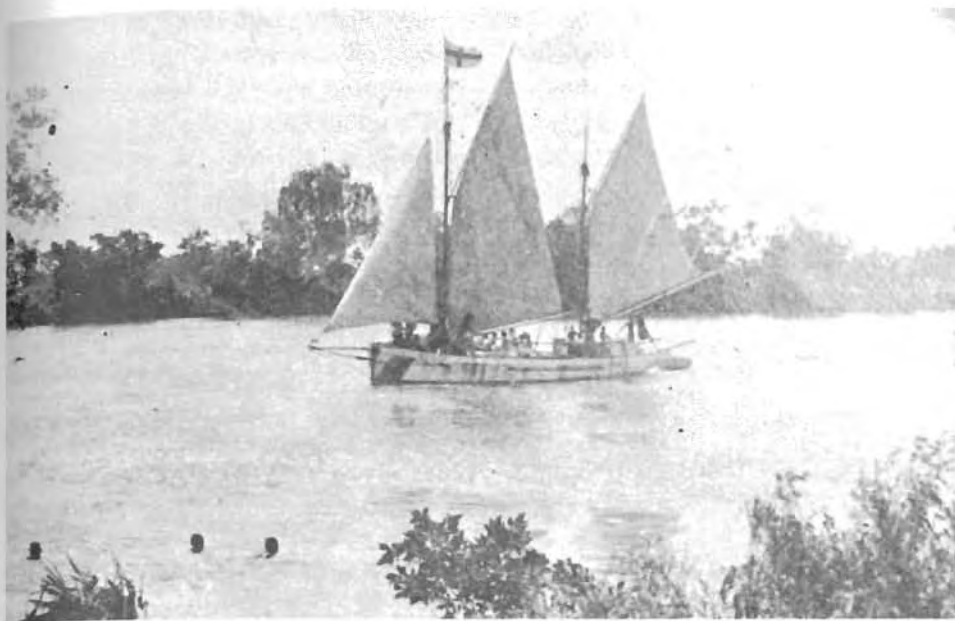
On New Years Day 1940 light rain began to fall over eastern Arnhemland. Over the next three days the rain extended westwards and increased in intensity, so that by Friday 5 January heavy continuous rain was falling over a vast area of northern Australia. Many of the rivers which a few days earlier had been collections of waterholes along dried up beds were now raging floodways. Over the weekend the relentless downpour continued, and even increased its ferocity, as a tropical depression over Arnhemland intensified. At Borroloola 12½ inches (312 mm) were recorded in one 24 hour period and several places reported 27 inches (686 mm) in six days. At the Roper River Mission, 120 kilometres upstream from where this mighty waterway empties into the Gulf of Carpentaria, hasty preparations were underway in the face of the rapidly rising flood. The Rev. P. F. Taylor from the Groote Eylandt Mission was there in the lugger *Holly*. Recently unloaded stores were taken up from the landing as the waters continued to rise.

The Rev. Taylor takes up the story of the amazing events which followed:

“On Saturday the River was rising rapidly, and we moved various things upstairs just in case it should come over the floor of the house. Sunday the river still rose so we moved the *Holly* from the jetty posts and tied up alongside some tall trees downstream as the river was too swift for the boat to anchor out. On Monday we wired C.M.S. and sent the people to the hills. They had to use canoes to get there. We brought the *Holly* and anchored her on the path between the hospital and chapel, and she rode outside the gate ready to take us off. We had put most of our personal effects and some stores aboard. Monday night we had to leave the house, and all slept on the *Holly*. The current was so terrific that the *Holly* broke her stern lines, so Mr and Mrs Port and all the half-castes of the Roper River Mission were taken off in the launch *Heath* to the mountain where the natives were. The river now became a roaring torrent, with trees coming down, and the village had been swept away, also the windmill and engine-house. We

took the *Holly* as close as we could to the highest land beyond the Mission, and dropped anchor in the lee of big trees, where there was good anchorage, and let go a shackle and half of both chains — we were well anchored. All day we ran the *Heath* and got stores by chopping a hole in the store. As all this was done in a terrific torrent and freezing rain it was a dreadful night. The cyclone came with a wind one could not face, and rain that just cut like whip-strings.

The natives took short shifts at the wheel, as by now the boat needed careful steering to keep her in the lee of the tops of the trees. At about 10.30 p.m. Harold and myself on watch and the other six (Mr Perriman, three boys, Marjorie and baby Constance), the cyclone rose to a deafening roar, and the rain was nothing but a cloudburst, when suddenly the anchor received a heavy blow and began to drag. We sprang into action and laid out nearly all our chain. We slid downstream in the howling storm at an ever-increasing speed and hearing all the Mission buildings crumbling in the torrent as we passed. All was pitch darkness except on the *Holly*. We crashed into heavy timbers, our position we did not know, and jammed on to the side of a stalwart iron-bark tree. With the rendering of many timbers in the side of the *Holly*, the tree God had put here invited us to its top with the aid of our torches. In three minutes we had all climbed into its branches. A brave boy sprang back to seize a blanket and a small swag to wrap the baby in. The *Holly* lunged to the starboard, freed herself from the tree and disappeared into twenty feet of raging torrent at a terrific rate. Freezing cold, howling wind, yet the baby slept rolled in the ground sheet little aware of her position. In the midst of a raging sea of river 13 miles wide. Well, no one will ever know of the experiences of that night in the trees with a few feet to spare. Some saw visions bright, all felt God very near, and none were afraid. His Hand was with us. His Love about us. We were safe. An interminable night, but at dawn the cyclone passed. Then what to do. The three native boys volunteered to swim to the mountain more than a mile distant, cold and cramped as they were. It was the only way of obtaining help. They were hurled downstream but caught branches of submerged trees, and gradually working from tree-top to tree-top into quieter water, and finally reached the party camped on the mountains exhausted but able to give the messages. Richard, a half-caste, one of the *Holly* crew, by wonderful skill, brought the *Heath* astern down the river, and caught on to the tree as the current carried them by. It took a little time for us to get aboard, and as we were carried on the little engine of this tiny launch did its best to get us towards the mountain. There Mr and Mrs Port and the natives had huge fires burning and hot tea ready for us. We changed into oddments of dry clothing, and our thanksgiving was very real. . . .”(1)



18. The mission lugger *Holly* on the Roper River.
(H. L. Perriman collection N.T. Archives).

The story later told by Constable Jack Mahony from the Roper River Police Station about 40 kilometres upstream from the mission was probably no less exciting. Mahony must have had some faith in the aboriginal rain-maker, for he had taken his family into the relative safety of Katherine for the wet season. Rain had begun to fall on the return journey, and he just made it back to the Roper before the road was cut completely. Hearing on the station radio that heavy rains had fallen further up the river catchment, the policeman enlisted the help of several Aborigines from the camp to move the stock to higher ground. Mahony kept a large herd of about 200 goats. All of these, together with the police horses and mules, were shifted to Telegraph Hill, about five kilometres to the southeast. All the stores and rations were moved to the station house which was a new building of sturdy construction made to withstand cyclonic winds.

It was now Monday, 8 January, and after contacting the Roper Valley Station by radio and advising them of the situation, Mahony placed the precious radio equipment on top of a wardrobe on the second floor of the house. About twenty Aborigines arrived from the camp and said that the old people had been taken to Gardargabul, a high mountain five kilometres southwest of the station. By dawn on Tuesday the rapidly rising floodwaters were only one metre below the top floor of the house.

Constable Mahony had at his disposal a motor launch (*Jolly Roger*) and a flat-bottom dinghy. After loading a week's stores into the launch, and

taking on board six women and two trackers, plus another six boys in the dinghy, the party set out for Telegraph Hill. The ten remaining Aborigines were none too happy about staying behind, and had to be threatened at gunpoint not to overload the boats. The trip to Telegraph Hill took two hours. The swirling floodwaters swung them into floating logs and around trees. Each time they bumped into a tree they were showered with centipedes, snakes or lizards. The Aborigines being towed in the dinghy were terrified and didn't make the job of steering any easier. When they finally made their destination, which was by now an island, the shoreline was crowded with fear-crazed goats. Many had already drowned and the crocodiles were having a feast.

After establishing order on shore, Mahony and two trackers, Dick and Nipper returned in the launch for those left behind at the Station. The relieved Aborigines made no secret of their delight at the appearance of the launch. The rain was now coming down in torrents and the wind was increasing as the tropical depression gradually wound itself up to cyclonic intensity. On the next trip to rescue further rations, calls of distress were heard from the direction of the camp. Upon investigation Mahony's party came across nine exhausted Aborigines clinging to the tops of trees and a paperbark raft. They were all carried safely to Telegraph Hill, much to the relief and delight of all.

No one slept through that Tuesday night as the storm increased its fury. The following day, 10 January, another trip was made across to the station which was now almost completely submerged. The return journey in the launch laden with stores was two hours of hair-raising adventure as the policeman and his two trackers struggled with oars and motor through blinding rain and waves whipped up by the cyclonic winds. Eventually they made it, but another trip was now out of the question; the large waves on that inland sea made it far too dangerous to venture forth. The crocodiles posed a different threat as they came brazenly out of the floodwaters to chase the goats; they certainly did not make sleep any easier for that shivering and exhausted group.

At about 3 a.m. Mahony was awakened by the Aborigines as the flood was threatening to submerge their shrinking island refuge. Seagulls were screeching overhead swept in from the Gulf. At daybreak he left immediately with a load of rations to set up a camp at Mount Gardargabul. The old Aborigines who had reached that place several days earlier were overjoyed to learn that their kin were safe and sound, and welcomed the prospect of a good feed. Four more trips were made that day to transfer 27 Aborigines, the wireless and all the rations to the mount. At 5 p.m. the task was complete and the policeman collapsed with exhaustion. The Aborigines carried their saviour to the bed they had prepared for him.

The following day Mahony climbed to the top of Gardargabul and looked out across that vast sea to where the Police Station should be. The house was completely submerged. All that was visible was the top of the windmill and two water tanks. The Roper River had risen 25 metres above its normal level. Mahony constructed a rock cairn in which he placed a pole with a silk shirt attached bearing the inscription "Mount Ararat". He had lost nearly everything in the flood but certainly not his sense of humour.⁽²⁾

It was another two weeks before the floodwaters had subsided and the stationhouse could be restored to something approaching livable condition. Progress was slow, because the constable suffered a severe bout of illness, accentuated by total exhaustion and poor diet. There was no medical assistance.

By the end of January he had recovered sufficiently to venture downstream to the Mission to investigate their plight. The usual six hour journey was accomplished in less than three hours, for the river was still racing. A scene of great devastation presented itself.⁽³⁾ Only two buildings remained — the Mission House and the store and both were in an unsound condition and teetering at a precarious angle.

"All other buildings, including hospital, school, two dormitories, cookhouse, salt store (with 50 tonnes of salt), butchers shop and beefhouse, workshop, three buildings for half-castes' quarters, numerous outbuildings, windmill, pumping engine and plant, and stockyards had been completely destroyed, and were strewn all over the countryside.

Huge holes and sand hills can be seen all over the garden and building site, and all the soil in the cultivated area has been washed away . . . Even if it were safe it would be impossible to build on the same site . . ."⁽⁴⁾

Constable Mahony remarked that the place had the appearance of having been shelled. Since the flood the Mission staff and the 100 Aboriginals had been camped on Mount Marnagarnee, about two kilometres downstream from the Mission. With the provisions they had managed to save, and with a canoe-load of stores generously brought down Mountain Creek by Mr Gibbs from St Vidgeon Station, they were fairly well catered for, for several weeks at least.

Mahony inspected the remains of the *Holly*. The lugger, which had served the Mission well for the past 21 years, was a total write-off. The deep furrow ploughed out by the boat's anchor as it was dragged along by the raging torrent could be clearly traced out to the large tree where the crew of the doomed vessel spent their frightful night.

Although the Roper Valley was the worst-hit area huge floods occurred over the whole northern half of the Territory.⁽⁵⁾ Every river was in flood

and many people living on stations were forced to abandon their houses and camp on higher ground. The pilot of a Guinea Airways mail plane which arrived in Darwin from Adelaide on 12 January reported that between Daly Waters and Newcastle Waters there was a vast expanse of water as far as the eye could see. He could not land at Katherine because the water was waist-deep over the aerodrome. The Katherine river was 16 kilometres wide and water was flowing through the township.

The government patrol vessel *Kuru* was loaded with stores and despatched from Darwin on 21 February to render assistance to the people on the Roper River. Although delayed for several days by bad weather in the Gulf of Carpentaria the vessel eventually arrived at the Roper landing on 5 March.

The Mission was subsequently rebuilt on higher ground some 10 kilometres upstream from the old site. With the aid of a special government grant another vessel *Iorana* (similar to the wrecked *Holly*) was acquired to service the Roper River and Groote Eylandt Missions.

CHAPTER 7

The Post-War Period

During the first week of February 1942 a deep monsoon depression formed over the Daly River Region near Port Keats and dumped prodigious amounts of rainfall over the surrounding area. At the Port Keats Mission over 900 mm of rain was recorded in eight days, and galeforce winds battered the station.⁽¹⁾ Little more than a week later, after the skies had cleared over the Top End, a rumbling was heard over Darwin which was not the sound of distant thunder but the approach of many enemy aircraft. The Japanese assault on Darwin had begun.

In April 1948 the worst floods for over twenty years were reported to have affected more than 75 000 square kilometres of Arnhemland and the Barkly Tableland, after three cyclones had swept the Gulf of Carpentaria in February and March.⁽²⁾ One of these cyclones in late February almost demolished the remote township of Borroloola.⁽³⁾ Winds of more than 95 km/h completely wrecked the hotel and destroyed a number of other buildings. The windmill which provided the town with fresh water was blown down and severely damaged. During March a cyclone flattened the Johnston Homestead on Vanderlin Island.⁽⁴⁾ At the height of the storm which raged for four hours the air was thick with flying branches, and the Johnston family was forced to seek shelter behind the solid rails of the goat pens. Only two walls of the home were left standing. Spear grass and spinifex were torn from the ground; trees were either uprooted or stripped of all their foliage; and the sea rose 3.7 metres above its normal level, causing Vanderlin Island to be separated into three islets.

The following December a severe cyclone struck the Tiwi Islands. On the night of Tuesday 30 November three luggers owned by Streeter & Male, whilst returning to Darwin from the pearling grounds encountered the cyclone near Cape Don.⁽⁵⁾ Mr Rod Hornsby, skipper of one of the boats, estimated that the winds reached 160 km/h. His vessel eventually struck a bank and he was forced to let go the anchor. The masts soon snapped and the boat rolled in the heavy seas for the remainder of the night. Two of the luggers finally limped into Darwin harbour on the following Sunday morning. The third vessel, *La Grange*, was not so lucky. A MacRobertson Miller Anson was immediately despatched to conduct an air search. The wreckage was quickly found on a reef near Soldier Point, the eastern-most

tip of Melville Island. A search party in the patrol vessel *Kuru* went to the site but could find no trace of the eight Timorese and two Aboriginal crewmen.

The eye of the cyclone passed directly over the Bathurst Island Mission during the morning of 1 December. Most of the Tiwi huts were demolished, many mango trees were blown down and the gardens ruined. According to Brother Pye, one large building of angle iron construction was blown over to an angle of 45 degrees. Then as the eye passed over and the winds reversed direction, the building was blown back up into its original position!⁽⁶⁾



19. Bathurst Island school after the 1948 cyclone.

(Bro. John Pye).

In Darwin the cyclone struck shortly after noon on Wednesday, 1 December, when the wind quickly increased to around 90 km/h and gusting to over 100 km/h. Two houses were completely demolished, and many trees, sheds and power lines were brought down.⁽⁷⁾

Cyclones are not always bad news however; the policeman at Daly River described the rain brought by the cyclone as a “Godsend”, having been the means of saving hundreds of head of stock.⁽⁸⁾ Green grass was shooting up everywhere, and in a month or so feed would be plentiful.

A feature of the cyclones during the fifties was the fact that most of them occurred near the end of the wet season. Altogether seven cyclones occurred in the month of April during this decade. One of these, in April

1952, severely damaged the Methodist Mission at Yirrkala on the Gove Peninsula.⁽⁹⁾ Winds estimated to reach 160 km/h destroyed the church and all but nine of the twenty-four Aboriginal huts, unroofed the Mission house and store, flattened the gardens including paw paws and bananas, and stripped all the bush trees of their foliage. The houses were drenched with salt spray thrown up over the ten metre high cliff, and even stones and shells from the beach were hurled up into the Mission houses. As the cyclone moved southward through the Gulf, pastoralists on the drought-stricken Barkly Tableland looked forward to much-needed rainfall in their area. It was not to be, however, for the cyclone crossed the coast near Borroloola but then moved quickly to the southeast, and it was Queensland stations that received the benefit of soaking rains.

It may be opportune at this point to elaborate a little upon the benefits of tropical cyclones. Much has been said about the devastation of cyclones and their impact on coastal communities, but these clouds, to use a pun, do have a silver lining. Decaying tropical cyclones make a significant contribution to the average rainfall over much of inland northern Australia. Cyclones which cross the coast usually degenerate into rain-bearing depressions which may deposit huge amounts of rainfall over vast areas of the inland. This however is not a frequent occurrence in any one particular location, and several supposed wet seasons may pass without such an event. So it is that the manager of a cattle station on the Barkly Tableland in the grip of drought would be quite pleased to see a Gulf cyclone move southward through the area.

Of course, sometimes these rain depressions bring with them altogether too much rain and huge floods are the result. One such occasion was in March 1957. During the first week of March a cyclone formed in the Bonaparte Gulf. On the 6th the Weather Bureau in Darwin issued a cyclone warning, and alerted areas south of Darwin to the threat of serious flooding, as the cyclone moved inland near Port Keats and was drenching the catchment areas of the Katherine and Daly Rivers. The following day the floods reached a record height in the Katherine township.⁽¹⁰⁾ Water was flowing more than a metre deep through the main street. Many homes and business premises were flooded. The railway line to Darwin was cut in several places and passengers had to be ferried by bus. The next day the flood peaked further downstream on the Daly River. The Mission and surrounding farms were practically inundated, and many marooned residents had to be rescued by boat.⁽¹¹⁾

The warm waters of the Arafura Sea, bounded by the coasts of Arnhemland, Irian Jaya and the westernmost Indonesian island groups of Tanimbar and Aru, have proven to be the breeding ground of many cyclones. Sometimes these storms intensify locally and impinge upon the Northern Territory coast, but more frequently the embryonic depression

drifts away to form a major cyclone elsewhere. Occasionally these developing cyclones move southeastward down through the Gulf of Carpentaria and possibly into the Coral Sea, but more often they take a southwesterly track down the coast of Western Australia. This tendency was most pronounced during the wet season of 1960/61 when four cyclones were spawned in the Arafura Sea.⁽¹²⁾ One of these moved rapidly southeast through the Gulf of Carpentaria and crossed Cape York Peninsula into the Coral Sea. The other three moved to the southwest and developed into severe cyclones.

On 15 December 1960 a cyclone with winds up to 185 km/h tore through Saumlaki in the Tanimbar Islands wrecking substantial buildings and uprooting thousands of coconut palms. The storm raged for four hours and left three people dead and 20 000 of the 23 000 population homeless. After leaving the Tanimbars the cyclone moved to the southwest bypassing the Northern Territory coastline. On the 22nd it recurved towards the Kimberley coast and the next day struck the Australian Iron and Steel Company installations on Cockatoo and Koolan Islands. Winds gusting to over 185 km/h caused many thousands of dollars worth of damage.

On 15 January 1961 a depression formed about 200 kilometres north of Milingimbi. The system moved to the west and had intensified into a cyclone as it passed north of Melville Island. Heavy rains and rough seas were experienced along the north coast, but once again it was to be Western Australia that received the brunt of the storm. For the next week the cyclone travelled parallel to the northwest coast of the continent before veering southward through the township of Onslow on the 25th, where high seas, hurricane winds and heavy rain caused severe damage. Paradoxically, while this was happening, the cyclone was enhancing a flow of hot dry air into the southern areas of the State which sparked off widespread bushfires, and the town of Dwellingup was almost completely destroyed by fire.

The third system to track down "cyclone alley" formed well to the north of Darwin on 20 February. Once again the developing storm moved southwest parallel to the Western Australian coast. This time the cyclone crossed overland between Port Hedland and Carnarvon, producing severe flooding around Onslow.

Each of these three cyclones had little or no effect on the Northern Territory but had caused disasters in other areas. This is not unusual, for many of the cyclones which affect Western Australia, especially, have their beginnings in Northern Territory coastal waters.

CHAPTER 8

Evolution of a Cyclone Warning System

The initial expansion of the Bureau of Meteorology was rather slow in the first twenty years after its establishment in 1908.⁽¹⁾ In northern Australia daily weather reports were received only from stations along the overland telegraph line. Thus little information could be placed on weather maps and in daily forecasts concerning ocean areas and the vast expanses of sparsely populated country, where the occupants were without the benefits of instant communication. The development of radio communications during the 1920s meant that isolated communities could provide reports of weather conditions, and could receive in turn, daily forecasts, and warnings of severe weather such as tropical cyclones. On 1 February 1925 Amalgamated Wireless Australasia Ltd began broadcasting daily from Darwin forecasts for the northwest coast, Gulf of Carpentaria and Queensland.

The Northern Territory was at centre stage of another development which was to have profound impact on the nation as a whole, and that was the coming of aviation. On 10 December 1919 Ross and Keith Smith touched down at Fannie Bay, just outside the Darwin township to complete the first flight from England to Australia. They were followed by many other adventurers, including Bert Hinkler in 1928 and Amy Johnson in 1930. However it was soon realised that aeroplanes had other uses besides breaking records. In 1928 the Aerial Medical Service (later called the Royal Flying Doctor Service) was founded at Cloncurry. In 1934 Dr Clyde Fenton began operating a N.T. Aerial Medical Service from a base at Katherine. The following year a base was established at Wyndham. Also during the early 1930s missionaries Keith Langford Smith and Harold Shepherdson began servicing mission stations in Arnhemland with their tiny aircraft.⁽²⁾

All this activity provided impetus for the expansion of the weather service in the north, and when a London to Melbourne air race was planned to coincide with the Melbourne centenary in 1934, a meteorological office was established in Darwin to provide weather forecasts for the competitors. Later that same year the newly formed Qantas Empire Airways began to run an England-Australia airmail service through Darwin. Guinea Airways began carrying passengers weekly between Adelaide and Darwin early in 1937 and in December 1937 Imperial Airways commenced a flying boat service between England and Australia. In mid-1938 a flying boat base was established at Groote Eylandt, and a meteorological office was opened

there to provide weather services. The meteorological network was expanded to several more stations along the north coast as local airmail services began operating during the 1930s.

A third influence on the development of meteorology, after radio communications and the aviation industry, was the outbreak of war. Now more than ever, reliable weather information was required for ships and aircraft operating in unfamiliar areas. Until then, the science of meteorology in Australia had been focussed on mid-latitude zones, where most of the country's population lived; the meteorology of the tropics was less well understood. The Bureau of Meteorology came under the control of the Royal Australian Air Force, and the study of tropical weather systems and their effect on military operations was intensified.⁽³⁾ Further expansion took place in the observing networks in northern Australia. New meteorological offices were established at Daly Waters in 1939 and Alice Springs in 1941.

After the war the expansion of the weather service slowed somewhat, however warnings of tropical cyclones in northern Australia were now being provided by the divisional offices in Perth and Brisbane. During the mid-fifties these offices commenced compiling case histories on each of the tropical storms that occurred in the region.

In November 1958 a weather radar commenced operating at Darwin Airport. This was one of many such units being installed across the country. The weather radar had a twofold role. It could track rain areas within a radius of 200 kilometres or more. This is very useful when a cyclone approaches a major population centre. The radar could also be used to track weather balloons which sample conditions in the upper atmosphere.

On 1 March 1963 the Northern Territory Divisional Office opened at Darwin Airport. This was transferred to a new Regional Office in Darwin City early in 1965. At the same time the Darwin Tropical Cyclone Warning Centre was established. During the late sixties enormous improvements were made to the weather observing networks in northern Australia. Automatic weather stations were installed at strategic locations along the coast, and several new manned stations were opened. The United States had launched several meteorological satellites and pictures from these were becoming available, first on relay from Melbourne, and then directly by means of a readout station installed at Darwin in April 1968. The impact of satellites on weather forecasting was great indeed, and this was especially so for the tracking of tropical cyclones. For the first time man could observe a tropical cyclone in its entirety; to watch it grow from a small cloud cluster to a huge spiralling dynamo of awesome energy which could wreak destruction and death upon all in its path. At last weather forecasters had the means to give coastal communities ample warning of the approach of a tropical cyclone so that lives and property could be protected.

An interesting innovation in 1964 was the allocation of names to tropical cyclones. Actually, this was not the first time in Australia that names had been attached to weather systems. The flamboyant Clement L. Wragge, Government Meteorologist in Queensland between 1887 and 1902 initiated the practice by calling the highs, lows and monsoons on his charts anything from biblical characters to polynesian maidens, and even politicians who may have annoyed him, by for example “whooping around and making a nuisance of itself as usual.”⁽⁴⁾ Up until 1975 only female names were used for tropical cyclones, but following some rumblings from within women’s activist groups the Bureau commenced alternating male and female names.

CHAPTER 9

Tracy

In 1974 Darwin was riding a new wave of prosperity. The population was growing at a rapid rate, and large residential areas were being opened up in the city's northern suburbs. There was a general feeling that after a hundred years of lethargy Darwin was at last going ahead in leaps and bounds.

To the average Darwinite tropical cyclones posed little threat. Always they seemed to pass Darwin by. The past ten years had seen a vast improvement in the Weather Bureau's capability to observe and track tropical cyclones, what with satellites, radar and better observation and communications systems, the public were now being advised of more tropical cyclones than ever before. Between January 1964 and March 1974 the Bureau named 25 cyclones in Northern Territory waters. Few of these had caused very much damage.

Cyclone Madge had produced severe damage at Grootte Eylandt in March 1973, and Cyclones Cindy and Cynthia had earlier done minor damage in the same area.⁽¹⁾ Four fishermen had drowned at Goulburn Island in March 1969 due to Cyclone Audrey. Audrey and Ines (Nov 1973) both removed a few roofs along the north coast. Darwin however had been mostly immune. In this period eleven cyclones had approached within 200 kilometres of the city, but apart from the occasional heavy rain and strong winds barely reaching galeforce, the effects were minimal. There was even a hint of disappointment in the community when in late 1971 Cyclone Kitty approached from the northeast only to dissipate over Melville Island — virtually on Darwin's doorstep.⁽²⁾

Robert Southern, the Regional Director of the Bureau of Meteorology in Darwin, had warned local residents not to be complacent. In a prophetic statement to the press, Southern said:

“It is my belief that Darwin will suffer very severe damage by a tropical cyclone. This must happen some day. When it does strike, hundreds of dollars worth of damage will be caused to the majority of buildings. . . .”⁽³⁾

The warning fell on deaf ears. Quick money was being made during a record-breaking building spree. In April 1974 the Darwin Group of the Institution of Engineers produced a report entitled “Is Darwin Prepared for a Cyclone?” The report concluded that in many ways Darwin was not

adequately prepared, and amongst other recommendations called for a redrafting of the building code and the enforced upgrading of housing in the Darwin area. But time was running out.

Early in December 1974 Cyclone Selma formed in the Timor Sea well to the northwest of Darwin. At first she moved south, but later swung to the east and intensified as she moved towards Darwin. By noon on 3 December, Selma was only 55 kilometres northwest of the city and producing 90 km/h winds and rough seas in the Beagle Gulf. As if to exemplify the fickle nature of cyclone movement Selma halted in her tracks and turned back towards the northwest and then moved southwest away from Darwin. The residents of that city could almost have been forgiven for thinking by now that they were invincible.

Just five days before Christmas, weather satellite pictures indicated a tropical depression in the Arafura Sea some 700 kilometres northeast of Darwin. The next day 21 December, it was evident that the depression was moving southwest and the Tropical Cyclone Warning Centre in Darwin issued an alert, advising communities along the north coast of a possible cyclone threat. Later that same day it was decided that the system had reached cyclone intensity, and it was assigned the code name of Tracy. ⁽⁴⁾

Cyclone Tracy continued southwest over the next two days gradually intensifying on the way. On the 23rd she passed northwest of Bathurst Island and started to slow down. During that night the cyclone rounded Cape Fourcroy and began to move southeast — directly towards Darwin. At 9 a.m. on Christmas Eve the mean wind at the Cape Fourcroy automatic weather station reached 120 km/h as the cyclone centre passed within 20 kilometres. Just after midday a cyclone warning was issued for Darwin predicting very destructive winds in the city that night and the next day — Christmas Day. In spite of the warnings of “very destructive winds” nobody would have envisaged the scale of destruction that was to follow.

At 7 p.m. a moderate northeasterly breeze was blowing with the light rain that had persisted all day. Over the next six hours both the wind and rain increased gradually; by 1 a.m. the wind was still barely more than galeforce (64 km/h) at the airport. However during the next two hours the gale increased dramatically in strength as Tracy’s centre neared the city. By 3 a.m. the wind was a screeching hurricane gusting to over 200 km/h, and houses were starting to disintegrate all over Darwin as the terrified residents huddled in whatever sheltered corner they could find.

Around 4 a.m. the eye of the cyclone passed over Darwin. For a brief period an eerie calm descended over much of the battered city. Inevitably the wind returned from the opposite direction. This time there was no gradual build-up. Within minutes the hurricane was roaring, seemingly stronger than before. Houses weakened by the first onslaught now

succumbed completely. The air was filled with flying sheets of iron and various other building materials; with branches of trees and all manner of missiles being swept from collapsing buildings; all accompanied by the teeming rain which penetrated every shelter.

The horror of that night has been recounted many times since by the thousands who experienced it, and is typified by the following story written by a Darwin woman soon afterward:

“There was a horrible high-pitched sucking noise all round the house from the wind pressure against the windows and the noise of loose debris being bowled along the road. More uncanny and frightening than that was a sudden bursting sound from the other end of the house and then everything seemed to happen at once. The radio went off, the lights went out, the wind became unbelievably stronger and there was rain, thunder and lightning.

Above the noise of the storm, flying debris and breaking trees came a great rending noise of cracking wood, creaking and straining and the whole place was shaking. As we got under the bed there was one great heave — suddenly we could see the sky and feel the rain. Our roof was gone! We dived under the bed and lay on our tummies, not knowing what would happen now. Another big gust and heave and the foot and legs gradually sank down into the floor-boards. By this time we were lying in water. I tried to crawl out on my side but came up against something solid and unmovable — the wardrobe had tipped over on to the bed. It was impossible to lift the bed with our backs but Harold managed to squeeze out on his side, told me to stay put, and disappeared. It was horrific to be left lying on my tummy in the cold water, dark and noise all by myself. This was my most panicky moment. The restriction and feeling of being trapped all added to the general feeling of helplessness.

The two walls of the passage began to fall together like a pack of cards. I looked up and could see them waving about my head and I wondered why we had not been hit by anything falling from the sky, not even bits of glass. I found I had one foot in the kitchen vegetable rack and wondered how it got there. Then a packet of Omo descended and the rain on us tasted soapy instead of salty and our fingers were slimy! Then came the very worst. Tracy was obviously having her last fling and it was beyond description. The thunder and lightning were continuous. The thunder was a distant rumble blanketed by the wind noise which was a cross between a screech and a roar. On top of that was the creaking of breaking timber and the straining of joints. Over all was the din of flying tin as it wrapped itself round bending electric poles and spiked itself on railings. Everything shook, and so did we, from cold and fright.

We tried to keep those two walls falling together, with us in between by standing with our bottoms against one and our hands

against the other. A hopeless thing to do, but it may at the time have helped to keep our thoughts off other things. So there we were, with our backs literally to the wall, heads down against the lashing rain, hanging on for our lives. I hoped the walls would fall quickly and hit us hard so we would not know anything. Being elevated to first floor level my mind blanked at what would happen when everything collapsed and us with it.

Looking back, I can only liken that experience to being towed, standing up in a fast open boat through a rough sea, in the dark. Even that could not include the possibility of one or both of us being injured by flying debris.”⁽⁵⁾

After what must have seemed like an eternity for the 45 000 residents, Tracy relented and began to weaken as she moved inland towards the southeast.

As daylight came to Darwin that Christmas morning the people emerged to a sight that seemed to have no place with reality. What should have been a morning of joy was instead one of heartbreak. The suburban streets had no children happily riding shining new bicycles; instead they were strewn with the wreckage of broken homes and shattered lives. Some were never to see that scene of devastation. The death toll was 49, with a further 16 listed as missing at sea. Admitted to hospital with serious injuries were 145 patients, whilst on Christmas Day at least 500 or more were treated for various minor injuries at Darwin Hospital.⁽⁶⁾

Given the extent of building damage, the toll of dead and injured was unbelievably small. Approximately 70% of homes suffered serious structural failure, and only about 10% escaped with little or no damage.⁽⁷⁾ In some of the newer northern suburbs the destruction was absolute — some journalists likened it to Hiroshima in 1945. There were probably several contributing factors to this greater damage in the north. First of all, it is likely that the onshore winds on the northern side of the cyclone were somewhat stronger. Secondly, in the new suburbs there were few trees to provide a sheltering effect, and furthermore there were large amounts of building material lying around where new homes were under construction (much damage was caused by wind-borne debris). It may have been also that home building construction standards had slipped during the boom years of the early seventies. By comparison, the engineer-designed structures of the city business area suffered little damage.

The scene at Darwin Airport was one of utter chaos. The operations and terminal buildings had been severely damaged. Navigational aids had been destroyed or disabled. Runways and taxiways were littered with large containers and all sorts of building debris. Huge aircraft hangers had been reduced to gargantuan heaps of twisted girders and crumpled iron. The light aircraft terminal was a complete shambles. Only one operator had seen fit

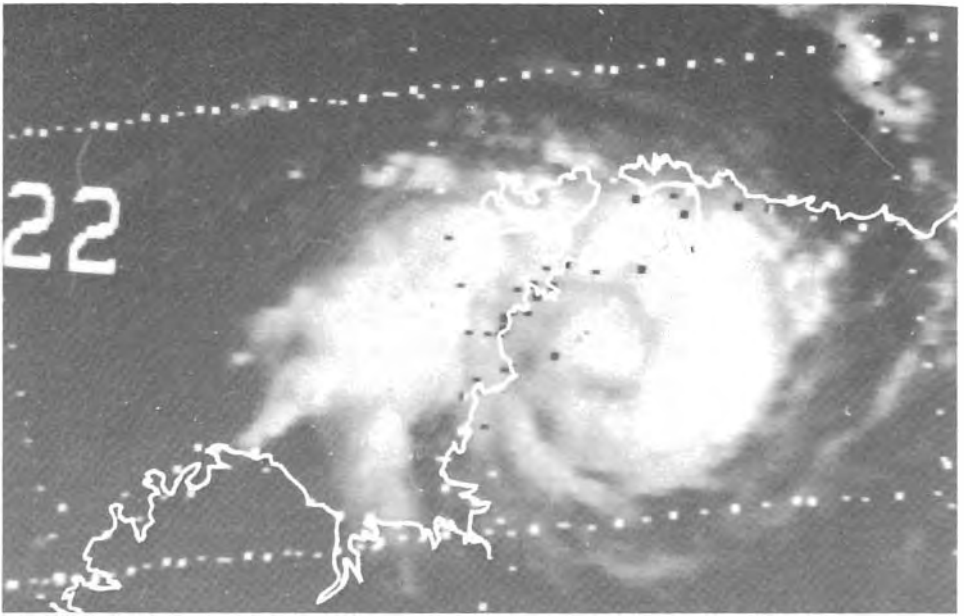
to evacuate his fleet before the cyclone. Those that remained were now scattered in all directions. Many had been flipped over. Others had been flung up against buildings or smashed into other aircraft. Altogether, thirty-one were totally destroyed and a further twenty-five seriously damaged — a total loss of over one million dollars.⁽⁸⁾

In the harbour the shipping fleet was decimated. (see Appendix 4) Approximately twenty of the larger vessels were wrecked, including the Navy patrol boat HMAS *Arrow*, plus various fishing trawlers, ferry boats and yachts. More than twenty more received varying degrees of damage. Most of the boats in the harbour were either sunk by the huge waves or run aground on the eastern shores. The number of casualties among the smaller craft was unknown. As the cyclone crossed the coast a surge in the level of the sea of about four metres was produced. Fortunately, it was at a time of low neap tide and the water level barely reached the spring tide level with the surge.⁽⁹⁾

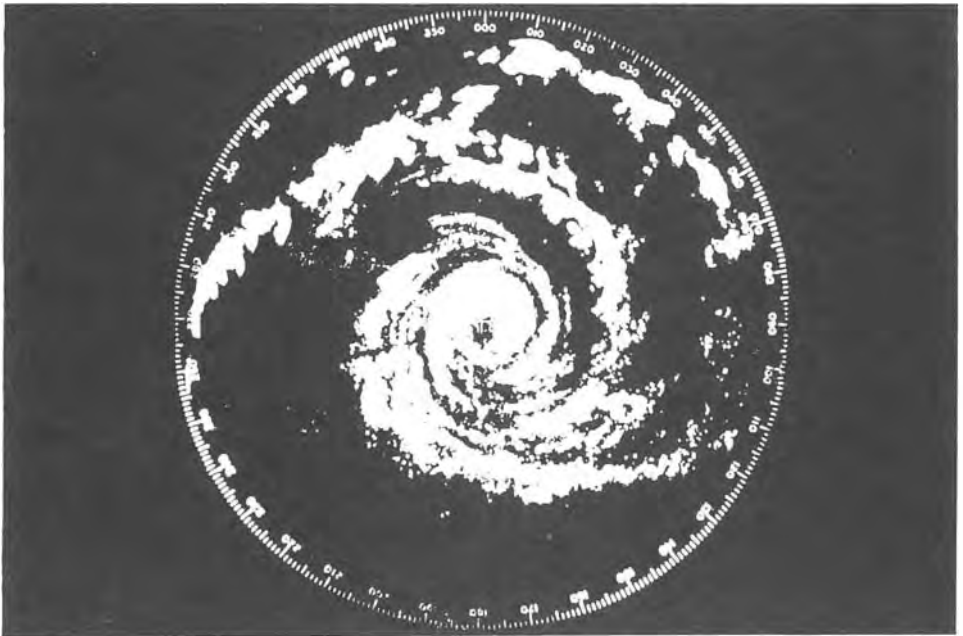
The hurricane winds of Tracy almost totally destroyed the vegetation in and around Darwin. Overall the tree damage extended inland for about eighty kilometres and spread over an area of almost four thousand square kilometres. In the worst areas near Darwin about half of the trees in the open forest areas were felled with those remaining standing solemnly naked, devoid of all foliage and small branches. Ten years later, large numbers of these dead trunks still bear silent testimony to the destruction of Tracy.

Along with the destruction of vegetation went the disappearance of insect and bird life, and an eerie hush fell over the town after the cyclone — the only sounds being those made by man. The insect population recovered quickly and with no predators to control them mosquitoes came in droves, necessitating the regular spraying of insecticide in the town area for several years afterward. Native birds were much slower to return and about five years elapsed before their songs were regularly heard in the suburbs.

On Christmas Day 1974 Australia faced the greatest disaster in her history. Her isolated capital of the north had been destroyed, with 45 000 inhabitants left without light or power or running water or sanitation or even communication with the rest of the world. Early on Christmas morning the first hint of the disaster trickled through to the operations centre of the newly-formed Natural Disasters Organisation in Canberra and set off a chain of events which lead to the head of that organisation, Major-General Alan Stretton being sent to Darwin to head the relief operation.⁽¹⁰⁾ Stretton's long military command experience made him well-equipped to handle such a huge organisational task. He quickly decided that to avert a calamitous health situation most of the population would have to be evacuated in the shortest possible time.



20. Tracy by satellite, 9 a.m. Christmas Day 1974.
(Bureau of Meteorology).



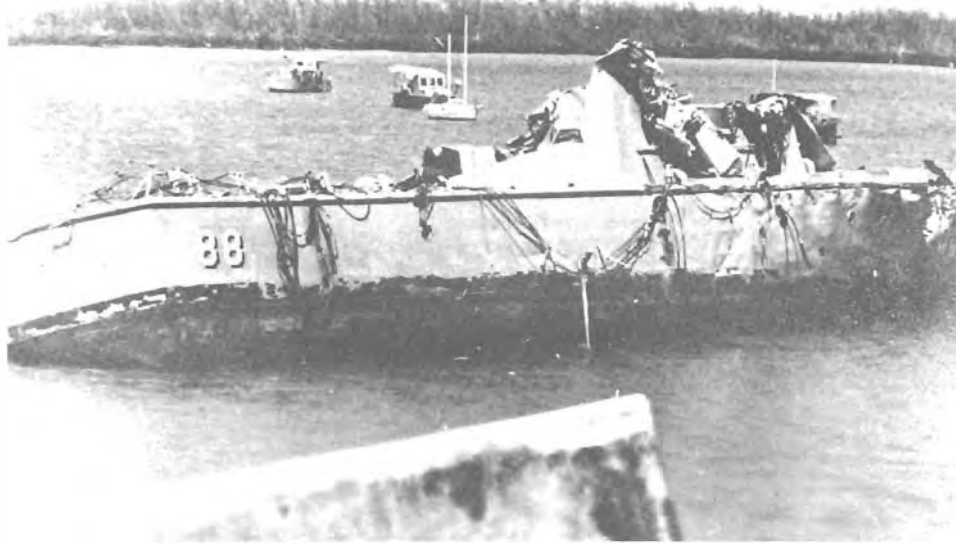
21. Tracy by radar, over Darwin.
(Bureau of Meteorology).



22. The devastation of Tracy in the northern suburbs of Darwin. (Sydney Morning Herald).



23. A picture with a story — Darwin after cyclone Tracy. (P. Copland).



24. HMAS *Arrow*, one of the many casualties in Darwin Harbour during Tracy.
(P. Copland).



25. Death of a Dakota — Darwin Airport December 1974.
(P. Copland).

The evacuation of Darwin was nothing short of astounding. In an operation rivalling Dunkirk 25 628 men, women and children carrying their meagre belongings, many sick or injured or in a dazed state, were evacuated by air to southern cities between 26 and 31 December. During the same period a further 9 734 left by road. The exodus reached a peak on the 28th when 8 223 were airlifted out in a variety of aircraft. On that day one Qantas Boeing 747 departed with an amazing 694 passengers. By 31 December the population had been reduced to about ten and a half thousand, and the crisis was over. By that time electricity and water and sewerage facilities had been partially restored, shelter was available for the remaining inhabitants and ships from the Australian Fleet had arrived to commence a large-scale cleanup operation.

All Australians were shocked by the Darwin disaster. Most would have thought that the early news reports were highly exaggerated, as usually happens. But the first dramatic newspaper and television pictures soon dispelled those thoughts. The sympathetic reaction was spontaneous. Gifts of blankets, food, tarpaulins and all sorts of commodities in addition to cash soon began pouring in from all around the world, as well as from all parts of Australia. Estimates of the cost of damage ranged up to 800 million dollars, and insurance companies faced huge payouts.

If the story of the evacuation of Darwin is amazing, then the story of its rehabilitation is equally so. The rebuilding began almost immediately. Within a week the ten thousand or so residents who remained were housed, mostly in temporary accommodation. In February 1975 the Darwin Reconstruction Commission was formed to undertake the rebuilding program. In the early post-cyclone days many questions concerning the new Darwin were raised and debated. Should the city be rebuilt at all? If so should it be shifted to a new location? What type of houses should it contain? As a result of the obvious deficiencies in building standards new regulations were formulated which would be rigorously enforced.

For the first few months of 1975 restrictions were placed on entry into Darwin. A permit system was rigidly enforced, for fear that if people were allowed to return too quickly, Darwin would soon become a shanty town with severe health problems. However officials soon bowed under pressure and lifted restrictions. As a result former residents and newcomers flocked into the area and by September 1975 an estimated 34 500 people were residing in Darwin. At a time of rising unemployment in Australia many came to participate in the expected building boom. A separate village comprising 860 single housing units was constructed to cater for building contractors. Around the end of 1975 there were some 3 500 caravans in and around Darwin.⁽¹¹⁾ More than five hundred families were living in relocatable units and many more had taken up residence in a variety of other temporary dwellings.

The new building code by specifying strength of construction approaching that of a bomb shelter, was at first an over-reaction to the devastation of Tracy. It was later realised that the more traditional style of tropical house could be made cyclone-resistant without the sacrifice of comfortable living.

The impact of Cyclone Tracy has reached far beyond the limits of Darwin itself. All along the tropical coasts of northern Australia and beyond a new cyclone awareness has emerged. In the years that followed 1974 researchers in various fields of science and social studies, as well as in industry and commerce, have studied the Darwin disaster and its aftermath in fine detail, so that Tracy has now become probably the most written-about cyclone in history. Various aspects of the disaster relief operation were debated by sociologists, some of whom were critical of the large scale evacuation, suggesting that the separation in many cases of families and friends caused severe stress among evacuees. Critical appraisals were written on counter disaster measures, communications, the cyclone warning system, and the effect of cyclones on people, buildings and vegetation. The risk of cyclones and storm surge and the resultant implications for coastal development also came under scrutiny.⁽¹²⁾

As for Darwin itself the level of cyclone-awareness in the community was clearly demonstrated in March 1981 when Cyclone Max passed through the town. Cyclone Max developed in the Arafura Sea near Goulburn Island from a tropical depression which had already dumped a huge amount of rainfall on the north coast and in the "uranium province" of Western Arnhemland. The cyclone moved westwards across the Cobourg Peninsula and through the Van Diemen Gulf, passing just north of Darwin City in the early hours of 12 March. Max was not a severe cyclone as it passed through Darwin. The maximum wind gust at Darwin Airport was 107 km/h, and although a large number of garden trees were blown down, very little building damage resulted.

However, the effect of the cyclone threat on the populace at large was quite remarkable.⁽¹³⁾ Darwin citizens were warned well in advance of the approaching cyclone, which was to be the first to visit the city since Tracy. During the morning of Wednesday 11th schools were closed and most workers knocked off to return home to their families. By mid-afternoon the city streets were deserted. Long queues had formed at suburban supermarkets and petrol stations as people stocked up emergency supplies. More than 7 000 residents spent the night in public shelters. An estimated 2 500 people unwilling to shelter in Darwin left the city by car and headed down the Stuart Highway. Counter disaster officials were pleasantly surprised at the manner in which the people battened down in preparation for the cyclone. It seemed that the lesson of Cyclone Tracy had not been forgotten.

CHAPTER 10

Kathy

Since the advent of weather satellites it has become apparent that the Gulf of Carpentaria is a favoured region for the development of tropical cyclones. In earlier times, due to the remoteness of the Gulf and the lack of human habitation, only the more severe cyclones which came close to one of the few settlements in the Gulf, were ever recorded. Now the all-embracing view of the satellite ensures that no cyclonic storm goes unnoticed.

In the past ten years four particularly severe cyclones have occurred in the Gulf. Two of these, Cyclone Rosa in February 1979 and Dominic in April 1982, had little effect on populated areas. Cyclone Ted in December 1976 passed southwest then southeast through the mid-Gulf and almost completely demolished the Queensland communities of Mornington Island and Burketown. As Ted moved down through western Queensland an estimated 250 000 sheep perished due to flooding and unusually cold temperatures.⁽¹⁾

The fourth and most recent severe cyclone to affect the area was Cyclone Kathy in March 1984. March had been a busy time for the warning centre in Darwin. Cyclone Ferdinand made a brief appearance on the north coast during the first few days of the month before crossing the coast and drenching the countryside down through Katherine. While this was going on Cyclone Jim was forming up in the Coral Sea. On 8 March Jim crossed Cape York Peninsula and intensified as he moved into the Gulf of Carpentaria towards Groote Eylandt. The island community was reprimed from a stiff blow, however, as the cyclone veered slightly southwards and crossed the coast near the mouth of the Roper River. A fifteen-metre barramundi boat was stranded temporarily near the river mouth and a few buildings were unroofed and trees blown down at Ngukurr Mission (Roper River) but otherwise the effects were minimal.

About a week after Jim had spent his energy over the Roper Valley another developing low appeared in the Coral Sea. Following a similar pattern to its predecessor of the previous week the low intensified and moved westward towards the Queensland coast. Shortly after noon on 18 March the Brisbane Warning Centre named the system Kathy and issued warnings to threatened coastal communities. During the night of the 19th, Kathy crossed Cape York Peninsula into the Gulf of Carpentaria, passing just north of the

remote mining town of Weipa. The cyclone appeared to falter as it crossed the land barrier separating the Gulf waters from the Coral Sea, and the satellite pictures showed a rather disorganised pattern. However, by Wednesday 21 March Kathy had moved into the centre of the Gulf and started now to gather strength. During that day her central pressure fell dramatically and a distinct eye on the satellite pictures were evidence of her renewed vigour. Kathy began to curve towards the southern Gulf coast, much to the relief of anxious Groote Eylandt residents. Attention was now focussed on the remote islands of the Sir Edward Pellew Group.

In Geranium Bay on Vanderlin Island seventeen of a fleet of twenty prawn fishing trawlers were gathering to shelter from the storm. Vanderlin, thirty kilometres long and about eight kilometres at its widest point, is the largest of the Pellew Islands. No doubt the skippers of the fleet were hoping that Kathy, now being described in the three-hourly bulletins from the Darwin Warning Centre as a "very dangerous cyclone" would bypass Vanderlin Island and continue her southward arc towards the empty reaches of the southern Gulf coast. In the event that the worst should happen, Geranium Bay appeared to be a strategic anchorage, for it should provide some shelter from the southeasterly winds ahead of the cyclone. The three remaining vessels, *Orpheus*, *Lindeman* and *Invincible II*, took refuge in the lee of Centre Island, some fifteen kilometres to the west of the main fleet.⁽²⁾

During that Thursday afternoon the skipper of *Gove Aries* observed a crescent shape on his ship's radar showing up at a distance of about 100 kilometres away to the northeast. As darkness approached it became evident that this was the front edge of the cyclone and that it was on direct course for Geranium Bay.

The boats spaced themselves around the bay, nosing in close to the beach where the seas would be quieter. Anchors were laid out and main engines started in readiness for the battle that seemed almost inevitable. The various crews busied themselves with preparations. Awnings were taken down, loose objects were stowed away, hatches were sealed and everything that was likely to move around was securely tied down. By midnight the wind was blowing a gale from the south southeast. From then on its fury redoubled to hurricane force. The lights of other boats disappeared in the teeming rain and blowing spray. Several vessels began to drag on their anchors. *Comac Endeavour* and *Gove Aries* both retrieved their anchors and proceeded to ride it out.

Some of the boats lost their radars as the water penetrated everywhere causing short circuits in electrical wiring. Steaming blind, *Hayman* drew in too close and struck the rocky shore. Fortunately she soon floated free. Likewise *Repulse* and *Newfish II* ground onto rocks at the northern side of the bay, but eventually came free with the rising waters. *Angela Wright* with

her main engine going full steam ahead on full rudder was losing ground rapidly and had dragged to within a kilometre of the rocky shore of North Island. All of the crew were wearing their life jackets and tensely waiting for the crunch. But then they were relieved to see that they were now making headway and retreating from shore. The wind was dropping, the eye of the cyclone had arrived.

On board *Newfish I*, skipper Tor Andersen looked up and saw the stars, clearly visible. On the wall of the wheelhouse the barometer needle had wound way down past the end of the scale, and was now hanging vertically in the "6 o'clock" position, the complete reverse to its normal location near the top of the dial. Tor set the gold pointer over the top of the needle for later reference.⁽³⁾ On the advice of the fleetmaster anchors were recovered and *Newfish I* steamed for Walker Point to join the remainder of the fleet which was congregating in the lee of North Island in preparation for the second blow.

As a relative peace and quiet descended over Geranium Bay the three remaining members of the fleet were still battling the hurricane to the north of Centre Island. *Lindeman* had lost too much ground and had stuck fast on a reef. One boom was bent underneath her and she was listing heavily as the seas crashed over her. Just before dawn the eye arrived and *Orpheus* and *Invincible II* raised anchors and headed for Walker Point. The crew of *Orpheus* spotted *Lindeman* in distress, but assistance was out of the question in the conditions.

Just to the northeast of Geranium Bay lies picturesque Barbara Cove. Latvian born Gunar Bekeris had eked out a lonely existence here for many years. Gunar had heard the cyclone warning the previous day on his radio. He was not unduly concerned however, for had not Cyclone Jim come and gone less than two weeks ago, with little more than an easterly breeze and a passing shower. But as night progressed and the howling gale was buffeting his small humpy, he came to realise that Cyclone Kathy was a different proposition. Soon after 3 a.m. as he clung to the doorpost of the hut the hurricane tore away the roof and Gunar decided it was time to seek shelter elsewhere. It was impossible to stand so he crawled along the ground down into the mangroves by the water's edge. There he waited as branches of trees flew overhead. Somehow the feel of the mangroves on his back was strangely comforting.

At last the eye came over and Gunar ventured forth to search for his tobacco amongst the wreckage of his hut. Before he could find it, the winds came again and he was forced back to his leafy refuge. Now Gunar had another problem. The northerly wind began piling up the sea water into Barbara Cove⁽⁴⁾ and as the level rose higher and higher Gunar was made to retreat further up the slope. Soon after dawn the storm began to relent and finally he could emerge to grimly gaze at the mess.⁽⁵⁾

The breathing space provided to the trawlers as the cyclone eye passed over was shortlived — for most about twenty minutes. In fact some boats had barely reached their anchorage at Walker Point before the second round of the battle began. The wind burst in from the northwest and within minutes the hurricane was raging once more and even surpassing its former fury. *Lindeman* lurched off the reef, tearing a hole in her port side. The engine-room quickly flooded. Water was pouring into the galley where the crew were gathered. They retreated to a store room up forward, but it soon became obvious they would have to abandon ship. The skipper went through the hatch to hold open the door but was immediately swept overboard. The rest of the crew followed him into the raging seas.

On *Newfish II* water leakage had started an electrical fire. This was quickly smothered, but now there was a 240 volt short circuit running through the metalwork in the wheelhouse. The life raft blew off the wheelhouse roof of *Invincible II* and smashed into the port side. Water was penetrating everywhere. As the hurricane reached even greater intensity several boats lost their engines and were now at the mercy of the seas. Radars stopped working and visibility was zero.

The jotted notes in the log of *Newfish I* graphically describe the scene:

“0530 hrs. Winds starting to gust from NW at well over 100 knots. Wind speed picking up more and more. Radar scanner starting to fail. Visibility nil. Seas extremely rough. Reports of *Lindeman*, *Goldsmith* and *Solo III* aground. Radar now useless. Position not known. Crew all wearing life jackets. Barometer climbing steadily.

0640 hrs. Vessel rolling and pitching violently. Dipping booms. Back deck completely awash. Skipper and mate remain on bridge. All other crew shut below in galley. Wind speed approximately 180 knots.

0650 hrs. Vessel lifted high on huge swell. Listed suddenly to starboard. Starboard boom under water and came up bent. Loud crunching from boom and grinding from keel. Vessel on 35° starboard list and pounding on rocks. Some trees visible beyond starboard boom. Winds still in excess 150 knots. Barometer climbing rapidly. Position of rocks and vessel not known. Crew now preparing to leave vessel if need be. Fleetmaster informed by VHF that *Newfish I* is aground.

0715 hrs. Vessel still being pounded by heavy seas. Winds easing slightly as barometer rises. Crew all in good spirits. Situation now not as dangerous. Everyone now waiting to leave vessel. Wind dropping all the time.

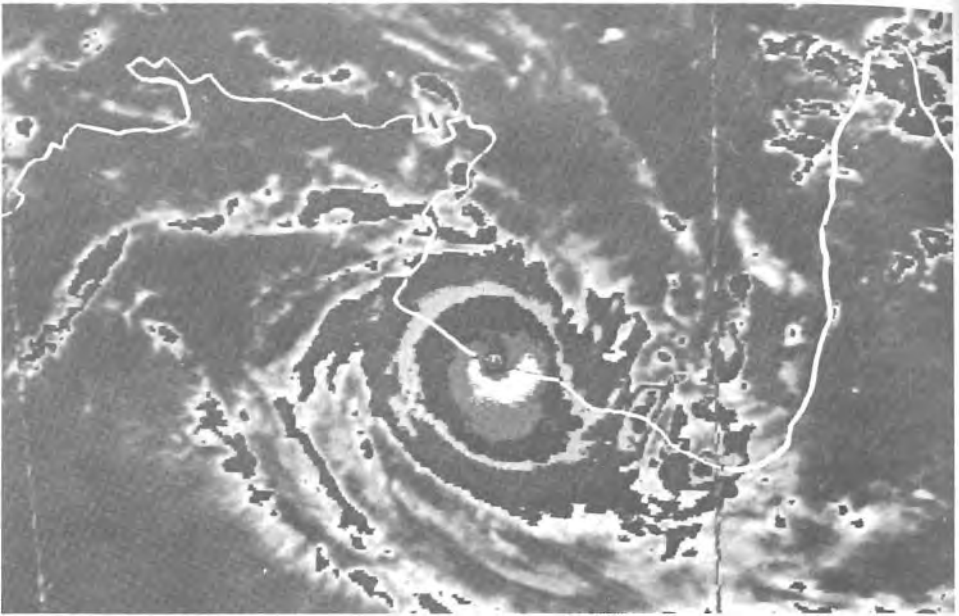
0915 hrs. Mate climbs down starboard boom and onto island. All crew safe and we are now able to ascertain that we are now on Brown Island⁽⁶⁾ reef . . .”⁽⁷⁾

As *Newfish I* struck the rocks, Tor Andersen could see the lights of other vessels hurrying past in the gloom. *Carlisle*, *Orpheus*, *Angela Wright* and *Gove Aries* were all driven southward past Brown and Willie Islets towards the mainland mud flats, to finish up to twenty kilometres from their anchorage at Walker Point. *Solo III* and *Goldsmith* were grounded on North Island. All of the remaining boats received various degrees of superficial damage but all were still afloat. Later that morning *Orpheus* picked up two survivors from *Lindeman* in the water southwest of Brown Islet. *Comac Endeavour* picked up three more close by. One crew member perished.

On nearby Centre Island Max Wiese who for many years had lived a lonely existence as caretaker and weather observer had spent a sleepless night. His shack, which was fairly sturdily constructed of corrugated iron and steel frame, and partially sheltered under the brow of a ridge, had stood up to the hurricane reasonably well. However the pelting rain had penetrated every corner as Max desperately tried to protect his personal effects in foam eskies. In between times he sent off regular weather reports by radio as the cyclone headed directly for his isolated outpost. Shortly before 6 a.m. as the screaming southerlies reached a crescendo the anemometer tower on top of the nearby ridge crashed to the ground. The last wind gusts recorded on the chart reached 232 kilometres per hour. However the barograph, protected in a large foam esky, recorded the whole sequence of events. As the eye passed directly over the island the pen plummeted to a low of 940 millibars.

Several holiday camps around the islands were utterly demolished. At Paradise Bay near the northern tip of North Island Ken Oliver and his companions sheltered in a nearby cave as the northwesterly gale and pounding seas swept sand a metre deep off the two kilometre long beach. Surrounding trees afterwards showed the effects of sandblasting as bare trunks stood with bark stripped and branches wrenched away. The corrugated iron residence was reduced to a jumbled ruin. At Clarkson Point on the south end of Vanderlin Island the Johnston residence withstood the blow fairly well. The strength of the wind was somewhat diminished there, and at any rate the homestead was of quite sturdy construction following the family's long experience with cyclones in the area.⁽⁸⁾

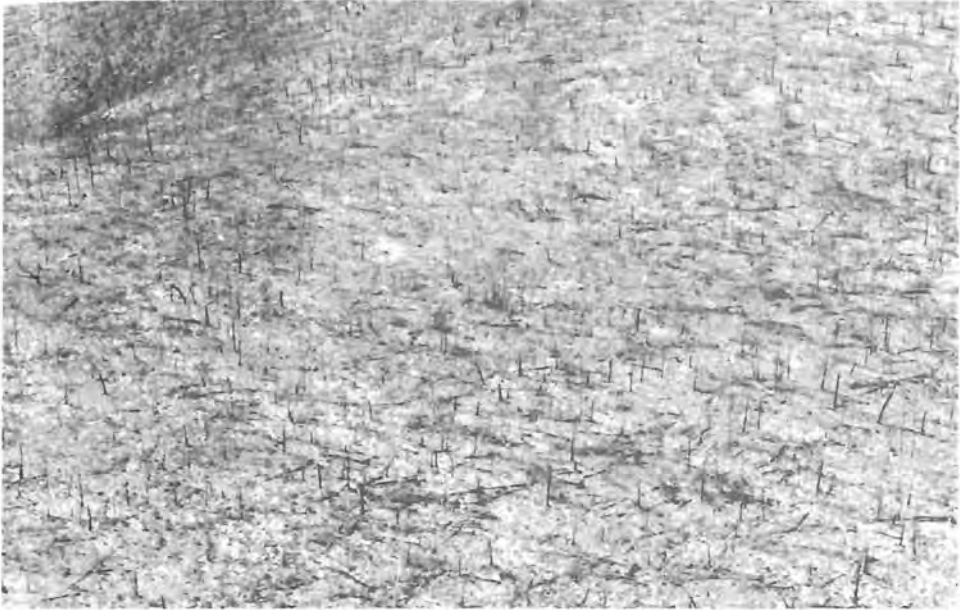
As Cyclone Kathy approached the mainland coast the sea surged in over the mudflats. On a headland jutting out into a wide shallow bay thousands of white egrets were smashed to pieces amongst the mangroves. About thirty dugongs and many hundreds of green turtles, which were feeding on the seagrass banks along the McArthur River delta, were picked up and hurled inland, to be left spreadeagled and utterly helpless all over the salt pans.



26. Enhanced infra-red satellite picture of Kathy at landfall.
(Bureau of Meteorology).



27. The prawn trawler *Newfish I* stranded on Willi Islet.
(Bureau of Meteorology).



28. Complete devastation of forest on Southwest Island, one of the Sir Edward Pellew Group. (Bureau of Meteorology).



29. Centre Island weather observer Max Weise, with the Cyclone Kathy wind record rescued from the wrecked anemometer. (Bureau of Meteorology).

Borrooloola, a small outback township near the banks of the McArthur River and about 45 kilometres from the coast, was well prepared as the cyclone bore down on it. During that Friday morning most of the town's 450 inhabitants gathered in the sturdily-built police station and gaol under the supervision of Senior Constable Mick Van Heythuysen. Although the cyclone centre passed just north of the town winds gusting to around 180 km/h buffeted the houses for five or six hours. Aboriginal shanties dotted around the area and many sheds and outhouses were demolished. Also several of the less-well constructed houses were badly damaged. All of the more sturdily built houses remained more or less intact. Vegetation damage was severe. In the town many mango trees were flattened. Many of the native trees were either felled or had much of their foliage removed. Kathy penetrated inland almost 300 kilometres before her winds abated below gale force. Broadmere Station some 150 kilometres from the coast was reporting winds of 100 km/h twelve hours after Kathy had moved inland. The tree damage extended over an area of 1.3 million hectares.⁽⁹⁾ The Pellew Islands were most severely affected. Apart from West Island and the southern end of Vanderlin Island the islands were totally devastated. In the worst areas about half of the timber was completely flattened. Any trees left standing were just bare poles with all bark and foliage stripped. Everywhere was stark brown — as if singed by some giant bushfire or nuclear blast.

A week after the cyclone, a rescue operation was mounted in order to save the stranded turtles and dugongs. The operation, costing around \$35 000, involved two helicopters with teams of workers who struggled in the mud through the daylight hours over a three-day period. The dugongs had dug themselves into wallows, and kept rolling over to keep themselves moist. By contrast, the turtles wandered aimlessly around, their tracks making crazy patterns on the salt pans. Many of these sea creatures were found long distances from the water. One dugong was marooned nine kilometres from the coast. In all, 23 dugongs and 162 turtles were airlifted back to their watery habitat. Most of the dugongs were saved but it was estimated that several hundred turtles perished.⁽¹⁰⁾

NOTES AND REFERENCES

CHAPTER ONE

1. See C. C. Macknight, *Voyage to Marege*, Carlton, Melbourne University Press, 1976.
2. See, for instance, D. J. Mulvaney, *Prehistory of Australia*, New York, Praeger, 1969.
3. Letter from Campbell to MacLeay, *Historical Records of Australia*, Series III Vol. V, p. 803.
4. The Port Essington settlement is described in detail by Peter Spillett in *Forsaken Settlement*, Dee Why West, Landsdowne Press, 1972, and by F. J. Allen, *Archaeology and History of Port Essington*, PhD thesis, Australian National University 1969.
5. Events aboard *Pelorus* and *Britomart* have been gleaned from the logs of the vessels, Mitchell Library ref. PRO 5744, 5762.
6. The 451 ton (459 tonne) barque *Orontes* struck a reef and sank near Vashon Head on 17 Dec. 1838. The reef now bears the name Orontes Reef.
7. A more comprehensive description of damage is given by Spillett, *op. cit.* pp. 56-59.
8. The surge would have occurred between 1 a.m. and 2 a.m. Astronomical observations of the time suggest that this coincided with low tide at Port Essington. Thus the total rise above normal tide level may have been five metres or more.
9. John Lort Stokes, *Discoveries in Australia*, London, Boone, 1846, Vol. 2, pp. 97-105.
10. *Ibid.*
11. The stranding and subsequent refloating of *Pelorus* is described in some detail in an article from the *Sydney Morning Herald*, 12 Jun. 1840 and reprinted in the *Nautical Magazine* of Sept. 1840, pp. 587-589.
12. In his 'Discoveries in Australia', Stokes intimates that the French explorer Dumont D'Urville had experienced the same storm in the Torres Straits before it reached Port Essington. However this is not possible. Dumont D'Urville left the Bay of Lampongs in Sumatra on 11 Oct. 1839 bound for Hobart at which port he arrived on 12 Dec. 1839, having sailed via the west coast of Australia. At the time of the Port Essington cyclone he was in the Southern Ocean, a continent removed from the Torres Straits! Dumont D'Urville did however meet heavy weather in the Torres Straits in Mar. 1839, whereupon he returned westward, visiting Raffles Bay and Port Essington in late Mar. early Apr. Apparently Stokes had later confused the two events. (See De M. S. Dumont D'Urville, *Voyage au Pôle Stud et dans L'Océanie, Histoire du Voyage*, Paris 1844 Vol. 6).
13. G. W. Earl, *Enterprise, Discoveries and Adventures in Australia*, London, Madden and Malcolm, 1846 pp. 87-88.
14. Owen Stanley, *Port Essington and the Passage to Timor and Swan River*, article in *Nautical Magazine*, Sept. 1840, pp. 583-586.
15. A. H. Chisholm, article in *The Emu* Vol. 38, 1938.
16. A biography of J. A. G. Little is contained in an article in the *Transmitter*, Vol. XI, No. 5, Sept. 17 1901. Further details were kindly provided by Mr. Claude Leonard of Telecom Museum, Adelaide.

17. See also *The Shackle* by Dudley Kelsey, Ira Nesdale (ed.) Blackwood, S.A., Lynton Publications, 1975 p. 99. Little's obituary is in *N.T. Times and Gazette*, 25 May 1906.
18. *N.T. Times and Gazette*, 19 Jan. 1878. This occurrence is often quoted as a tropical cyclone. This is not so.
19. At this time, the term "veer" was understood to be a counterclockwise rotation of the wind, the opposite to its present accepted meaning in Australia.
20. *N.T. Times and Gazette*, 21 Jan. 1882.
21. Related in *N.T. Times and Gazette*, 21 Jan. 1882.

CHAPTER TWO

1. Report by Christie to Government Resident 8 Jan. 1897. Government Resident's Incoming Correspondence, S. A. Archives 1374/1897.
2. *N.T. Times and Gazette*, 25 January 1897.
3. J. A. G. Little, in report to Sir Charles Todd. Copy held by Bureau of Meteorology, Darwin.
4. From the diary of Dudley Kelsey, S.A. Archives, and retold in Kelsey, *op. cit.* pp. 107-110.
5. Report by Chief Warden to Government Resident, S.A. Archives 1374/1897.
6. *N.T. Times and Gazette*, 25 Jan. 1897.
7. Report by Christie, *op. cit.*
8. Letter from Christie to Government Resident, Jan. 1897, S.A. Archives 1374/1897.
9. Letter to Harbourmaster, Correspondence files Marine and Harbours, S.A. Archives, G.R.G. 51/17/1897/58.
10. J. A. G. Little, *op. cit.*
11. Incoming correspondence Minister Controlling N.T., S.A. Archives 790.
12. *Ibid.*
13. *Ibid.*
14. *N.T. Times and Gazette*, 7 Jan. 1898.
15. Kurilla (nom de plume), "The Northern Territory Revisited", serial in *Public Service Review*, Sept. 1904 — Dec. 1904.
16. *N.T. Times and Gazette*, 1 Apr. 1898.
17. Bureau of Meteorology, *Rainfall Observations in Western Australia, 1876-1926*, Melbourne, Government Printer 1927, p. 175.

CHAPTER THREE

1. F. H. Bauer, *Historical Geography of White Settlement in Part of Northern Australia, Part 2: The Katherine-Darwin Region*, CSIRO, Division of Land Research and Regional Survey, Division Report No. 64/1, Canberra, 1964, p. 109.

2. Home and Territories Dept Corresp. File, Australian Archives, Darwin, CRS A3, 15/1942.
3. *N.T. Times and Gazette*, 11 Mar. 1915.
4. It has not been established whether or not these two vessels and their crews survived.
5. Bathurst and Melville Island rainfall returns, Feb. 1915, Australian Archives, Darwin, 1980/351.
6. *N.T. Times and Gazette*, 11 Mar. 1915.
7. Australian Archives, Darwin, CRS A3 15/1942 *op. cit.*
8. Charles Point rainfall return, Dec. 1915, Australian Archives, Darwin 1980/351.
9. *N.T. Times and Gazette*, 30 Dec. 1915.
10. Reported at length in *N.T. Times and Gazette*, 5 Apr. 1917.
11. See also *N.T. Times and Gazette*, 12 Apr. 1917.
12. This figure has been exceeded only twice since.
13. Wyndham weather reports Mar. 1919, Bureau of Meteorology, Perth.
14. Darwin Post Office weather reports Mar. 1919, Australian Archives, Darwin, 1980/351.
15. *N.T. Times and Gazette*, 8 Mar. 1919.
16. *N.T. Times and Gazette*, 22 Mar. 1919.
17. *Ibid.*
18. F. X. Gsell, *The Bishop with 150 wives*, Sydney, Angus and Robertson, 1956, p. 126.
19. From information supplied by Bro. Pye of Bathurst Island, and from the author's inspection of the site and subsequent calculations, the storm surge is estimated to have been 5 to 6 metres.
20. Cape Don rainfall return, Australian Archives, Darwin, 1980/351.
21. *N.T. Times and Gazette*, 12 Apr. 1919.

CHAPTER FOUR

1. *The Bulletin*, 17 Mar. 1921.
2. Australian Archives, Canberra, Home and Territories Department correspondence file, CRS A3, 21/1077.
3. Alan Powell, *Far Country*, Carlton, Victoria, Melbourne University Press, 1982, p. 136.
4. The cyclone is described scientifically by H. E. Whittingham in "The Douglas Mawson Tropical Cyclone of 1923", appendix to Bureau of Meteorology, *Tropical Cyclones in the Northern Australian Regions for 1964-65 season*, Melbourne Government Printer, 1968. A popularised (but factual) version is also provided by Hector Holthouse in *Cyclone*, Adelaide, Rigby, 1977.

5. Perriman's story has been pieced together from several different sources:
 - (a) K. E. Cole, *Perriman in Arnhemland*, Parkville, Church Missionary Historical Publications, 1973.
 - (b) Australian Institute of Aboriginal Studies Canberra, Dyer mss, letter Perriman to Dyer.
 - (c) Australian Archives, Darwin, Emerald River rainfall return, Mar. 1923, 1980/351.
6. K. E. Cole, *op. cit.*, pp. 23-24.
7. Australian Archives, Darwin, Roper Mission rainfall return, Mar. 1923, 1980/351.
8. *Daily Mail*, Brisbane, 31 May 1923.
9. Letter from Shire Clerk to Marine Board of Inquiry in Brisbane, and quoted by H. E. Whittingham in *Sea Conditions in the Southern Gulf of Carpentaria during the Douglas Mawson Hurricane of Mar. 1923*, unpublished paper, copy held by Bureau of Meteorology, Darwin.
10. Sir W. Clarkson, *Report . . . on the possibility of developing a harbour at the mouth of the McArthur River*, Commonwealth Parliamentary Papers, 1923-24 Vol. 4, pp. 1949-55. Clarkson's estimate of the surge (18 ft) was later disputed by railways surveyor Tucker who said that it should have been more like 8 ft (2.4 m) G. W. Tucker, Reports to the Chief Engineer of Way and Works, Melbourne:
 - (a) Rocky Island to Borroloola, Trial Survey. Preliminary Report, Aug. 1924.
 - (b) Final Report, May 1925, quoted in Whittingham *Sea conditions . . .*, *op. cit.*
11. *Daily Mail*, Brisbane, 6 Jul. 1923.
12. *N.T. Times and Gazette*, 1 Apr. 1924.
13. *N.T. Times and Gazette*, 12 Aug. 1924.
14. Reprinted in *N.T. Times and Gazette*, 19 Sept. 1924.
15. The *Sydney Daily Telegraph* articles are summarised in *N.T. Times and Gazette*, 19 Sept. 1924. The *N.T. Times and Gazette* carried a stream of articles on the "captive women" between June and October 1924.
16. N.T. Administrator's Report, June 1938.

CHAPTER FIVE

1. Capt. A. Donaldson, *Fifty Years too Soon*; Sydney, 1948.
2. *Northern Standard*, 13 Jan. 1935.
3. *Northern Standard*, 1 Feb. 1935.
4. Emerald River rainfall return, Jan. 1935, Australian Archives, Darwin, 1980/351.
5. Mornington Island rainfall return, Jan. 1935, Bureau of Meteorology, Brisbane.
6. Darwin Met. Office weather records Mar. 1937, Australian Archives, Darwin, 1976/107.
7. *Northern Standard*, 12 Mar. 1937.

8. Administrator's correspondence file, Aust. Archives, Darwin CRS F1, 37/296.
9. C. T. G. Haultain, *Watch off Arnhem Land*, Canberra, Roebuck Society, 1979, p. 107.
10. This information was passed on by the late Capt. Tom Milner for many years chairman of N.T. Port Authority who spoke to several survivors of the cyclone.
11. *Northern Standard*, 16 Mar. 1937.
12. Report by the captain, V. J. Clark, Administrator's correspondence file, Aust. Archives, Darwin, CRS F1, 37/296.
13. *Northern Standard*, 19 Mar. 1937.
14. N.T. Administrator's Report, June 1937.
15. *Northern Standard*, 19 Mar. 1937.

CHAPTER SIX

1. A. J. Dyer mss, held by Australian Institute of Aboriginal Studies Canberra. The author is indebted to the Church Missionary Society for permission to publish this extract. Perriman's version of the story is related by Keith Cole in *Perriman in Arnhemland*, *op. cit.* pp. 86-89.
2. Mahony's own colourful version of the Roper Flood is contained in an article in the police journal *Citation*, June 1966, pp. 11-16.
3. Australian Archives, Darwin, Mahony Papers, 1981/162.
4. Australian Archives, Darwin, Letter from Mission superintendent (Stanley Port) to Director of Native Affairs, 6 Feb. 1940, CRS F1, 40/297.
5. *Northern Standard*, various articles between 12 Jan. and 23 Jan. 1940.

CHAPTER SEVEN

1. Port Keats rainfall return, Feb. 1942. Australian Archives, Darwin, 1980/351.
2. *Northern Standard*, 23 Apr. 1948.
3. *Northern Standard*, 5 Mar. 1948.
4. T. Milner, Unpublished record of interview with Mr Steve Johnston of Vanderlin Island, copy held by Bureau of Meteorology, Darwin.
5. *Northern Standard*, 10 Dec. 1948.
6. John Pye, *The Tiwi Islands*, Darwin, Coleman, 1977, pp. 39-40.
7. *Northern Standard*, 3 Dec. 1948.
8. Daly River Police Station rainfall return Dec. 1948, Australian Archives, Darwin, 1980/351.
9. *N.T. News*, 10 Apr. 1952.
10. *N.T. News*, 7 Mar. 1957.

11. A personal account of the flood on the Daly River is related by Nancy Polishuk in *Life on the Daly River*, Douglas Lockwood co-author, Adelaide, Rigby, 1976, p. 73.
12. Bureau of Meteorology, "Tropical Cyclones in the Northwestern Australian region during the 1960-61 season," *Australian Meteorological Magazine* 37, Melbourne, Government Printer, 1962, pp. 35-46.

CHAPTER EIGHT

1. An insight into Australian meteorology prior to 1908 is given by W. J. Gibbs in "The Origins of Australian Meteorology" *Bureau of Meteorology Historical Note No. 2*, Canberra, A.G.P.S., 1975.
2. Alan Powell, *op. cit.* p. 183. Langford Smith relates his experiences in *Sky Pilot in Arnhemland*, Sydney, Angus and Robertson 1935, and *Sky Pilot's last Flight*, Sydney, Angus and Robertson, 1936.
3. The development of the Bureau during and since the Second World War is described by W. J. Gibbs in "A prespective of Australian meteorology", *Australian Meteorological Magazine* 30, Canberra, A.G.P.S., 1982, pp. 3-17.
4. See W. J. Gibbs, *Origins . . . op. cit.* For a more comprehensive treatment of Wragge's early career, see George F. Loyau, *Notable South Australians*, Adelaide, Reprinted 1978.

CHAPTER NINE

1. Case histories of Northern Territory cyclones since 1964 are held in the Darwin Regional Office of the Bureau of Meteorology.
2. *N.T. News*, editorial 7 Dec. 1971.
3. *N.T. News*, 18 Nov. 1970.
4. Bureau of Meteorology, *Report on Cyclone Tracy, Dec. 1974*, Canberra, A.G.P.S., 1977.
5. Darwin Reconstruction Commission, First Annual Report, 1975.
6. C. H. Gurd, A. Bromwich and J. V. Quinn, "The Health Management of Cyclone Tracy," *Medical Journal of Australia*, 1, 1975, pp. 641-644.
7. G. R. Walker, *Report on Cyclone Tracy — Effect on Buildings*, Canberra, Dept Housing and Construction 1975, Vol. 1 p. 4.2.
8. Information on damage to aircraft and facilities at Darwin Airport was provided by courtesy of Department of Aviation, Darwin.
9. G. C. Stocker, *Report on damage to natural vegetation in the Darwin area after Cyclone Tracy*, Department of Primary Industry Forestry and Timber Bureau leaflet No. 127, Canberra, A.G.P.S., 1976, p. 10.
10. Natural Disasters Organisation, *Darwin Disaster: Cyclone Tracy, Report by Director General, N.D.O., on the Darwin relief operations*, Canberra A.G.P.S., 1975. This is the official report on the relief operation. Stretton's own story of the operation is given in *The Furious Days; The Relief of Darwin*, Sydney, Collins, 1976.

11. Darwin Reconstruction Commission, Second Annual Report, 1976.
12. In addition to the references given above and in the Select Bibliography see also the following:
 - F. Irwin, "The effectiveness of Darwin's cyclone warning system", BA (Hons) thesis, ANU 1979.
 - G. Parker, "Psychological disturbance in Darwin evacuees following Cyclone Tracy", *Med J. Aust.*, 1:650, 1975.
 - J. Scanlon, "Day one in Darwin: Once again the vital role in communications", in *Planning for People in Natural Disaster* ed. By J. I. Reid, 1979.
 - G. R. Walker, "A review of the impact of Cyclone Tracy on Australian Building regulations and practice", *Civ. Eng. Trans. Aust.* Vol CE22, No. 2, 1980.
 - K. S. Walters, "The reconstruction of Darwin after Cyclone Tracy", *Disasters*, V.2 (1): 59-68. 1978.
 - F. L. Wilkinson, "Interim Report on Cyclone Tracy storm surge at Darwin", 25 Dec. 1974, Dept Hous. and Const. Canb. 1975.
13. N. R. Britton, "Darwin's Cyclone Max", Disaster Investigation Report No. 4, Centre for Disaster Studies, James Cook Univ. 1981.

CHAPTER TEN

1. Bureau of Meteorology, Cyclone Ted case history report.
2. Details of events on board the various trawlers have been gleaned from the written reports of the captains, and from personal interviews with some crew members.
3. This barometer was later checked against a Bureau of Meteorology standard barometer and the eye reading calculated to be 938 mb.
4. The storm surge in Barbara Cove was measured at 3.5 metres.
5. Gunar and other residents of the Pellew Islands were interviewed personally by the author after the cyclone.
6. Actually, it was Willi Islet, which lies two kilometres northeast of Brown Islet.
7. Published with permission of KfV Fisheries Pty Ltd. A copy of the log of *Newfish I* is held by the Bureau of Meteorology, Darwin.
8. Steve Johnston remembered the last severe cyclone in Mar. 1948 (ref. p. 47).
9. This was calculated by the author after inspection of the area.
10. Details of the rescue operation were provided by W. Freeland of the Conservation Commission, Darwin.

SELECT BIBLIOGRAPHY

- Australian Archives, Canberra Cyclone at Darwin March 1937 File CRS A1 37/4701
- Australian Archives, Darwin Original Rainfall Returns — various N.T. Stations, 1869-1974. Acc. 1980/351
- Bureau of Meteorology Report on Cyclone Tracy, December 1974, Canberra A.G.P.S. 1977
- Bureau of Meteorology Case History Reports, various cyclones. Regional Office, Darwin
- Cole, Keith *Perriman in Arnhemland*, Parkville, Vic., Church Missionary Historical Publications, 1973
- Cole, Keith *A Short History of the C.M.S. Roper River Mission, 1908-1968*, Parkville, Vic., Church Missionary Historical Publications, 1968
- Cole, Keith *Winds of Fury: The full true story of the great Darwin disaster*, Adelaide, Rigby, 1977
- Darwin Reconstruction Commission Annual Reports 1975, 1976, 1977
- Donaldson, Capt. A. *Fifty Years Too Soon*, Sydney, 1948
- Dyer, A. J. "Reminiscences 1915-1934", Australian Institute of Aboriginal Studies, M.S. 7 (unpublished)
- Durisch, P, Howarth, R. and Stevens, K. "Cyclone! Christmas in Darwin 1974," *Sydney Morning Herald*
- Gibbs, W. J. "A Perspective of Australian Meteorology, 1939-1978". *Australian Meteorological Magazine*. 30 (1982) 3-17. Canberra, A.G.P.S.
- Holthouse, Hector *Cyclone*, Adelaide, Rigby, 1977
- Lourensz, R. S. "Tropical Cyclones in the Australian Region July 1909 to June 1980," *Bureau of Meteorology, Meteorological Summary*, Canberra, A.G.P.S. 1981
- Mahony, J. "Roper River as a Watering Place for Policemen," *Citation*, June 1966
- Mitchell Library Log of Proceedings of HM *Pelorus*, HM *Britomart*. P.R.O. Reels 5744, 5762
- Natural Disasters Organisation Darwin Disaster: Cyclone Tracy. *Report by Director General N.D.O. on the Darwin Relief Operations*, Canberra A.G.P.S. 1975
- Northern Standard* Various issues, 1921-1953
- N.T. News* Various issues, 1952 to date
- N.T. Times and Gazette* Various issues 1873-1923

- Powell, Alan *Far Country*, Carlton, Vic., Melbourne University Press 1982
- Pye, John *The Tiwi Islands*. Darwin, Coleman, 1977
- South Australian Archives Incoming Correspondence of the Government Resident. Acc. 1374/1897
- South Australian Archives Incoming Correspondence of Minister Controlling the N.T. Acc. 790
- Spillett, Peter *Forsaken Settlement*, Dee Why West, Sydney, Lansdowne Press, 1972
- Stretton, Alan *The Furious Days* Sydney, Collins, 1976
- Visher, S. and Hodge D. "Australian Hurricanes and Related Storms," *Bureau of Meteorology Bulletin* No. 16, Melb. 1925
- Whittingham, H. E. "The Douglas Mawson Cyclone of 1923," Appendix to *Tropical Cyclones in the Northern Australian Regions for 1964-65 Season*, Bureau of Meteorology, Melbourne 1968.

APPENDIX 1:

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1827 2-3 Apr.	Severe gales battered Fort Dundas (Melville Is.) destroying fences, gardens and wharf, and unroofing buildings.	
1839 24-25 Nov.	Port Essington settlement virtually demolished by hurricane winds. H.M. <i>Pelorus</i> driven ashore with eight lives lost. Swathe cut through trees on Cobourg Peninsula.	Lowest pressure 965 mb, Storm surge to 3.2 m (M) above spring tide level.
1882 16-17 Jan.	Strong gales in Darwin with severe damage to buildings.	Lowest pressure 994 mb.
1891 19-23 Feb.	Strong southerly gales and heavy rain at Borroloola.	
1897 6-7 Jan.	Hurricane winds and torrential rain at Darwin. Township flattened and pearling fleet decimated. At least 28 lives lost. Vegetation destroyed over a wide area.	Lowest pressure 960 mb. 296 mm of rain in 12 hours.
1898 27-29 Mar.	Strong winds with heavy rain and severe flooding between Darwin and Daly River.	Lowest pressure 994 mb.
1909 12-13 Mar.	Cyclonic weather at Borroloola and at mouth of McArthur River.	
1910 9-10 Apr.	Gales and heavy rain in Darwin area. No damage reported.	
1913 30-31 Jan.	Strong gales and heavy rain in Darwin-Melville Is. area.	
1914 2-4 Jan.	Trees blown down and buildings unroofed at Roper Mission. Heavy rains over Top End.	
1915 25-26 Feb.	Hurricane winds sank fishing vessels and destroyed trees in Croker Is.-Port Essington area. Trees uprooted and buildings damaged at Bathurst, Melville Is. At least six lives lost.	250 mm rain in 8 hours at Bathurst Is.
1915 22-24 Dec.	Severe tree damage in Charles Point-Grose Is. area. Torrential rain and heavy flooding.	Lowest pressure 977 mb at Charles Point.

(M) measured

(E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1917 1 Apr.	Moderate damage to Darwin buildings. Many trees destroyed north of town. Sampan sunk with crew of three drowned near Point Blaze.	Lowest pressure in Darwin 996 mb. 364 mm in 24 hours at Brocks Creek.
1919 3-11 Mar.	Hurricane winds and storm surge destroyed Bathurst Is. Mission. One baby drowned. Thousands of trees destroyed near Cape Don. Hurricane winds near Pellew Islands.	440 mm in 40 hours at Wyndham. Lowest pressure at Cape Don 986 mb.
1920 21-22 Dec.	Gales and heavy rain from Cape Don to Charles Point.	Lowest pressure in Darwin 992 mb.
1921 8-9 Jan.	17 hours of hurricane winds at Vanderlin Is. demolished gardens, fences, building and boats.	
1922 11-13 Mar.	Strong winds and heavy rain between Darwin and Wyndham. Motor launch sunk at Pearce Point.	
1923 29-31 Mar.	Hurricane winds and storm surge destroyed buildings and vegetation on Groote Eylandt. Buildings damaged and 70 goats drowned at Roper Mission. Steamer <i>Douglas Mawson</i> sunk in Gulf of Carpentaria with 20 lives lost. Severe damage also in Torres Straits Is.	Wind gusts to 160 km/h (E) and 6.7 m storm surge (M) at Groote Eylandt.
1929 27-28 Feb.	Gales and torrential rain at Groote Eylandt and Roper River. Ketch washed ashore at Groote.	
1930 7-8 Jan.	Strong winds and heavy rain at Roper River. Strong winds at Groote Eylandt.	
1931 24-27 Jan.	Gales and torrential rain at Groote Eylandt. Much flood damage.	498 mm in 3 days at Groote Eylandt.
1931 6-9 Apr.	Cyclonic winds and storm surge at Groote Eylandt. Sawmill demolished by flood.	539 mm in 48 hours, 6.5 m storm surge (M)
1935 12-18 Jan.	Hurricane winds and phenomenal seas in Arafura Sea. ss <i>Marella</i> slightly damaged. Some building damage at Cape Don. Trees destroyed on Groote Eylandt. Severe effects at Vanderlin Is.	Winds to 160 km/h (E) in Arafura Sea. 340 mm in 14 hours at Cape Don.

(M) measured (E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1937 8-11 Mar.	Hurricane winds severely damaged Darwin. Huge seas in harbour and several boats stranded. One man killed. Widespread destruction of vegetation.	Wind gusts to 158 km/h (M). Lowest pressure 982 mb.
1938 4 Feb.	Cyclonic winds and torrential rain at Borroloola and Vanderlin Is.	300 mm in 24 hours at Borroloola.
1940 4-8 Jan.	Galeforce winds and torrential rain especially in Roper Valley. Biggest floods seen over Top End. Roper Mission destroyed. Roper Police Station severely damaged, many homesteads marooned.	
1940 24-25 Mar.	Gales and heavy rain at Groote Eylandt.	Wind gusts to 106 km/h (M)
1943 17 Dec.	Cyclonic weather at Vanderlin Island.	
1945 20-22 Dec.	Gales and heavy rain at Goulburn Is. and Milingimbi.	
1948 20-23 Feb.	Trees stripped of foliage at Elcho Is. Torrential rain in western Gulf of Carpentaria. Borroloola Township badly damaged	358 mm in 2 days at Yirrkala.
1948 6 Mar.	Homestead on Vanderlin Is. demolished. Severe damage to vegetation on Pellew Islands.	3.7 m storm surge (M) at Vanderlin Is.
1948 29 Nov.- 3 Dec.	Strong gales caused severe damage on Bathurst and Melville Is. Sawmill at Snake Bay badly damaged. Lugger <i>La Grange</i> wrecked with ten lives lost. Moderate damage in Darwin.	Winds to 160 km/h (E) near Melville Is.
1950 9-13 Apr.	Gales on Groote Eylandt. Heavy rains in western Gulf of Carpentaria.	
1950 10-12 Dec.	Gales and rough seas along north coast. Strong gales and storm surge at Groote Eylandt.	Winds to 128 km/h (E) at Groote Eylandt.
1952 19 Jan.	Galeforce winds and high tides on Groote Eylandt.	

(M) measured

(E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1952 3-6 Apr.	Hurricane winds and torrential rain in western Gulf of Carpentaria. Yirrkala Mission badly damaged.	Winds to 160 km/h (E) at Yirrkala.
1953 17-18 Apr.	Severe gales flattened gardens, crops and scrubland at Goulburn Is.	Winds to 113 km/h (E) at Goulburn and Croker Is.
1954 9-11 Apr.	Severe gales and heavy rain from Cape Don southward. Buildings damaged at Cape Don and Koolpinyah Station. Several boats wrecked in Darwin harbour.	Mean winds to 110 km/h (E) at Cape Don.
1956 24-26 Mar.	Near hurricane force winds damaged gardens and bushland between Elcho and Goulburn Is.	Winds to 130 km/h (E) at Milingimbi.
1957 5-7 Mar.	Heavy rains and severe flooding over large areas of Top End, especially near Katherine.	
1957 7-11 Apr.	Gales and heavy rain at Milingimbi and Elcho Is.	Ship reported winds to 115 km/h (E).
1958 12-16 Apr.	Strong gales and heavy rain in western Gulf of Carpentaria. Many trees blown down.	399 mm in 24 hours at Yirrkala.
1959 17-18 Jan.	Gales in Groote Eylandt area. No damage reported.	
1959 1-6 Apr.	Very heavy rains over western Top End. Gales at Port Keats.	Winds to 96 km/h (E) at Port Keats.
1959 24-26 Dec.	Galeforce winds flattened crops along north coast. Buildings damaged at Milingimbi.	Winds to 130 km/h (E) Goulburn and Elcho Is.
1961 16-18 Jan.	Gales and rough seas along north coast.	
1963 11-13 Apr.	Galeforce winds and rough seas on northeast Arnhemland coast.	Winds to 126 km/h at Elcho Is.

(M) measured (E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1964 10-12 Jan.	Audrey — Torrential rains over Barkly Tableland.	
1964 29-31 Jan.	Dora — Gales and very heavy rain over northeast Arnhemland.	289 mm in 24 hours at Yirrkala.
1964 1-4 Dec.	Flora — Heavy rains on north coast and Gulf of Carpentaria. Heavy flooding at Adelaide River.	400 mm in 48 hours at Maningrida.
1965 22 Feb.- 1 Mar.	Marie — Heavy rain and rough seas on north coast. Lugger badly damaged near Elcho Is.	
1965 25-31 Dec.	Amanda — Heavy rain, gales and rough seas on north coast. Two radio towers damaged.	437 mm in 48 hours at Noonamah.
1967 13-19 Mar.	Cynthia — Torrential rain and gales in western Gulf of Carpentaria. Boats and bridges damaged at Groote Eylandt.	419 mm in 24 hours at Angurugu.
1968 19-20 Jan.	Bertha — Roughseas in the Bonparte Gulf. No damage reported.	
1969 1-5 Mar.	Audrey — Gales, rough seas and heavy rain on north and west coasts. Four fishermen drowned at Goulburn Is. Some tree damage and minor building damage at Milingimbi and Maningrida.	Wind gusts to 160 km/h (M) in Bonaparte Gulf.
1970 15-22 Mar.	Cindy — Flood rains badly damaged beefrood on Barkly Tableland. Wharf damaged at Groote Eylandt.	
1970 28-30 Nov.	Beverley — Gales from Milingimbi to Yirrkala. Heavy rain especially at Elcho Is. Little damage.	339 mm in 24 hours at Elcho Is.
1971 1-4 Feb.	Aggie — Gales and heavy rain in southern Gulf of Carpentaria. No damage reported.	Wind gusts to 113 km/h (M) at Vanderlin Is.
1971 4-5 Dec.	Kitty — Gales and heavy rain Cape Don to Darwin. Trawler partly damaged in Beagle Gulf.	400 mm in 24 hours at Delissaville.
1973 27-29 Jan.	Adeline — Gales and heavy rain in southern Gulf of Carpentaria. No damage reported.	

(M) measured

(E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

DATE	EFFECTS	METEOROLOGICAL EXTREMES
1973 26-28 Feb.	Leah — Gales and heavy rain in Groote Eylandt area. Launch wrecked at Numbulwar.	
1973 5-6 Mar.	Madge — Severe damage at Angurugu and elsewhere on Groote Eylandt and also at Numbulwar. Buildings badly damaged, trees uprooted, a jetty washed away and a barge sunk.	Wind gusts to 180 km/h (E) at Angurugu. 421 mm in 14 hours at Angurugu.
1973 22-25 Mar.	Bella — Gales and heavy rain in western Gulf of Carpentaria. No damage reported.	
1973 17-21 Nov.	Ines — Trees uprooted on Croker Is. Buildings unroofed on Bathurst Is., rough seas on north coast.	
1974 1-5 Dec.	Selma — Gales, rough seas and heavy rain in Bathurst Is.-Darwin area. Little damage.	
1974 21-25 Dec.	Tracy — City of Darwin devastated. 65 people killed and majority of 45 000 population left homeless when at least 90% of homes demolished or badly damaged. About 45 vessels of various sizes either damaged or wrecked in Darwin harbour. Vegetation around Darwin laid bare.	Maximum wind gust 217 km/h (M). Lowest pressure 950 mb. 255 mm rain in 12 hours.
1975 11-14 Mar.	Wilma — Gales and rough seas along north coast and in Bonaparte Gulf.	Winds to 120 km/h (E) in Bonaparte Gulf.
1975 6-8 Apr.	Amelia — Gales and heavy rain in Northeast Arnhemland. No damage reported.	
1975 3-9 Dec.	Kim — Gales and very heavy rain in Gove area. Slight wind damage at Nhulunbuy.	Wind gusts to 140 km/h at Gove.
1976 17-19 Dec.	Ted — Severe gales and rough seas in Gulf of Carpentaria. Trees blown down on Groote Eylandt and Pellew Islands. Severe destruction at Mornington Is. and Burketown (Qld).	
1977 29 Apr.- 2 May	Verna — Gales, heavy rain and rough seas on north coast.	298 mm in 24 hours at Croker Is.

(M) measured (E) estimated

APPENDIX 1: (cont.)

CHRONOLOGY OF TROPICAL CYCLONE EVENTS IN THE NORTHERN TERRITORY

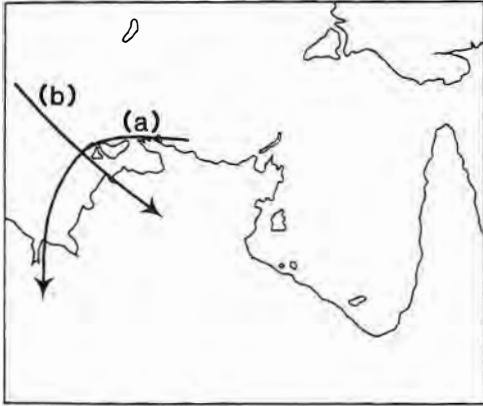
DATE	EFFECTS	METEOROLOGICAL EXTREMES
1978 5-7 Apr.	Hal — Gales and rough seas in Gulf of Carpentaria. No damage reported.	
1978 29-31 Dec.	Peter — Gales and rough seas in Gulf of Carpentaria. Fishing vessel on rocks in Gove harbour.	
1979 23-26 Feb.	Rosa — Gales and rough seas in southwest Gulf of Carpentaria. Station buildings and large areas of vegetation damaged in Roper/McArthur district. High tides reported.	Winds to 169 km/h (M) in research aircraft.
1980 15-17 Mar.	Doris — Gales and very heavy rain in Gove/Groote Eylandt area. Yacht washed aground at Gove.	278 mm in 24 hours at Gove.
1981 9-11 Feb.	Eddie — Gales in southern Gulf of Carpentaria and through central N.T.	Wind gusts to 143 km/h (M) at Elliott.
1981 10-13 Mar.	Max — Gales between Maningrida and Darwin. Torrential rain especially in western Arnhemland and near Maningrida. Trees blown down in Darwin. Severe flooding around Jabiru.	426 mm in 24 hours at Maningrida. Wind gusts to 107 km/h (M) in Darwin.
1982 16-17 Jan.	Bruno — Gales and rough seas in the Bonaparte Gulf. Some trees blown down near Peron Is.	
1984 3-5 Mar.	Ferdinand — Gales and rough seas in Goulburn Is. Maningrida area. Severe flooding in Katherine and Daly Rivers.	Two vessels reported winds of around 120 km/h off north coast.
1984 9-11 Mar.	Jim — Gales in the southwestern Gulf of Carpentaria. Trees blown down and many buildings damaged at the Roper Mission.	
1984 20-23 Mar.	Kathy — Hurricane winds and phenomenal seas in the Gulf of Carpentaria. Sir Edward Pellew Islands devastated. One man drowned when one trawler sank and two others stranded on rocks. Moderate to severe damage in Borroloola township. Large numbers of turtles and dugongs stranded by storm surge.	Wind gusts to 232 km/h (M) and min. pressure, 940 mm (M) at Centre Is. Storm surge 4.2 metres (M) at Vanderlin Is.

(M) measured

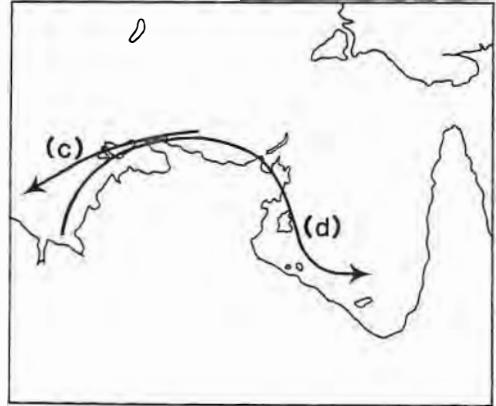
(E) estimated

NOTE: The foregoing chronology contains all of the tropical cyclones *known to have affected* the Northern Territory. Many other storms have occurred, but there is insufficient evidence that they complied with the strict definition of a tropical cyclone (see Preface). A number of tropical cyclones, especially in latter years, which formed in the area but which had little effect on the Territory in terms of adverse weather or damage, have been omitted. In some places differences occur with the data given in the R. S. Lourensz publication (see bibliography) which forms part of the official Bureau of Meteorology record of cyclones in the Australian region. Whilst I am confident that these differences can be justified by the material I have uncovered, they have yet to be validated. The chronology should not be regarded, therefore as an official record.

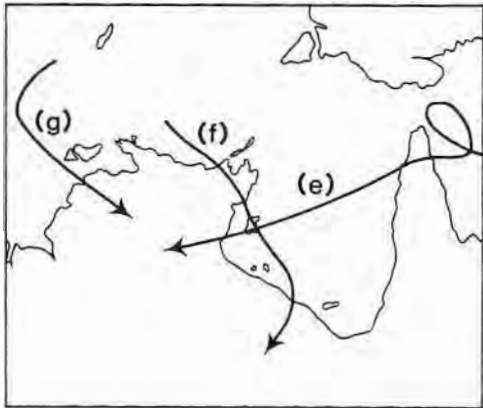
APPENDIX 2: TRACKS OF SOME NOTABLE NORTHERN TERRITORY CYCLONES.



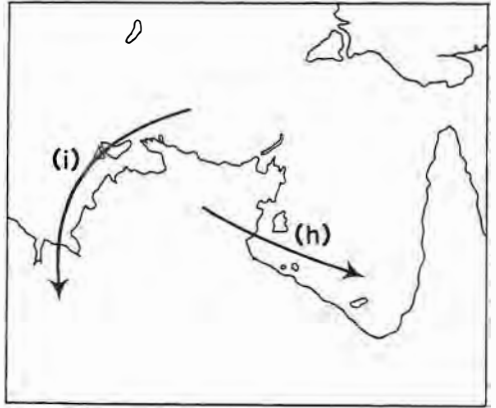
(a) 25-27 Nov. 1839
(b) 5-7 Jan. 1897



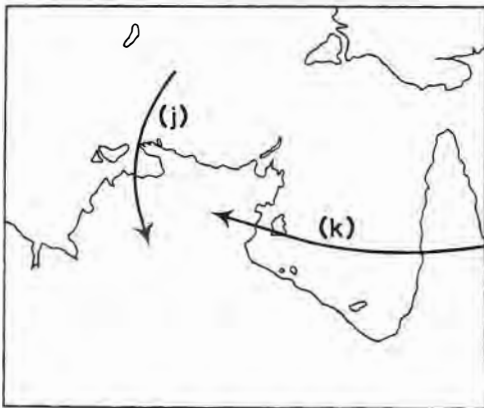
(c) 25-26 Feb. 1915
(d) 3-13 Mar. 1919



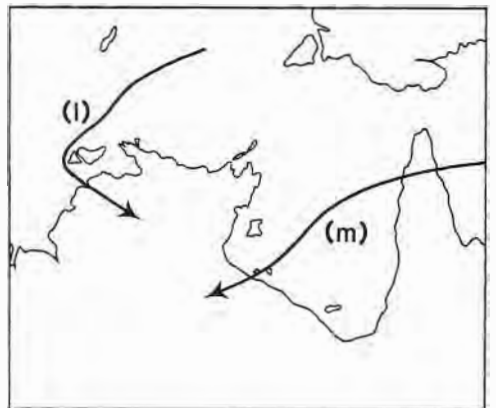
(e) 24-31 Mar. 1923
(f) 13-19 Jan. 1935
(g) 7-11 Mar. 1937



(h) 8-12 Jan. 1940
(i) 30 Nov.-3 Dec. 1948



(j) 9-11 Apr. 1954
(k) Madge, 5-6 Mar. 1973



(l) Tracy, 22-25 Dec. 1974
(m) Kathy, 20-23 Mar. 1984

NOTE: Some of the above tracks differ from equivalent tracks in the R. S. Lourenz publication referred to in the note to Appendix 1.

APPENDIX 3:

SHIPPING CASUALTIES IN THE GREAT DARWIN HURRICANE, 1897

NAME	TYPE OF VESSEL	TONNAGE	EFFECT OF CYCLONE	LIVES LOST	EVENTUAL FATE
Zuleika	steam launch	12	Stranded just SE of Middle Pt	0	condemned
Ark	cutter	6	Foundered — spot unknown	0	not found
Wairil	lugger	14	Foundered west of outer end railway jetty	0	raised and repaired
Sapphire	lugger	5	Foundered at W end of railway jetty	0	raised and repaired
Black Jack	lugger	6	Foundered - spot unknown	0	not found
Cleopatra	lugger	9	Capsized in shoal water near railway jetty	0	righted at low water and repaired
Jack	lugger	11	Foundered — spot unknown	0	not found
Scout	lugger	14	Stranded on Middle Pt just east of Leper Stn	0	total wreck
Maggie	lugger	14	Foundered in 7 fms 1 mile ENE of Leper Stn	3	total wreck
Brisbane	lugger	11	Foundered — spot unknown	4	not found
Revenge	schooner	15	Foundered off SE end of railway jetty	0	abandoned
Roebuck	schooner	10	Stranded near mangroves 1 mile S of Middle Pt.	0	total wreck
Cleopatra	schooner		Collided with railway jetty and foundered	0	broke up — total wreck
Olive	schooner	11	Foundered in 14 fms SW of Fort Hill	1	total loss
Florence	schooner	10	Stranded in mangroves — mainland N of Channel Is.	0	floated off and repaired
Gertrude	schooner	10	Foundered in shoal water on Middle Pt	0	righted and repaired
Minnehaha	schooner	14	Stranded on mainland E of N Shell Is.	0	repaired and floated off again
Midge	schooner	15	Stranded in mangroves near Middle Pt	2	floated off and repaired
Florence	schooner		Stranded on beach 3 miles ENE Cape Don	0	floated off and repaired

REFERENCES: S. A. Archives — Corresp. files, Marine and Harbours, 51/17/1897/235. N.T. Govt. Resident's Report, 1897-1898

APPENDIX 4:

SHIPPING CASUALTIES IN DARWIN HARBOUR FROM CYCLONE TRACY*

NAME	TYPE	LENGTH (METRES)	EFFECT OF CYCLONE TRACY	CONDITION	CONDITION 2 APR. 1975
HMAS Arrow	Patrol boat (S)	30	Under Stokes Hill Wharf	Wrecked	Wrecked — Frances Bay
HMAS Advance	Patrol Boat (S)	30	Afloat	Damaged	Operational
HMAS Attack	Patrol Boat (S)	30	Aground at Larrakeyah	Damaged	Under repair
Larrakia	Pilot Boat (W)	17	Aground near Fort Hill Wharf	Damaged	Under repair
Gunyana	Pilot Boat (W)	13	Missing	Unknown	—
John Stokes	Pilot Boat (A)	8	Overturned at Stokes Hill Wharf	Minor damage	Operational
NR Castlereagh	Prawner (S)	22	Aground at Talc Head	Damaged	Repaired
NR Essington	Prawner (S)	22	Aground near Fort Hill Wharf	Damaged	Repaired
NR Diemen	Prawner (S)	22	Wheelhouse found in Shoal Bay	Wrecked	—
NR Buckingham	Prawner (S)	22	Grounded at Gunn Point	Damaged	Operational
NR Anson	Prawner (S)	22	Afloat	Minor Damage	Operational
NR Kendal	Prawner (S)	24	Overturned at Larrakeyah	Severe Damage	Salvaged
NR Junction	Prawner (S)	24	Afloat	Minor Damage	Operational
NR Harris	Prawner (S)	24	Aground at Larrakeyah	Damaged	Operational
NR Liverpool	Prawner (S)	24	On NT Port Authority slipway	Damaged	Under repair
Catbird	Prawner (S)	26	Aground at Emery Point	Damaged	Repaired
Clipper Bird	Prawner (S)	26	Aground at Larrakeyah	Damaged	Repaired
Blue Bird	Prawner (S)	26	Sunk behind ore berth	Wrecked	—
Bell Bird	Prawner (S)	26	Overturned and sunk Doctors Gully	Wrecked	—
Frigate Bird	Prawner (S)	23	Overturned at Weed Reef	Wrecked	Salvaged, under repair

APPENDIX 4: (cont.): SHIPPING CASUALTIES IN DARWIN HARBOUR FROM CYCLONE TRACY*

NAME	TYPE	LENGTH (METRES)	EFFECT OF CYCLONE TRACY	CONDITION	CONDITION 2 APR. 1975
Flood Bird	Prawner (S)	23	Missing	Unknown	—
Jenny Wright	Prawner (S)	19	Overtuned and sunk at Larrakeyah	Wrecked	—
Medusa	Prawner (S)	19	Grounded at Larrakeyah	Damaged	Repaired
Booya	Fuel Tanker (S)	40	Unknown	Unknown	Unknown
Miss Rankin	Survey (S)	21	Afloat off East Point	Minor damage	Operational
Bluff Creek	Survey (S)	26	Grounded at Emery Point	Moderate damage	—
Goyder	Harbour Tug (S)	21	At tug berth Stokes Hill	Minor damage	Operational
Corowa	Harbour Tug (S)	15	Grounded in Boom area	Severe damage	Under repair
Arnhem T	Trader (S)	24	Sunk under Stokes Hill	Wrecked	--
Edwina May	Ferry (S)	27	Sunk under Stokes Hill	Wrecked	—
Darwin Princess	Ferry (S)	23	Missing	Unknown	—
Mandorah Queen	Ferry (S)	22	Missing	Unknown	—
Carina	Ferry (F)	11	Sunk under Stokes Hill	Wrecked	—
AM 704	Work Boat (W)	12	Sunk at buoy	Damaged	Raised — under repair
4 004	Work Boat (W)	12	Missing with buoy	Unknown	—
Police Boat	Launch (F)	6	In Doctors Gully	Wrecked	—
Scally Wag	Yacht		At Stokes Hill Approach	Wrecked	—
Rasta	Yacht		Under Stokes Hill	Wrecked	—
La Pelican	Yacht		Ashore in Frances Bay	Damaged	Unknown
Roper	Work Boat (W)	8	Missing	Unknown	—
Nimrod	Yacht (W)	12	Under Stokes Hill Wharf	Wrecked	—

APPENDIX 4: (cont.): SHIPPING CASUALTIES IN DARWIN HARBOUR FROM CYCLONE TRACY*

NAME	TYPE	LENGTH (METRES)	EFFECT OF CYCLONE TRACY	CONDITION	CONDITION 2 APR. 1975
Charles Todd	Ferry (W)	14	Believed foundered	Missing	—
Skywave	Ferry (A)	16	Under Stokes Hill	Sunk	Salvaged but not operational
Betty Joan	Trader (W)	32	Ashore in Frances Bay	Wrecked	—
Ataluma	Survey (W)	31	At East Point	Wrecked	—
Chinta	Yacht		Under Stokes Hill	Wrecked	—
Zora 4	Trawler (S)	20	Stranded in Frances Bay	Severe damage	Condition unchanged

LEGEND: S—Steel, W—Wood, A—Aluminium, F—Fibreglass

* Information supplied by N.T. Port Authority