CHAPTER 4

‘Notwithstanding the inclemency of the weather’:¹
The role of precipitation in the catchment

There appears no termination of this unprecedentedly wet season, and the residents think that Jupiter Pluvius has taken up his quarters for good and all.²

Introduction

Colonial Gippslanders preferred moderate, permanent flow. For this to occur, steady and reliable rainfall is needed. If there is anything in Australia that is reliably unreliable, it is rainfall. The epigraph from the *Gippsland Times* in 1870 tells a story of seasonal bewilderment, of people whose expectations about rainfall are thrown firmly out of kilter.³

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¹ *GT*, 31 December 1870, Crooked River correspondent. The full quote read ‘Not withstanding the inclemency of the weather, great and manifold have been the festivities held in commemoration at Grant’.

² *GT*, 1 November 1870.

³ For other examples of bewilderment, see *GT*, 11 September 1876, Maffra correspondent: ‘In adverting to the weather, I must say that the last three days have been so extremely warm as to suggest that old Father Time had dispensed with one of the seasons and thrown us right into the heat of summer’. Settlers were generally like the Dargo correspondent in August 1886 when s/he said that ‘We are getting a little rain, though the showers are like angels visits, few and far between; still just enough to show that the clerk of the weather has not quite forgotten us’. Some of the examples cited below at fn. 4 could also have been included here.
Chapters 2 and 3 demonstrated how migrants from Europe were encouraged by their culture in multiple ways to expect regular rainfall, lush greenness and permanent surface water as the norm. The mountainous parts of Gippsland come as close as possible to this as the Australian mainland can manage – for example, Erica averages 1,100 mm of rain a year. Yet the catchment experienced significant variability in rainfall, inducing otherwise devout Christians to talk in mythical and pagan terms, as in the epigraph. The mythological references that surface in the newspapers during unexpected weather suggests how much settlers felt themselves to be at the mercy of environmental processes that they did not understand.

This chapter concentrates on the wet part of the hydrological cycle. Section one explores what colonial settlers knew about precipitation, provides an analysis of rainfall variability and discusses the roles of meteorological science and traditional weather lore in the nineteenth century in shaping settler’s ecological perceptions. Section two focuses upon the practical impacts of rainfall and flood on social and economic life. Finally, the last section probes the emotional aspects of rain through an examination of the figurative language of precipitation used by settlers.

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4 For other pagan allusions, see GT, 26 January 1875, Rosedale correspondent: ‘If there were any worshippers of Moloch living in our midst, they could have had a place for sacrifice last Thursday or Friday by patronizing the Rosedale School’; Gippsland Mercury (hereafter GM), 15 March 1877, Upper Maffra correspondent: ‘we hope that Jupiter Fluvius will soon favour us with his much desired gifts. We have not experienced such a dry season in the last 8 years’; GM, 17 February 1877, also referring to Jupiter Fluvius; GT, 29 December 1876, report of a fundraising bazaar: ‘Here was everything to tempt the disbursement of ready cash, which began to flow apace into the ready hands and pockets of the Hebe-like forms which thronged the building, inviting all and sundry to win fabulous articles with infinitesimal outlay’; GM, 11 August 1877, Hygeia – in reference to the death of a man who’d worked on Good Luck Creek for 16 years and who died of natural causes; GT, 22 December 1874, ‘Now that the Rosedale Council have got the plans passed for the bridge over Shiel’s gully on the Sale and Rosedale Rd, traveling ratepayers will not be displeased to see the works progressing. This ugly little pinch is a kind of Charybdis to the Scylla of the cutting’; GT, 3 February 1876, Charles Berry is warned to study the tale of Tithonus. Tithonus was granted immortality because a goddess fell in love with him, but he forgot to ask for his beauty to be preserved; he aged terribly, wished to die but couldn’t and was turned into a grasshopper. Berry would become ‘a mere political grasshopper’. The report in fn. 1 also referred to Terpsichore, the muse of dance; GT, 22 March 1870, report of the Sale cricket team’s trip to Port Albert: ‘old Sol smiled the next morning, on a party of ten knights of the willow … trudging to the bathing house, towel in hand … Old Father Neptune might have allowed his grim visage to relax into a smile, when he saw the merry we disported ourselves in the briny element’; GT, 11 November 1881, Rosedale correspondent, complaining about the weather on the Prince of Wales’s birthday, which forced the suspension of the cricket match between Sale and Rosedale. ‘Whether the transit of Mercury the day before over old Sol’s disc has so disgusted that noble luminary that he declined since to show his face, or from other reasons not known outside the realms of science … about dinner time (vulgo) tears began to flow from the clouds in earnest, and all hopes were abandoned by those who had entered the cricket ground, as of some more ancient visitors to Dante’s Inferno of the prospect of any amusement.’
Knowledge, measurement and prediction

The birth of meteorology

The modern nightly weather bulletin complete with five-day forecast is the exception to the pattern of human experience. The settlement of the Gippsland Lakes Catchment (GLC) took place at the midpoint of a great transition, when traditional weatherlore and the emerging science of meteorology uneasily cohabited. Jankovic, in his history of English weather, notes that over the eighteenth and nineteenth centuries there was a transition from qualitative, unique and local weather to quantitative, systematised and national weather. This quantitative emphasis corresponds with similar developments in hydrology, detailed in Chapter 2.

Before the twentieth century, European understanding about precipitation was in a constant state of flux. Europe was late to the practice of rainfall recording. Data from the recording rain gauge (probably invented by Christopher Wren in 1663) furthered questioning about weather patterns. Scientists began to appreciate that there was a big difference between measuring rainfall on an ad hoc basis, and a systematic approach over a wide geographical area. In 1677, Richard Townley of Townley Hall, Lancashire, commenced the first continuous observations of rainfall. Followed by others across England, the practice of keeping cumulative records extended both knowledge and questions. For example, in The Natural History of Selborne, Gilbert White said that his six-and-a-half years of observations were insufficient for a conclusion about a mean. White’s brother-in-law took this observation to heart and kept records for 59 years. Hence, the establishment in the United States in the nineteenth century of a geographically dispersed network of continuously recording stations was a major milestone.

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6 Other cultures, notably ‘India around the fourth century BC, Palestine in the first century AD, China in the thirteenth century, and Korea in the fourteenth century’, had all developed methods to accurately measure rainfall. Benedetto Castelli (the ‘father’ of hydrology) made the first rain gauge in Europe in approximately 1639. However, this gauge could not record, and it was Christopher Wren who is attributed with this invention. The earliest recorded description is from 1663. From then on, rain gauges are the subject of considerable design attention. Biswas gives details of the various types invented across Europe. AK Biswas, History of hydrology, North Holland Publishing Company, Amsterdam, 1970, pp. 231–4.

7 Cited in Biswas, History of hydrology, p. 248.
Across Europe, the establishment of Royal Societies ‘by first class men’ fostered the fledgling sciences of meteorology and hydrology, but Biswas’s comprehensive history of hydrology indicates that the science of precipitation was nowhere near as sexy as flow, velocity and discharge.8 William Heberden first noticed that rainfall gauges at different elevations produced different results, but incorrectly concluded that it was due to ‘some hitherto unknown property of electricity’.9 These differences are due to orographic effects. Water vapour cools as it rises and condenses into clouds and, where conditions are suitable, releases precipitation.10

Rainfall was obviously a factor in the debate on the origin of rivers and springs. There were three theories on the origins of rivers, which echoed the models of the hydrological cycle. Theory one held that rainfall was the source of rivers. Theory two was alchemical – the conversion of air to water created rivers – while theory three opted for recirculated sea water as the mechanism.11 This was not conclusively settled until Perrault published his now classic work *On the Origin of Springs* about the Seine in 1674. Perrault’s findings were confirmed in 1715 when Antonio Vallisnieri published his analysis of measurements in the Italian Alps.12 However, the real purpose of these works was to settle the flow issue, and were not about precipitation itself.

Middleton concurs with this view of rainfall research, noting that the field was thin until the turn of the nineteenth century. Luke Howard commenced his classification of clouds in the first quarter of the century. An understanding of cloud types was a great help to predicting precipitation.13 The great nineteenth-century advances in understanding precipitation were based on advances in thermodynamics, ‘the branch of physics that deals with the conversion from one to another of the various forms of energy and how these affect temperature pressure, volume, mechanical action and work’.14

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10  Pers. comm., Sara Beavis, 30 September 2011.
The nineteenth century was marked by robust scientific debate about the phenomenon of precipitation, as demonstrated by some of the ideas that were later demonstrated to be wrong. This included the widespread notion that electricity played a role in cloud formation and other rainfall phenomenon: that water dissolves in air, that water vapour moves independently of the air surrounding it, and that while air could ascend, there was apparently no way for it to descend.\textsuperscript{15} Air was also the subject of similar intellectual debate, as is shown by Walker.\textsuperscript{16}

In Australia, meteorology was establishing itself, and the climatic variability stimulated debate. ‘The science of Meteorology is not, as yet, in a sufficiently advanced state to enable any reliable theory to be formed to account for abnormal seasons, either of excessive drought or excessive rainfall in any country’, wrote FS Peppercorne in \textit{On Australian Meteorology and Hydrography} in 1879.\textsuperscript{17} Starting in Melbourne and Sydney, observatories were set up, and a network of weather observation stations followed the frontier of settlement.\textsuperscript{18} Under the charge of the government astronomer, these networks were the manifestation of scientific meteorology. Leading scientists attempted to make emerging scientifically derived weather patterns available. Ellery from the Victorian Observatory allowed his ‘Plain rules for foretelling the weather’ to be published in Mullen’s \textit{Almanac} in 1884.\textsuperscript{19} The catch was that each farmer had to own both a barometer and a thermometer for the plain rules to be useful. While many settlers might have lauded the development of a meteorological network, the fact remained that the information they received from it was generally too little and too late.

\begin{footnotesize}
\begin{enumerate}
\item Middleton, \textit{A history of the theories of rain}, pp. 148–51.
\item S Mullen’s \textit{Victorian Almanac for 1884}, (Being Second Year after Bissextile, or Leap Year) and Astronomical Ephemeris, containing all necessary information, reduced to the meridian and latitude of Melbourne expressly for this work; also, Departmental, Postal, Telegraph and Mail information, notable events during past year, original medical notes, farming and gardening, and a mass of miscellaneous information.
\end{enumerate}
\end{footnotesize}
Weather rhetoric and reality in the catchment

In Gippsland, a network of weather stations slowly grew from Sale outwards from 1870 onwards, but, as shall be seen, the weather in Sale was no reliable guide to the rest of the catchment. Farmers needed other ways to understand the weather.

From the earliest reports by explorers, Gippsland earned a reputation for having a ‘good’ climate. There had been enough rain to make the catchment look like a pastoralist’s version of Heaven. In 1835, George MacKillop wrote of Strathdownie (now Benambra) that it:

contains 60000 acres of as fine land as I have seen anywhere in the colonies. The Strath is well watered by a large stream running through the middle of it and according to the native who was with me the climate was bland all the year round.

Writing soon after, Strzelecki said: ‘Everywhere Nature seems to have most liberally enriched this part for the benefit of man’, an excellent example of the divine design philosophy discussed in Chapters 2 and 3.20 Angus McMillan could barely believe how lush the grasses were. The news of this magnificent new land spread quickly, and the idea of Gippsland as a mild and pleasant climate spread with it.

Settlers used adjectives like ‘fine’, ‘moist’ or ‘salubrious’. Dr King of Ballarat said at his farewell party that: ‘He had come to Sale in the first instance to recover his health, and … he had found here a fine climate … about the finest climate in the colony. The rivers were equal to the climate’.21 Yet a comparison of rainfall data with the newspaper regional correspondents reports show the startling variability that was experienced within the catchment.

21  GT, 7 October 1881. During his convalescence, King helped to establish a fish acclimatisation society.
Table 4.1 provides information on mean monthly and annual rainfall. The geographic variability is obvious comparing Tanjil Bren at an altitude of 838 metres with Stratford, lying on the flattish red gum plains along the Avon River. Stratford’s annual average is 637.4 mm, while Tanjil Bren receives nearly three times that amount, 1,742.3 mm. There are also times when rain was almost completely absent. For example, the statistics for Sale show that the driest June ever recorded was in 1886 when only 6.6 mm of rain was recorded. In 1895, Sale residents experienced their driest November, with 0.8 mm in the gauge.22 In contrast, the nineteenth century held the record for wettest month in seven out of the 12 months. The year 1873 was particularly notable, notching up a saturating February and November with 220.7 mm and 206.7 mm respectively.23

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22 Monthly Climate Statistics for Sale, Station No. 085133, generated from Bureau of Meteorology (BOM) online on 17 July 2007.
23 Monthly Climate Statistics for Sale, Station No. 085133. 1879 was the wettest May (228.6 mm), 1896 was the wettest June (136.4 mm), 1897 was the wettest August (104.9 mm), 1880 was the wettest September (148 mm), 1886 was the wettest October (153.5 mm).
These distinct differences explain the regular comparisons in primary sources about the wetness in certain areas, like Warragul, and the complaints of dryness in places like Bairnsdale and Stratford. Rainshadow areas also exist at Licola, the area around Maffra (the twentieth-century Macalister Irrigation District) and Swifts Creek.\textsuperscript{24} We can see the rainshadow effect in operation in this quote from 1876:

\begin{quote}
There has been abundant rainfall at Moe and Morwell, and some at Traralgon, but very little has reached further east – not even to Toongabbie which locality generally rejoices in a moist climate from its proximity to the ranges.\textsuperscript{25}
\end{quote}

Despite the evidence of actual variability in place and time, many still clung to a vision of how they would like certain seasons to be. The \textit{Gippsland Times} Upper Maffra correspondent wrote in September 1876:

\begin{quote}
I am delighted to be able to convey to you, even if in borrowed words, the fact that our luxuriant and genial fields assume once more their wonted verdancy. It is to be hoped that a genial summer will maintain the pleasing prospect.\textsuperscript{26}
\end{quote}

Perhaps the Upper Maffra correspondent was a newcomer, for summers are rarely genial and luxuriant. These were, after all, what Michael Cathcart called wet country people, with ‘water coursing through their industries, their farms, their buildings, their class relations, their faiths and superstitions, their songs and their games’.\textsuperscript{27}

\section*{Traditional weather lore}

Before modern meteorology, Europeans had developed elaborate systems for understanding and predicting the weather. These were based on the surviving theories of ancient Greece, particularly Aristotle’s \textit{Meteorologica}, or, more typically amongst the less educated, on intergenerational oral traditions. The emphasis here is on the latter. The majority of migrants

\textsuperscript{24} Agriculture Victoria, Victorian Resources Online: East Gippsland, vro.agriculture.vic.gov.au/dpi/vro/egregn.nsf/pages/eg_climate, accessed 26 October 2017. ‘Rainshadows caused by the ranges occur in the Mitchell and Tambo River valleys, and on the plains. Rainshadow effects are evident when comparing average annual rainfall of 659mm at Tabberabbera in the Mitchell River Valley in the bordering high country which receives an average of 1080 per annum.’
\textsuperscript{25} \textit{GT}, 4 July 1876. See also \textit{Bairnsdale Advertiser}, 18 April 1885, noting less rain in Bairnsdale than west of Sale.
\textsuperscript{26} \textit{GT}, 25 September 1876, Upper Maffra correspondent.
\textsuperscript{27} Cathcart uses this term specifically in relation to the First Fleet, but I think it can be appropriately used for any migrant from northern Europe. M Cathcart, \textit{The water dreamers: The remarkable history of our dry continent}, Text Publishing, Melbourne, 2009, p. 9.
to Gippsland were not highly educated members of the upper classes. To them, reading Aristotle may have seemed more like punishment than pleasure. The majority of people relied upon a detailed oral tradition of weather lore, along with other aspects of environmental knowledge.\textsuperscript{28}

European traditional ecological knowledge was highly honed. It was, in fact, a great skill possessed by rural people, rather than the vague and possibly magical art that sensationalising folklorists and sceptical scientists have since portrayed it.\textsuperscript{29} As Hatfield points out in her work on domestic plant medicine in England, ‘many [of the rural working classes] could tell the time accurately without a watch, and predict the weather without listening to reports or recording pressure changes’.\textsuperscript{30} Time could be told by observing the opening and closing of certain flowers.\textsuperscript{31} Observation of animal behaviour was also a significant part of weather lore, as were rainbows:

Rainbow in the morning, sailors take warning;
Rainbow at night, sailor’s delight.

Lee and Fraser interpret this saying in the light of the position of the observer:

Throughout much of North America and Europe, weather systems tend to move from west to east. Because the rainbow is seen opposite the sun, a morning rainbow means that rain is falling to the observer’s west and thus is likely to arrive soon (‘sailors take warning’). Conversely, a later afternoon rainbow, (‘night’ here is obviously poetic, not literal) means that the rain is to the east and is receding from the observer. Because many rainstorms occur in the afternoon, the rainbow is often (and quite fittingly) taken as a sign of fair weather to come.\textsuperscript{32}

\begin{itemize}
\item \textsuperscript{28} Jankovic, \textit{Reading the Skies}, p. 2.
\item \textsuperscript{29} I. Watson, \textit{Supernature: A natural history of the supernatural}, 3rd edn, Sceptre Books, Great Britain, 1986, p. 257. Watson described an experiment that analysed the chemical composition of mistletoe (a well-known ‘magical’ plant) and found that the levels of compounds varied significantly across a year as well as during the day. This confirmed the herbal lore that suggested mistletoe, along with many other plants, should be harvested only at certain times of the day or year to achieve the best potency.
\item \textsuperscript{30} G Hatfield, \textit{Memory, wisdom and healing: The history of domestic plant medicine}, 2nd edn, Sutton Publishing, Gloucestershire, 2005, p. 5.
\item \textsuperscript{31} A tiny vestige of this kind of knowledge was passed on to me by my grandfather, Phillip Jacka. In the front lawn of their home in Victoria Park in Perth was a tiny plant with pink flowers he called Four O’Clock’s because they would start to close their flowers at around this time every summer afternoon. This plant was a type of oxalis, but it shares its common name with \textit{Mirabilis jalapa}, a native of Peru. \textit{Mirabilis} opens in the evening and flowers through the night.
\item \textsuperscript{32} RL Lee & AB Fraser, \textit{The rainbow bridge: Rainbows in art, myth and science}, Pennsylvania State University Press, Pennsylvania, 2001, p. 29. I learnt a version of this from my grandfather that substituted ‘red sky’ for ‘rainbow’.
\end{itemize}
Such traditional knowledge is highly valuable, but also locationally specific. Could settlers translate their old models of weather and climate knowledge onto a foreign land that bore little, if any, resemblance to the world they left behind? How did someone from Galashiels, or St Erth, come to grips with Australian weather? Under Australian conditions, traditional English weather lore could not be relied upon, contributing to the sense of disorder and chaos that many settlers felt. With no familiar plants or animals, there was little opportunity for translation of their traditional knowledges into the Australian environment. Additionally, the presence of Indigenous custodians of weather lore and ecological knowledge rubbed up uncomfortably against their own sense of being the epitome of God’s plan. Viewing Aboriginal knowledge as anything other than superstition threatened that view.

Given the climatic variability, the promise of systematised predictions offered by the newly emerging science of meteorology would have seemed ideal. At the same time, the delivery of useful predictions by meteorologists to country farmers was dogged by time delays. Additionally, every farmer would have had a different definition of ‘useful’ depending on their crop and the stage of its growth. A potato farmer from Thorpdale would differ from a hops grower at Bairnsdale. There was a tension between the desire for generalised predictions based on systematised observations and the reality of the isolated farmer, say, somewhere north of Bairnsdale. In practice, farmers had to make up their own minds about when it might rain, using whatever came to hand and seemed to work.

33 I selected these two towns as they were the birthplaces of two female ancestors who migrated.
Living between rhetoric and reality

A GLC farmer might read about meteorological debates in supplements in the local papers or in libraries, but it seems unlikely that they would find them helpful on a day-to-day basis.\(^35\) Given that meteorological science offered little of practical value to settlers, what other tools did they have at their disposal to figure out this perplexing world? There were four ways:

- their own recorded observations
- almanacs
- the possible survival and adaptation of traditional weather lore
- astronomical theories.

The most abundant evidence comes from observations that settlers made themselves. Every diary consulted recorded their experience of the weather and made comparisons among years. In her comparative study of British and Australian almanacs, Perkins discusses an Australian sheet almanac held in the British Library. Its advice for October and November acknowledged that only personal observation by the farmer would be of use and that no book could hope to fulfil their need for advice.\(^36\) Every diary consulted made weather observations, to varying degrees of sophistication. McLeary and Dingle note that Catherine Currie, a selector’s wife at Lardner in West Gippsland, recorded everything including rainfall.\(^37\) On her selection near Lake Wellington, Isabella MacLeod also made regular notes on the weather in her diary. On 5 June 1873, it was ‘dull-damp’ and the following day was ‘rainy and miserable all day’.\(^38\) The timing, quantity and duration of rainfall was a matter of strategic importance to these newly establishing farmers. While most settlers who kept diaries always made a passing note of the weather, very few of them took measurements. More significantly, the weather observations are interpreted in the light

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35 For an example, see Castner’s Rural Australian, December 1875, p. 8; and GT, 1886 Supplement. Hutton and Connors discuss the role of the newspapers in reporting the activities of scientific societies and in starting ‘nature columns’. D Hutton & L Connors, A history of the Australian environment movement, Cambridge University Press, Cambridge, 1999, pp. 30–1.
of their current circumstances. These are personal measures of rainfall effectiveness, whether that might be to moisten the soil enough to start ploughing or to fill the waterholes for desperately thirsty stock.

Buckley and Auchterlonie, whose diaries have the longest runs, show evidence of attempting to figure out weather patterns. In the mid-years of his diary, Buckley tended to sum up the month. In a month that had seemed contrary, he would remark how he had never seen it so dry/wet/windy/frosty since he arrived. Gradually these individual observations accumulated. One can imagine conversations held in the stores and streets of the settlements that, with time and repetition, grew to be the new weather lore, approximations that the newspapers reflect. A good example comes from 1890:

The remarkable heat and dryness of the Autumn is causing heavy loss in those parts of the colony where a fair amount of moisture is customary at this time of year, and is a necessity for crops produced in them. In North Gippsland, the maise [sic] and hops crops are pretty nigh ruined, especially the former, while the potato crops in other districts are suffering severely for want of moisture … Altogether the autumn is reckoned as the hottest and driest experienced for many year past.39

Because rainfall variability could cause such havoc, it is not unreasonable to assume that traditional methods of weather forecasting might be adapted, and in some ways attain a greater significance, in areas being newly settled. From the sources consulted, nothing conclusive can be said, although there are some clues worth following up. As noted previously, European weather knowledge involved a detailed understanding of local plants. One reference to this was found in newspapers. In its March 1876 issue, Castner’s Rural Australian reported the research of Herr Hanneman, Director of the Botanic Garden in Proskau, Germany, on plant behaviour that could predict the weather. For example, Convolvulus arvensis (common English bindweed) and Anagallis arvensis spread their leaves at the end of wet weather, in contrast to some varieties of clover, which contract their leaves. Stellaria media (chickweed) and Pimpinella saxifraga in clear morning weather will straighten its flower and spread its leaves, and droop in rain. If Calendula pluvialis hasn’t opened its flowers

39 Morwell Advertiser, 7 February 1890.
by 7 am, one could expect rain. Even the name of this plant is a clue to its connection with rainfall. However, the article made no references to any Australian flowers. Nor did it suggest that farmers could adapt this knowledge of European plants to the Australian context. Rather, it was presented in the manner of curious facts that one might read aloud to the children at tea time.

On the other hand, David Brown, a road labourer, recalled in his memoirs an anonymous German man in Brandy Creek whose nickname was ‘the weatherman’. One cannot rule out the adaptation of old-style European ecological knowledge, for three reasons. First, the newspapers almost never provide sources for their weather, describing them only as ‘those most capable of giving an opinion on the subject’. This could be the Weatherman, or it could mean the Mayor of Sale, who in 1870 owned a thermometer, barometer and hygrometer. Second, there is the strong tradition of oral knowledge suggested by Hatfield. The almanac referred to by Perkins above advised that December was the month for gathering and drying medicinal herbs, which suggests that some parts of traditional herbal knowledge continued. Third, by the emphasis in Australian history on the practical skills of the bushman. It would be logical to assume that part of the skill set of a practical bushman would include knowledge about the weather. Perhaps the constant noting of weather conditions in diaries is a part of the revamping of the old version of European weatherlore. While some settlers must have learnt some botanical information from Indigenous people, this research found no evidence of the transfer of Indigenous ecological knowledge in Gippsland.

The final method of weather forecasting was planetary observances. In this approach, the weather was caused by the movements of astronomical bodies and their phenomena, especially the moon. Most almanacs recorded phases of the moon, and there are comments throughout newspapers that indicate the broader public found moon tracking to be normal. It was in relation to weather extremes that comments were found linking the moon to the weather. For example, the Gippsland Times on 21 June 1880 queried: ‘Whether it is owing to the approaching eclipse of

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40 Castner’s Rural Australian, March 1876, p. 16.
41 David Brown, Reminiscences Of Brandy Creek, CGS, 696.
42 For example, GT, 24 December 1886.
43 Perkins, Visions of the future, p. 175.
the moon, which will take place tomorrow night, or not, the temperature
during the last four or five days has been marked by extreme severity’. In 1881, cricket lovers were thwarted by downfalls on the Prince of Wales’s birthday public holiday match between Sale and Rosedale. The Rosedale correspondent said:

Whether the transit of Mercury the day before over old Sol’s disc has so disgusted that noble liminary that he declined since to show his face, or from other reasons not known outside the realms of science, the weather was just as provokingly aggravating in the morning as the most arrant flirt could desire in her conduct to her lover.\(^4^4\)

Whether or not he believed it, the Rosedale correspondent displayed an understanding of weather prediction based on astronomical movements. Describing locally significant events in these terms suggests that many Gippslanders accepted this idea.

Almanacs are an important source for understanding colonial weather knowledge, as significant as settler diaries.\(^4^5\) They are vital to understanding what information was easily available for settlers to make agricultural and social decisions. Not having an almanac would be like not having a mobile phone in the twenty-first century. Almanacs were a cross between a calendar, a business diary and a government year book. They always carried day and date information; listed the government, its ministers and departments; and provided data on essential services like postage and telegraph services. They also published varied types of scientific, meteorological, astronomical, astrological and environmental data. There were also specialty almanacs, like the *Victorian Law Calendar and Almanac*, referred to in the *Government Gazette*.\(^4^6\) For the very poor, many papers printed sheet almanacs.\(^4^7\)

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\(^4^4\) *GT*, 11 November 1881, Rosedale correspondent. See also, *GT*, 4 January 1876, Report of a meteor.


\(^4^6\) *Victorian Government Gazette*, 1 December 1855, p. 94.

\(^4^7\) For example, the *Gippsland Times* on 1 January 1876 published a sheet almanac that gave day, date, mail info (arrival and dept of the mail steamers) and postage rates.
The *Gippsland Times* often assessed the content of different almanacs and made comments about their value for money. In 1869, the *Gippsland Times* favourably reviewed Clarson and Messina’s and Dr LL Smith’s.\(^ {48} \) Robert Thomson, MLA, kept his 1848 *Blackie’s Literary and Commercial Almanac*, which fortunately survived the flood that destroyed most of the Thomson papers stored in a cellar at Clydebank.\(^ {49} \) The weather table on pages 18 and 19 illustrates succinctly how the moon was thought to influence the weather.

### Table 4.2: Extracted from *Blackie’s Literary and Commercial Almanac*, 1848.

<table>
<thead>
<tr>
<th>New and Full Moon</th>
<th>Summer</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>At new or full Moon, the Moon entering the first or last Quarter at 12 noon or between 12 and 2</td>
<td>Very rainy</td>
<td>Snow and rain</td>
</tr>
<tr>
<td>_ afternoon 2-4</td>
<td>Changeable</td>
<td>Fair and mild</td>
</tr>
<tr>
<td>Evening 4-6</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Evening 6-8</td>
<td>Fair if wind at NW, rain if wind at S or SW</td>
<td>Fair and frosty if wind at N or NE, Rain or snow if S or SW</td>
</tr>
<tr>
<td>Evening 8-10</td>
<td>Ditto</td>
<td>Ditto</td>
</tr>
<tr>
<td>Night 10-12</td>
<td>Fair</td>
<td>Fair and frosty</td>
</tr>
<tr>
<td>Morning 12-2</td>
<td>Ditto</td>
<td>Hard frost unless W, S, or SW</td>
</tr>
<tr>
<td>Morning 2-4</td>
<td>Cold with showers</td>
<td>Snow and stormy</td>
</tr>
<tr>
<td>Morning 4-6</td>
<td>Rain</td>
<td>Ditto</td>
</tr>
<tr>
<td>Morning 6-8</td>
<td>Wind and rain</td>
<td>Stormy weather</td>
</tr>
<tr>
<td>Morning 8-10</td>
<td>Changeable</td>
<td>Cold rain if wind W, snow if E</td>
</tr>
<tr>
<td>Noon 10-12</td>
<td>Frequent showers</td>
<td>Cold with high wind</td>
</tr>
</tbody>
</table>

\(^ {48} \) *GT*, 23 and 29 October 1869. These two almanacs are very similar, as Clarson and Massina also published Smith’s. The texts of the 1877 editions of both are virtually identical. The major point of difference is that Dr Smith supplemented the standard information with a range of medical information, which is itself interesting for how dampness or dryness was seen in relation to health. For other examples of reporting on almanacs, see *GT*, 1 August 1876, copy of Bradshaw’s *Northern Miners Almanac* from Charters Towers area, giving crushing details; *GT*, 1 December 1876, ‘We have received a copy of McKay’s almanac for 1877 being the eighteenth year of its publication. It abounds in useful information’; *GT*, 18 November 1881, ‘We have received a copy of the Temperance Year Book for 1882, published Messrs Dunn and Collins Melbourne, It is compiled with special reference to temperance matters, but contains a quantity of general information, including and almanack, &c. Hutchinson’s Australian Almanac for 1882 is also to hand, being the 23rd year of publication. It is of the usual standard of merit, containing information upon a large variety of topics, political and social, including an educational register, medical notes, postal rates, acts of parliament in 1880–2, 7c, &c.’. \(^ {49} \) Other settlers with extant almanacs include the following: Alexander Hunter’s journal was recorded in a book, which also had an almanac printed in the front. It’s a basic almanac with weather table, moon and eclipses, English, religious and other dates, but no facts etc in the blanks. *Lett’s Diary or Bills Due Book and an Almanack for 1839*, Hunter Family Papers, SLV, PA 99/64. Michael Wilson suggests that Rev. Francis Hales adapted the Churchman’s Almanac for his journal. *Journal of the Rev. Francis Hales* (edited by Michael H Wilson), SLV, MS 12950, box 1716/14.
Immediately following the table is a series of guidance statements on weather prediction. For example:

Dew – If dew lies plentifully on the grass after a fair day it is a sign of another. If not, and there is no wind, rain must follow. A red evening portends fine weather, but if the red spread too far upwards from the horizon in the evening, and especially morning, it foretells wind or rain, or both.\(^{50}\)

The moon theory of weather prediction was accepted by the state. For example, the report in the *Government Gazette* on Alberton’s meteorological records for December 1854 noted the moon’s age and described the weather experienced. Smith’s *Almanac* for 1877 provided a week by week weather prediction chart, but did not explain how it was derived. Given the layout of Smith’s *Almanac*, it would seem likely that the predictions were derived from the moon theory. For July, the almanac claimed: ‘Fair weather will probably set in with this lunation and will last till the end of the month’. Week 2 of October refers to ‘electric disturbances in the atmosphere’ to be followed by stormy weather. The year of 1870 was notable for the number of displays of the Aurora Australis, and the *Gippsland Times* noted that ‘the farmers evidently think they prognosticate foul weather. Almost every heavy electric storm this season has been immediately followed by tempest, and rain’.\(^{51}\) Knowles Middleton noted that the connection between electricity and rainfall was commonly debated in scientific circles in the nineteenth century.\(^{52}\)

A comparison of almanacs published in Victoria dating from 1841 to 1895 shows that information about the moon is the most common. The phase of the moon was always given, followed by the age of the

\(^{50}\) Thomson Family Papers, NLA, MS 8600, box 2, folder 9. The remainder of weather signs were: ‘Mists – A white mist in the evening, over a meadow with a river will be drawn up by the sun next morning and the day will be bright. Clouds – Against much rain, the clouds grow bigger and increase very fast, especially before thunder. When the clouds are formed like fleeces, but dense in the middle and bright towards the edges, with the sky bright, they are signs of a frost, with hail, snow or rain. If clouds breed high in the air, in thin white trains, like locks of wool, they portend wind, and probably rain. Two currents of clouds portend rain, in summer thunder. Heavenly bodies – A haziness in the air which fades the sun’s light and makes the orb appear whitish, or ill defined, or at night if the moon and stars grow dim, and a ring encircle the former, rain will follow. If the moon looks pale and dim, we expect rain, if red, wind; and of her natural colour, with a clear sky, fair weather. If the moon is rainy through throughout, it will clear at the change, and perhaps the rain return. Wind – If the wind veers about much, rain is pretty sure. If in changing it follows the course of the sun, it brings fair weather; the contrary, foul’.

\(^{51}\) GT, 22 November 1870.

moon in days. Almanacs might also give times of the moon’s rise and set, hours of available moonlight and the dates of lunar and solar eclipses. The 1863 Victorian Almanac noted equinoxes. Because almanacs recorded the passage of the moon, there was no need for settlers to do so. Thus it is rare to find lunar references in personal writings. In diaries, only George Auchterlonie mentions the moon, and this was in relation to notable weather. On 29 September 1868, he wrote: ‘very warm today large circle around the moon tonight’. A month later, he wrote: ‘weather most oppressively hot today, sun rose red, atmosphere of a dirty haze, moon clear’.

The almanacs emphasis on the moon also reflected dependence upon its silvery light for navigation, in the age before street lighting was common. Duncan Johnston noted taking a moonlight walk with friends on one of his visits to Bruthen. Most large evening events were timed for the full moon to give the greatest amount of illumination to travelling revellers. Reflecting this importance, one local history is titled Wednesdays Closest to the Moon.

Interestingly, few almanacs provide temperature or rainfall data, even in later years when meteorology had gained more recognition as a science. Smith’s almanac was an exception. The 1864 edition provided an average for each month, and readers were informed that the figure had been derived from a seven-year dataset. The colonial authorities understood the value of meteorological records, as Governor Gipps forwarded instructions to La Trobe as early as 1840 on the proper way to keep meteorological journals. But for individuals, the expense of equipment precluded many from keeping records. Given the monetary and time costs, it is perhaps no wonder that the moon-charting method popularised in almanacs lasted so long. Anyone can pop outside and check the phase of the moon.

53 I compared 23 almanacs over a date range of 1841 to 1895.
54 Diary of George Glen Auchterlonie, 29 October 1868, CGS, 4060. The following day was recorded as ‘excessively warm’.
55 Diary of Duncan Johnston, Sunday 5 March 1882, CGS, 00317.
57 Dr LL Smith’s Medical Almanac for 1864 and guide to mothers and nurses and persons residing in the bush, printed by Clarson, Shallard and Co., 85 Bourke St East, Melbourne and 207 Pitt St, Sydney.
It was a terrible shame that it was wrong. Neither the new sciences nor the old wisdom cut the mustard for colonial migrants. It is no wonder they invoked those fickle Greek gods when talking about the weather. The practical implications of a turn in the weather could only have been magnified by how unpredictable the weather really was.

The effect of rain

The anxiety caused by the uncertainty of rainfall was exacerbated by the detailed knowledge of its positive and negative effects. In an agricultural economy, the quantity and duration of rain had ramifications across most areas of social and economic life. This section will examine how settlers reported positive and negative effects of rainfall.

Negative effects from precipitation included destruction from flood, storms, fallen trees and frost; coughs, colds and more serious health complaints like rheumatism and pneumonia; difficulty in travelling (see Chapter 6); the need for particular construction techniques to make buildings weatherproof; prevention of mining, outdoor works on farms and in construction; and many social activities like picnics.

On the positive side, precipitation supported germination, crop growth, ploughing, dam filling, milk yield, boating, bathing, washing, stock condition and the destruction of some vermin like grasshoppers. However, the line between ‘good’ and ‘bad’ precipitation was fine as shown in this quote from spring 1886:

The pleasant change in the weather is all the conversation one can hear at present. Plenty of grass and water for the season, yet I hear some beginning to grumble that there will be too much rain for the crops. At present the crops and pasture are both looking splendid, and promise to give a grand harvest.59

The line was variable, with big differences between pastoralists and farmers, followed by differences between farmers and their chosen crops. In this section I commence with flood, move onto the less overwhelming negative aspects of heavy rain and then contrast this with the discussion on the welcome aspects of rain.

59 GT, 13 October 1886, Briagolong correspondent.
Too wet

The editor of the *Gippsland Times*, in his offering on Saturday 17 December 1870, summed up the ideal notion of precipitation when he wrote:

> The weather necessarily enters largely into all our calculations whether we will or not. [In] agriculture, it plays a part of paramount importance; for the seed may be ever so choice; the soil ever so prolific, and the situation ever so favourable, but without the life giving showers of spring, and congenial heat of the summer’s sun, the blade will not show, neither will appear the full corn in the ear.

By December 1870, the GLC had suffered a surfeit of water, experiencing a staggering 17 floods. The words, ‘life giving showers’ and ‘congenial heat’, suggest a farming community wearied by extremes. The season had been ‘unprecedented in the memory of the oldest inhabitant’. District Surveyor Dawson summed up the year:

> Two high floods in a season are beyond the average, and three has also been looked upon as extraordinary. Upon occasions the rivers have never overflowed their banks at all for two, and upon occasion that I recollect, not even for three seasons, thus showing what exceptional weather we have had this year.

As the district had only been colonised since 1838, this was not a long time to make judgements about the unusualness of the winter of 1870. Yet it is quite clear from the discussion that litters the paper’s pages in this year that there is strong sentiment about what was normal and what wasn’t.

The winter and spring of 1870 did not provide the life-giving showers that obviously would have been preferable. Instead, there were extensive snow falls, hard frosts and widespread heavy rains and floods. Nothing about 1870 was normal. Is it possible to know what would have been considered climatically and socially normal in a district that had been so sparsely settled for such a short period of time? A glimpse of normality can be seen by looking at what events and activities this prolonged experience of flooding interrupted.

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60 *GT*, 17 December 1870.
62 *GT*, 13 December 1870. The report was to government but the *Gippsland Times* was able to publish it. Dawson, too, appears overwhelmed by the waters, although he couches his dismay much more bureaucratically. He was also unhappy with the report, as due to ‘continued bogginess of the bush lands’ he had been unable to make the full range of damage inspections that he would have liked.
If any subject got the lion’s share of column space that year, it was the damage to roads and bridges. The *Gippsland Times* printed paroxysms of verbiage on the condition of Punt Lane, which connected the township to the river wharf, and thence south to Port Albert (see Map 10). Punt Lane was only one of the casualties of the 17 floods experienced in 1870. There are at least two court cases where carriers sue the respective councils for the death or laming of their horses.63

In the Shire of Avon, the council faced a particularly difficult situation with nearly every bridge and crossing point damaged or destroyed. The council meeting of 22 August is full of memorials, correspondence and surveyors reports about flood damage. The reports also show evidence of individuals taking action to restore order, like seeking permission to cut drains to get rid of floodwaters off their lands. Unable to influence the arrival of the flood, they tried to shorten its effect. In September, all the flood-affected councils lobbied the state government to spend their promised £5,000 on the main coach road to Melbourne, ‘the like of which’ one of the attendees ‘ventured to say could be found in no part of the civilised world’.64

Another indication of ‘normal’ for the white citizens of Gippsland was in the number of events that were poorly attended or cancelled. In September the picnic and kangaroo hunt to celebrate the successful introduction of trout to the catchment was postponed for between three and four weeks. The Ladies Benevolent Society’s proposed fundraising concert survived the haranguing delivered by the rector of St Paul’s, only to be postponed because of the weather. Meetings of the Hunt Club were down on numbers. Government business was delayed, with the mail coach being detained and business in the land court affected by the inability of the surveyors to keep their schedules during bad weather. The 1870 Agricultural Show in Sale was postponed due to the flood that arrived on 25 March.65

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63 The first court case was against Sale Borough Council regarding a horse that took a whole day to extract from the bog of Punt Lane, and suffered so much during the process that it had to be destroyed. *GT*, 23 August 1870. The second court case was against the Avon Shire Council, discussed at the council meeting of 22 August 1870 and reported in the same 23 August edition.

64 *GT*, 2 September 1870.

65 *GT*, 2 September 1870 for the trout reference. There are regular reports throughout this whole year, and reports from 1869 of the mail being delayed across the catchment – for example, 1 June 1869 the coach from Melbourne was a whole day late. Coverage of the Land Court proceedings was in *GT*, 5 June 1869. See *GT*, 26 March 1870, for the description of the flood that postponed the agricultural show.
Figure 4.3: Flood debris piled up against the railway bridge to Walhalla across the Thomson River, 2008.
Source: Melissa Smith.

Figure 4.4: Flats at the mouth of the Latrobe River, Thomas Henry Armstrong Bishop, n.d. (c. 1894–1909).
Source: Pictures Collection, State Library Victoria, Accession no. H40967.
Figure 4.5: A Gipps Land track after rain, *The Australasian Sketcher with Pen and Pencil*, 1882.

Source: Pictures Collection, State Library Victoria, Accession no. A/S1/02/82/37.
The impact on individuals from floods can be gleaned from diaries. The King family had to beat a hasty retreat in the face of flood in November 1844. The station day books record the intent to move two huts further away from the river. Mary Cunninghame wrote in 1846 that ‘unfortunately our vegetable garden has been flooded by the lake rising higher than it was ever known to do before which will put us back a good deal with our gardening’. George Auchterlonie noted that his neighbour had lost land to the erosive power of floodwaters. Miss Caughey wrote on 27 August 1882 that rain was heavy enough to stop church attendance because the ‘fearful’ roads made for a dangerous trip. The following month they planned a picnic to host local councillors debating a bridge site, which the family hoped to influence. ‘I hope it will not rain after all our trouble’, she wrote. The normal social and business life of the catchment was severely disrupted for weeks or months until lands dried out and repairs could be undertaken.

Part of the difficulty in understanding ‘normal’ rainfall relates to measurement, or rather the lack thereof. At this time, measurement of rainfall was an emerging part of hydrological and meteorological science globally, but there is scant evidence of it occurring publicly, regularly and consistently in the catchment until the later years of the nineteenth century. On 19 July 1870, the Gippsland Times wrote:

The rainfall in the neighbourhood of Melbourne, according to the Argus, has only been 12.80 inches since the beginning of the year. The rains thus far during 1870 have varied much in different parts of the colony; but it is questionable if any place has been more severely visited in this respect than Gippsland. It would be well if a rain gauge were established at one of the Government offices, either here or at Bairnsdale, as records, besides being interesting, would be likely to prove useful in a country so liable to periodical inundation by disastrous floods.  

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66 Diary of Miss AM Caughey, 27 August 1882, 2 September 1882, and 21 September 1882, SLV, MS 8735, MSB 434; King Station Day Books, 23 November 1844, SLV, MS 11396, MSB 404.
67 Letter from Mary Cunninghame, at Roseneath, 20 September 1846 (postmarked from Alberton) to Lilias Bonar. Thomson Family Papers, NLA MS 8600, box 1, folder 1.
68 GT, 19 July 1870.
Gippsland had been settled from 1838, making 30 years of flood experience amongst the white population. These were mainly caused by the sandbar at the entrance remaining closed, inundating the swampy fringes of the lakes and rivers. It was a perfectly normal part of the hydrological cycle. These relatively small events contrasted with other qualitatively different floods, notably in 1863, when a number of people drowned and the whole Bairnsdale cemetery was washed away.

Whatever normal was, floods disrupted it because they weren’t predictably timed like the famous Nile floods. The Gippsland Times gave extensive descriptions throughout 1870 of how high the water reached and its path. Describing a flood around Narracan, the reporter noted:

On Blind Joe’s Creek the water was higher than during any portion of the winter floods, and a considerable portion of fencing has been washed away and buried, amongst other debris, in the scrub. At the Middle Creek the log crossing, lately constructed by order of the Rosedale Board was swept away … At Sheepwash Creek the water was very high, but no damage was reported as having been done. The river at Rosedale is running bank high, and threatens an overflow before long.\(^{69}\)

This typical report sets up an implied hierarchy of river heights. There is an average winter flood, exceeded at Blind Joe’s Creek. At Sheepwash Creek the water was high, in contrast to the term ‘bank high’, in contrast again to ‘overflow’. This shorthand description assumed that people who read the paper knew the places in question, and were au fait with the ‘ordinary’ conditions there.

In some rare flood reports, numbers are offered as an indication of magnitude. When discussing the height of a river, these are usually in relation to a bridge, but there are also mentions of what is thought to be the normal river height. For example, in the 26 March 1870 issue, the Heyfield bridge was under threat from an extra 2 feet of water ‘above its ordinary height’. When the paper went to press, the floodwaters were 2 feet under the Raymond St bridge. The following edition described the extent of the floods across the district, when information had been able to reach Sale. Largely there are no numbers given. One of the exceptions was the 6-foot-deep swamp opposite the English church, which attracted

\(^{69}\) GT, 16 October 1869, emphasis in original.
attention because some people had decided to go rowing.\textsuperscript{70} Where there is no available landmark, a straight depth in feet is given, such as Desailly’s flat being 2 feet under a week after the first rush of waters, or the depth of snowfall on the Dargo High Plains.\textsuperscript{71} Snow depth was important because it gave a potential indication of flood severity in the spring.\textsuperscript{72} On 9 April, the Boggy Creek correspondent wrote that the machinery at the Sons of Freedom Mine had been submerged for up to 60 hours, and that it was the heaviest rain seen in 10 years.

The rareness of measurement in the 1870 reportage confirms the importance of subjective and relative knowledge, especially when much of the population may have had minimal schooling. Everyone would have been able to visualise water up to the eaves of a barn.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{boggy_creek.png}
\caption{Boggy Creek, J Williamson engraver, 1865.}
\label{fig:boggy_creek}
\end{figure}

\textsuperscript{70} \textit{GT}, 29 March 1870.
\textsuperscript{71} For Desailly’s flat, see \textit{GT}, 23 April 1870; for snow, see \textit{GT}, 3 May 1870.
\textsuperscript{72} For example, the \textit{Illustrated Australian News for Home Readers}, reported on 20 August 1867 that John Temple Seaborne, while making his way from the Ovens, got stranded on the Dargo High Plains during snow and was so severely frostbitten he had to be taken to Grant for medical treatment. Similarly, deep snow (up to 3 feet) also reported at Woods Point and Matlock, p. 2.
Residents of Sale knew the next flood was coming from this report on 16 April:

The drizzling steady rain of the past two days has put an effectual damper upon all the sport and enjoyment in connection with the Easter holidays. Everything now wears a most uncomfortable, cheerless aspect … There was a continuous soaking rain all yesterday, and the Thomson has again risen to within five feet of the bridge level. It is feared that the copious rainfall in the mountainous districts will bring down a volume of water sufficient to again cover all the low lying ground in the vicinity of Sale and Stratford … The swamps, supplemented by the overflowing gutters and channels, are at the present time rising rapidly, and a very little will place Sale in an inundated condition. At the hour of going to press, we have had nearly 50 hours of rain without intermission.\(^{73}\)

As the floods continued through the year, the reference point for heights became the floods themselves. The flood reported on Tuesday 17 May, which had commenced with ‘incessant rain’ on the previous Thursday, was reported to exceed the 1863 flood mark. Until then this flood, with its high death toll, had been considered the extreme. More commonly, the description is referenced to floods occurring within 1870. There were now more landmarks by which to describe the ingress of the waters. Mr Cobain’s barn was flooded up to the roof, destroying his barley store. The Greenwood family at Clydebank was rescued off the roof of their hotel, while the bark huts of the Chinese market gardeners were submerged to their ridge lines.

In this story of relative heights, only two things sank (besides spirits): the pilings of the Cunninghame St and the Nuntin bridges.\(^{74}\) Notably these are all vertical measures. In the whole of 1870, there is not a single numerical reference to the breadth of space water could occupy, and only occasional qualitative ones.\(^{75}\) Gippsland’s settlers were very much as Cioc described people living along the Rhine:

\(^{73}\) *GT*, 16 April 1870.

\(^{74}\) *GT*, 17 May 1870.

\(^{75}\) *GT*, 29 March 1870, ‘The Thompson is now in every part a swollen expanded river’; *GT*, 19 April 1870, ‘The river washed over Punt Lane road at different places, flowing into the swamp on either side, and giving the whole country towards Longford the appearance of a vast lake’.
Flood is a highly anthropocentric term, rooted in the human proclivity to think of a river as having a fixed length but no prescribed breadth, with the result that the flood plain is often used for farms and settlements as if it were not part of the river system.\textsuperscript{76}

Sale residents appear to have forgotten that Sale’s original name was Flooding Creek, a clear toponomic clue to their likely experience if they settled there. Their ecological perception of a flood was generally expressed in words that represent degrees of verticalness, such the height of Cobain’s barn, rather than the breadth of the floodplain on which they settled. Height mattered because it was tied to the fate of the social, physical and economic infrastructure that underlay their culture. This emphasis on high and low will continue in Chapter 6, which considers still water lying in low in the landscape.

Other ecological knowledge learnt

It takes more than rain to make a flood. The detailed tracking of floods in the papers provides evidence for how colonial Gippslanders perceived these related ecological aspects of the hydrological cycle. In 1897, a newspaper report mentions that there were fears of a flood, because ‘the southerly winds were backing up the lakes, but the rainfall in the mountains does not appear to have been heavy enough to cause any trouble’.\textsuperscript{77} This demonstrates the understanding that more than one environmental process is at play. Additionally, newspaper evidence shows clearly that GLC settlers understood the relationship between snow, heat and flood timing, as well as the effect and implications of soil saturation. The combination of water and clay was lethal for the horse that lost its life floundering in a bog in Punt Lane.\textsuperscript{78} Similarly, it was noted that the annual movement of stock to the high plains would be delayed for months because the ground would be too boggy.

It also interfered with the timing of agricultural operations, setting ploughing and seeding back by weeks. In August it was noted that early sown crops were suffering from waterlogging, and that everyone was holding out for a dry change in order to attempt a late sowing.\textsuperscript{79} A few years later, the \textit{Gippsland Mercury} aired opinions on soil moisture in a less wet

\textsuperscript{77} \textit{GT}, 16 August 1897.
\textsuperscript{78} \textit{GT}, 17 September 1870.
\textsuperscript{79} \textit{GT}, 4 October 1870.
year. The Tinambra correspondent said: ‘Some farmers are of the opinion that a few showers would be of great advantage now, while others think there is sufficient moisture in the soil’. 80 This probably reflects differences in land units and the ability of different soils to retain moisture. A farmer who selected on a sandy unit would clearly have a different opinion to a farmer who was lucky enough to get a good loamy soil.

That a correlation between snow melt and flood was understood is evident from comments about a kind of informal flood-warning system, of which the papers were integral. On 16 October 1869, the paper published the following warning:

Constable Reilly writing from Warrangarra reports: ‘The spring flood of the present year is now passing down the Dargo and Mitchell Rivers. The water is overflowing their banks. A heavy flood may be expected at the end of the present week about Sale and the Lakes.’ This report we fear is only too true and persons whom it concerns had better take timely warning. 81

When the first flood struck Sale, the paper recorded that the police constables had visited the common and other lower elevation areas to advise residents to make preparations to shift livestock and valuables to higher ground. The collective wish was probably for warm dry weather so that the regular cycle of farm activity could get back to normal, but this could also be a dangerous wish after such a severe winter:

The milder weather which we experienced for the last two days has had the result of bringing down a quantity of water to the low lying lands from the upper country, evidently from melting snow. It is to be hoped the thaw will be gradual; else the probability is more floods will be experienced in this district, as the ranges have more than the usual quantity this season to be melted away. 82

The existence of this informal flood-warning system speaks of hard learning from experience. It shows that settlers did try to institute protective systems. In the flood of 25 March 1870 in which the bridge across the Avon River at Stratford was destroyed, the Gippsland Times said:

80 GM, 24 July 1877.
81 GT, 16 October 1869. The spelling of Warrangarra could mean either the Wonangatta River or the Wongungurra River. This practice was also discussed in J Sadleir, Recollections of a Victorian police officer, George Robertson and Co., Melbourne, 1913, p. 153.
82 GT, 9 August 1870.
This bridge has been swept away a second time. It will be recollected that it was partly re-erected at a considerable elevation above the ordinary flood level of the river, in order to prevent the reoccurrence of the disaster only a few years ago, but it seems this precautionary measure was powerless to prevent its demolition.83

The term ‘ordinary flood level’ illustrates that there was a mental benchmark. This is a kind of intellectual epigraphic record, the mental equivalent of the actual marks that floods leave in the landscape.84 In another example, the Bairnsdale Liberal News reported on a flood in 1879. Comparing damage to the flood of 1876, it noted that hop growers had learnt from the earlier flood because they had bound the hop poles and not lost quite so many.85

Given the constant discussion of interruption to nearly every aspect of social and economic life, it is not surprising to see so few references to the other side of the balance sheet. There were only four positives noted in the Gippsland Times. In August 1870, the Omeo correspondent detailed the devastation to mining operations around Livingstone Creek. His tone lightened, however, at the realisation that the flood had removed ‘hundreds of tons of tailings, and other debris which impeded the proper working of many river and creek claims throughout the district’.86 The health of the downstream aquatic life in the river channel would have been severely affected, but the Omeo correspondent had no appreciation of this.

The second benefit was the boost to pasture growth. The preceding summer had been quite harsh, and the ample quantities of water seemed to make the world anew. Fresh green grass, sprouting crops and full creeks, at least in the autumn of 1870, made for positive hopes for a bumper season. Third, the full lakes and swamps were also a beacon to all kinds of waterbirds and, therefore, to the euphemistically named ‘knights of the trigger’.87 Finally, the benefit with the most far-reaching consequence was that the sandbar entrance to the Lakes was scoured open. The Lakes Entrance pilot described the conditions as superlative in the six years that

83 GT, 26 March 1870.
85 Bairnsdale Liberal News and North Gippsland District Advertiser, 4 June 1879.
86 GT, 2 August 1870.
87 GT, 2 April 1870 and 30 April 1870.
he had been the pilot.\textsuperscript{88} The force and quantity of water from the floods had scoured a deep channel whose longevity would fuel the rail versus ship debate that was such a feature of the catchment’s public life.

**Staying safe, warm and dry**

Focusing solely on floods misses the impact of heavy precipitation that stops short of flood. There are similarities, however – notably the difficulty with travel and the interruption to the social calendar. Heavy rain accompanied by wind storms, frosts and hail were hazards that colonial settlers had to guard against. Stock could be killed by debris or weakened by frosts, while fences and other farm infrastructure could suffer damage. Duncan Johnston’s barn was destroyed by a storm in September 1882.\textsuperscript{89} Mr T White, recalling his early days in a tent on the west side of Narracan Creek, noted that the pigs were as anxious for shelter during storms as the humans. They would escape, come into the tent and shelter under the beds.\textsuperscript{90} Occasionally, people caught outside were injured or killed by falling trees.\textsuperscript{91}

Protecting oneself from the cold and wet was vital to maintaining good health. A variety of sources from the Narracan/Moe area all suggest that the constant rain had adverse health impacts. Colds and bronchitis were common. One teacher ‘caught a severe cold walking thro [sic] the flood water to school’.\textsuperscript{92} Councillor Michael O’Connor and his father-in-law George Holland both died of pneumonia, aggravated by the constant wet and damp conditions.\textsuperscript{93} Thomas Butterfield, a selector at Swan Reach, died of pneumonia in 1879. It took three days before the river was low enough for someone to come and help his wife and daughter bury him.\textsuperscript{94} Dampness also affected rheumatism.\textsuperscript{95} Henry Meyrick developed rheumatism while spending a winter in a tent. While attempting to fetch the doctor during a flood he was drowned because of the resultant weakness and pain in his arms.

\textsuperscript{88} *GT*, 2 August 1870.
\textsuperscript{89} Diary of Duncan Johnston, 17 September 1882.
\textsuperscript{90} *Coach News*, vol. 10, no. 3, March 1983, p. 4.
\textsuperscript{91} See, for example, the storm reported in *GT*, 14 January 1897, where a man and three horses were killed by lightning, reserves were flooded and a boarding house at Lakes Entrance was de-roofed.
\textsuperscript{92} M Fletcher & I. Kennett, *Changing landscapes: A history of settlement and land use at Driffield*, International Power Hazelwood, Morwell, 2003, p. 30. See also Diary of George Glen Auchterlonie, 12 December 1870, ‘my cold very bad today coughing up a great deal of stuff from my lungs’. Despite his illness, George had carted 91 rails from the nearby bush that day.
\textsuperscript{93} John Adams, *So tall the trees: A centenary history of the southern districts of the Narracan Shire*, Shire of Narracan, Trafalgar, 1978, p. 50.
\textsuperscript{94} *East Gippsland Historical Society Newsletter*, vol. 1, no. 2, 1979, p. 9.
Ferdinand von Mueller developed rheumatic fever, allegedly from too long a dunking in the Tambo River in search of aquatic plants. Duncan Johnston ‘got a wetting’ while helping his friend drive cattle to the Tambo. It was a bad day all round for Johnston, for he had also been press-ganged into standing for the shire elections.96 Norman Gunn remembered travelling to balls in the Thorpdale South area wearing ‘clean overalls over our good suits, then our good overcoat, and over it an old one to keep the saddle dry’.97

Figure 4.7: The floodplain between the Swing Bridge and Longford, November 2011.
Source: Author.

96 Diary of Duncan Johnston, 30 January 1882. He recorded other instances of getting wet while travelling on 17 March 1882, 28 March 1882 and 6 April 1882.
George Auchterlonie described a dreadful night that he spent camping out in a storm:

Weather heavy blasts of wind & rain throughout the day At 5 p.m. the wind increased to a perfect huracane accompanied with bitter rain. I could not light a fire & my clothes were wet thru so I fastened down the tarpaulon & slung my hammock & turned in. Kept awake a long time with the dread that the tarpaulon would be blown to pieces or the wagon upset.

The following day, he said:

At getting up found it anything but agreeable pulling ones legs out of a warm bed and shoving them into a pair of socking wet trousers in a bitter raw morning. Packed up did not take time to light a fire, swallowed my cold water break fast in a hurry & and got away for my bullocks, found them looking very miserable.98

Like Auchterlonie’s tarpaulin, settlers had some key items that could make wet weather more endurable. Paul Cansick’s lead advertising line was often ‘NO MORE DAMP FEET’, extolling the qualities of his locally produced shoe leather.99 A letter from 76-year-old Henry Dendy reveals the amount of planning that had to go into waterproofing. His plans to re-roof with bark were thwarted because it was not the bark season, so he was forced to use a different solution. He wrote to a friend to send ‘four lbs of litharge and a small quantity of some dark colour slate or dark stone or anything you think proper’. Combined with boiled oil, this mixture would waterproof unbleached calico and would serve as a roof until barking season.100

Attempts at waterproofing extended to harvested crops. The Currie family diary recorded for 17 March 1882 that ‘Da started to thresh but [the rain] came on just enough to stop him’. The wet weather of 1870 forced George Auchterlonie to devote a whole day to turning the stooks because the insides were not dry.101 A similar story unfolded in February 1886. Eight inches of rain in as many weeks meant that crops were rotting in

98 Diary of George Glen Auchterlonie, 8 and 9 September 1870.
99 GT, 29 March 1870.
101 Diary of George Glen Auchterlonie, 13 December 1870.
the stooks. The design of charcoal-fired hops kilns avoided iron roofs, as they could collect moisture and precipitate back on to the crops, which were supposed to be being dried. Heavy rains were, however, more of a problem for farmers than graziers. To a grazier, heavy rain meant lush pasture and a good return.

Wet and stormy weather also affected the progress of various public works. Councils and government departments preferred to schedule major works like bridges for summer and autumn. The newspapers yield multiple reports of delays to works and social functions. Angus McMillan gave perhaps the best description of rain stopping work, in his diary from 1864 while cutting the alpine track:

Sat 26th March. All hands set to clearing the road at 8am. Rain all last night. Mr Jones parting out clearing the track to the Upper Dargo ... 3pm heavy rain, the road cutters had to stop work, 20 to 5. Mr Jones returned like a drowned rat, encountered fearful scrub, even his forehead is bleeding with the bits of leeces which are always numerous in this altitude in this damp underwood.

102 GT, 10 February 1886. See also GT, 18 January 1897, Stratford correspondent: ‘The late heavy rains did a large amount of injury to the crops that were cut and awaiting the threshers, several stacks in this neighbourhood having to be separated so as to allow the sheafs to dry. So bad have the grasshoppers been and so vicious that they had commenced to destroy window curtains before the rain destroyed them. The river here only rose slightly even though we had nearly 4 inches of rains, but the ground was so parched the heavy downfall was largely absorbed. The fruit crops though largely thinned by heavy weather will be indifferent in quality codlin moth prevailing’.


104 GT, 20 December 1886, Rosedale correspondent; see also Diary of Duncan Johnston, Tuesday 30 May 1881.

105 GT, 26 January 1875.

106 For example, GT, 4 January 1876, the Rosedale New Year’s concert on New Year’s Eve was largely washed out by ‘drizzling rain’; GT, 14 December 1881, Traralgon Shire Council engineer reported that the inclemency of the weather has slowed everything, but as it was mostly clearing, no draining, no damage was done; GT, 10 December 1886, a really wet week: all over the catchment, part crops ruined. Rain caused delay in several functions including the Caledonian society sports; Walhalla Chronicle, 27 April 1894, Eight hr day picnic: ‘the weather was very unpropitious and to a certain extent marred the fun, as shelter had to be sought from the continual showers’, p. 12; GT, 12 October 1896, Shire Engineer Avon, reports. Of the eight contracts currently in hand, at least two were delayed by rain. ‘The heavy rains that have fallen since your last meeting did considerable damage to the roads in the north and east ridings. I annex hereto a list of the roads etc requiring repair, in consequence of the floods and heavy rains. I am pleased to say that no damage has been done to the bridges in the entire shire as far as I have ascertained as yet’; GT, 22 March 1897, wet weather dampens the St Patrick’s Day sports festival; GT, 17 May 1897, show for the mechanics hall was ‘marred by abominably cold and wet weather’.

107 Diary of Angus McMillan during 1864 Alpine expedition, 26 March 1864, SLV, MS 9776, box 268/2.
Welcome rain

So when was rain beneficial? Spring rains were vital to get crops growing:

During the last week a welcome change has taken place in the weather, nice genial showers falling at intervals during the day, and an occasional heavy one at night. It has been a godsend to the crops here, having come in the nick of time. Everything is beginning to assume a healthy and green appearance … 108

Rain was most welcome in March and April, especially after a blistering summer, and settlers had learnt to expect it then. Its desirability was influenced by the preceding conditions, especially if there had been a series of seasons without sufficient rain. Given low rainfall over winter, Duncan Johnston was extremely happy for a week’s home detention in October describing it as ‘nice steady rain’. 109

Insufficient autumn and winter rains meant patchy germination of crops. For a grazier, nicely spaced ‘genial’ showers through autumn would give enough pasture to sustain animals over the winter, until the combination of warmer weather and spring rains would produce the summer flush of growth. The term ‘genial’ is used often in newspaper reports. Its synonyms provide an image of a warm, reliable and good-natured friend, who can be trusted to show up when needed. 110 Farmers were acutely aware of the importance of rain and evaluated rainfall effectiveness continually. ‘Although steady, the downpour was by no means heavy, but it was an excellent soaking rain, and as there was no wind to dry it up, the ground received the fullest benefit from it.’ 111

A closer understanding of the rainfall timing comes from the report of the Agricultural Show in 1886, held in October, after a relatively wet spring. The show was considered a success because previous dry seasons had prevented many entries for fruits and vegetables. ‘Good cabbages, cauliflowers, turnips and rhubarb, no cherries too early, gooseberries too immature but still shown. Strawberries passable. Roses had suffered from recent high winds.’ 112 A month later, the Upper Maffra correspondent continued this emphasis on

108 GT, 16 August 1886, The Heart correspondent.
109 Diary of Duncan Johnston, 23 and 24 October 1882.
110 See fn. 18 for an example. Also, GT, 1 July 1897, Stratford correspondent.
111 GT, 20 August 1886. For another example, see GT, 20 November 1876, ‘Steady and continuous rain fell in the Rosedale and T districts on Thursday night and all day Friday, the smaller creeks are everywhere surcharged with the excess of water. This rain, owing to the late drying winds was greatly needed and will prove of great benefit to the young grass’.
112 GT, 29 October 1886.
the specificity of rainfall impacts: ‘It commenced raining heavily sometime during the night, and is still continuing. It will prove most beneficial if not too heavy, the grass in particularly being almost burnout out of the ground with the recent heat’.113

Farmer and graziers knew exactly how much rain they needed for where they were at in their annual cycle. At the beginning of a new season, a soaking rain of some duration was needed to be able to start ploughing. After crops had been sown, a soft steady rain was required, enough to moisten the soil and encourage germination, but not so much that the seed might rot in the soil.114 More importantly, they could know this without any reference to a centralised data bank of measurements.

There is evidence of settlers moving to areas that they believe had more reliable rainfall, from initially attractive lower, thinly wooded plains to areas that were higher and more densely forested.115 George Auchterlonie and his family left the Maffra district and selected adjoining blocks at Narracan, at the head of Wilderness Creek.116 The selectors who established Gormandale were fleeing the impacts of the drought on the flatter lands around Merriman’s Creek.117

This must be counterbalanced against Legg’s study, which illustrated that the greatest number of walk-offs were from blocks on heavy, wet forested lands.118 It was, however, in these areas that dairying was eventually established. Dairying is a graphic example of how rainfall controlled the spread of different types of agricultural industries. Until the advent of irrigation in the twentieth century, successful dairying was restricted to areas with a rainfall average of 25 inches.119 This explains the advent of anxious reports from the late 1880s about the quantity of milk supply to the various co-op creameries. For example:

113 GT, 26 November 1886, emphasis added.
114 GT, 11 November 1881, Upper Maffra correspondent: “The last day or two we have had some nice showers, which although not sufficient to saturate the grass lands, have done an immense amount of good to the crops and both crops and gardens are now looking well”.
116 Fletcher, Driﬀeld, p. 17.
since the late rains, the milk supply at the Rosedale creamery has increased 300 gallons, the weekly supply now being according to the Courier, about 1000 gallons. At Glengarry the supply has increased 300 gallons a day.\textsuperscript{120}

Brinsmead confirms the seasonality of milk production in Gippsland, stating that it was largely a spring and summer affair.\textsuperscript{121}

The positive impacts of moderate rainfall enabled the growth of an orderly and progressive society. Daily farm and government work proceeded, development of new agricultural enterprises was encouraged and social relations based upon Church and family could be maintained through the ability to travel and socialise. These were the physical manifestations of reliable, moderate and predictable rainfall.

The affect of rain

Responses to precipitation go beyond strictly scientific and practical approaches. As demonstrated in Chapter 3, colonial settlers were familiar with the figurative use of water in the Bible and, more broadly, with the use of ecological phenomena to describe the world to each other. All aspects of the hydrological cycle are used in this way. Rain, snow, mist, frost and hail are forms of precipitation that are used imaginatively to describe states of feeling. The quote from the \textit{Gippsland Times}, which conferred on showers of rain a vivifying capacity, is one example.\textsuperscript{122}

The Bible and other theological writings are one source of powerful imagery about precipitation. These metaphors provide a complementary approach to understanding rain, snow, hail, frost, dew and flood. Deuteronomy 33:28 gives a largely benevolent view of precipitation, saying: ‘My doctrine shall drop as the rain, my speech shall distil as the dew, as the small rain upon the tender herb, and as the showers upon the grass’. God’s grace comes clothed in the form of soft and gentle precipitation, echoing the life-giving showers alluded in the \textit{Gippsland Times}, which are ideally both moderate and regular. In another edition, the paper calls rain the providence in the clouds.\textsuperscript{123}

\textsuperscript{120} \textit{GT}, 22 February 1897.
\textsuperscript{122} See fn. 58.
\textsuperscript{123} \textit{GT}, 17 December 1870.
Middleton has pointed out the importance of Biblical scholarship throughout the centuries in reinforcing symbolic use of hydrological processes to explain faith. For example, Isidore, Bishop of Seville, used the process of cloud formation to explain how men are gathered to God:

The clouds are to be understood as holy evangelists, who pour the rain of the divine word on those who believe. For the air itself, empty and thin, signifies the empty and wandering minds of men, and then thickened and turned into clouds, typifies the confirmation in the Faith of minds chosen from among the empty vanity of the unfaithful.124

Isidore’s other descriptions included hail and snow, principally used to signify a lack of faith or a lack of love; mist meant confusion, whereas dew signalled purity.

As discussed in Chapter 3, God both rewards and punishes with water. One of the most important teaching stories in the Bible is the flood story.125 Flood is clearly a method of punishment and retribution. Also, the passage of a flood is used to illustrate undesirable human characteristics. The Book of Job 6:15 says: ‘My brethren have dealt deceitfully as a brook, as the channel of brooks that overflows’.126 A flood is the antithesis of a moderate and ordered Nature. It is quite clear from the descriptions of the numerous floods of 1870 that the floods were regarded in very negative terms. The 26 March 1870 edition used descriptions such as ‘a frightful rush of water’, ‘the resistless torrent’, ‘a hopeless case’ and ‘imminent danger’. The very number of floods in this very wet year was itself an affront to the much cherished notions of order and progress. The constant discussion of problems with roads and bridges reflects this underlying desire for permanency, order and moderation.

There is evidence that colonial Gippslanders used hydrological metaphors to describe their world in this symbolic manner. One example of local preachers following this tradition was Rev. Canon Watson, whose sermon from the words ‘Go show thyself unto Aham, and I will send rain upon the earth’ came from the Book of Kings (I Kings 18:1) Watson concluded that God’s munificence was in direct proportion to human obedience to his

125 For a discussion of a variety of aspects of the mythological importance of flood, see A Dundes (ed.), *The flood myth*, University of California Press, Berkeley, 1998.
126 See also: ‘But let judgement run down as waters, And righteousness as a mighty stream’, Amos 4.
laws. In the newspapers, a cloud metaphor was used to describe political relations amongst European nations in 1886, while the Cunninghame correspondent to the Bairnsdale Advertiser called the source of rain the ‘bottles of heaven’.

The presence of rain at the right time was an emotional upper for many farmers. On 24 February 1886, the Upper Maffra correspondent for the Gippsland Times wrote that the late steady rain has lifted the ‘desponding hearts’ of the farmers of the district. George Auchterlonie would go into some detail on his refreshed crops after a well-timed bout of rain. Margaret McCann, allowing for her general terseness, was positively effusive on 14 August 1895 when she recorded ‘nice rain badly wanted tank flowing over first time for the year’. A month later, she reported that ‘Wall flowers, verbena and white lilies are blooming in my garden’.

While rain was welcome, things could also go too far. Too much rain dampened the spirits. Writing in the last edition of the paper before New Year’s Eve, the Grant correspondent of the Gippsland Times wrote: ‘After our long and severe winter a bit of sunshine is very welcome’. In Chapter 3, I discussed Ada Crossley’s favourite song, ‘Sunshine and Rain’, which valorised sunshine and was performed many times publicly.

Other types of precipitation are pressed into a similar moral symbology. In a story in the Bairnsdale Liberal News and North Gippsland District Advertiser in 1879, George the hutkeeper begins (with unintentional comedy): ‘My life has been a sad one. It has been like a stormy dark night. Once a bright star shone up it for a short happy period; but then

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127 Reported in GT, 8 September 1886. In the same issue there was also Rev. WH Gray of the Presbyterian Church, who sermonised on the text from Acts of the Apostles 1:9–11. ‘And when Jesus had spoken these thing, while they beheld, he was taken up and a cloud received him out of their sight.’ At Primitive Methodist Church, Rev. GH Cole chose from St Johns gospel (John 8:12), ‘I am the Light of the world’.

128 GT, 31 December 1886; Bairnsdale Advertiser, 16 April 1885. See also Bairnsdale Advertiser, 14 May 1885, ‘A cloud has come over the prospects of the Good Hope Mine as the late yield was far below expectations’.

129 See also GT, 29 October 1886, Stratford correspondent.

130 Diary of George Glen Auchterlonie, 7 November 1868, ‘The wheat looks wonderfully improved since the rain, it has shot out to about two foot high. The Egyptian now nicely in bloom. The oats have become quite green again and growing well, the barley is quite revived’; Diary of Margaret McCann, 23 September 1895, SLV, MS 9632, MSB 480.

131 GT, 29 December 1880.

132 GT, 22 October 1896, the Glenmaggie correspondent wrote that at a coffee social and concert for the Church of England, Miss Purdue sang ‘Sunshine and rain’, Miss Bell sang ‘Valley by the sea’, Mr Haws sang ‘Will of the wisp’. GT, 15 April 1897, Miss O’Farrell’s pupils perform it at the Mechanics Hall.
heavy, angry clouds obscured it again. I was left in darkness blacker than before’. In 1870, the Gippsland Times uncharacteristically published two poems that provide examples. The first was called ‘Beautiful Snow’, and the second was called ‘On Morning’.133 ‘Beautiful Snow’ uses the contrast between the appearance of pure new snow and after it has been lying in the streets as the central motif to tell the story of a fallen woman. The first three stanzas set the scene of a happy town receiving the first snow of winter, with dogs chasing snowflakes, and people riding out in their sleighs. The fourth stanza begins the story of the woman’s misfortune:

Once I was pure as the snow, but I fell,
Fell like the snow flakes from heaven to hell;
Fell to be trampled like filth in the street,
Fell to be scoffed at, to be spit on and beat.

The poem continues on with the enumeration of her losses, her beauty and innocence, her friendships and her relationship with her family. She faces an icy death as a homeless person. The final stanza continues both the Christian and the hydrological theme, and offers her salvation:

Helpless and foul as the trampled snow,
Sinner despair not! Christ stoopeth low
To rescue the soul that is lost in its sin,
And raise it to life and enjoyment again.
Groaning, bleeding, dying for thee,
The crucified hung on the accursed tree,
His accents of mercy fall soft on thine ear –
‘Is there mercy for me? Will He heed my weak prayer?’
Oh, God! In the stream that for sinners did flow,
Wash me, and I shall be whiter than snow!

The second poem is not so overtly religious, but certain key words show it to have a religious subtext. Its anonymous local poet was comparing the rise of the sun and the beauty of a dew-spangled morning to the light of God’s truth. The sun, referred to throughout as a male, is kingly and banishes gloom and darkness. Dew, which is largely portrayed in the Bible as a benefit to mankind from God, reinforces the sense of the beauty of the morning.134

133 ‘Beautiful Snow’ was published on 12 April 1870, and ‘On Morning’ on 10 December 1870.
134 Genesis 2:5–6: ‘But there went up a mist from the earth and watered the whole face of the ground’, and Genesis 27:28: ‘So God give thee of the dew of Heaven, and of the fat places of the earth’. Also Samuel 17:12 and Deuteronomy 33:28 referring to falling dew.
Popular English poets employed precipitation imagery. One of the more famous is William Wordsworth, whose now classic poem with the opening line ‘Into every life a little rain must fall’ today adorns greeting cards. It was reproduced in the *Gippsland Times* on 23 May 1874. Shakespeare regularly used precipitation to heighten the emotional effect of his dramas. Would the opening scene of Hamlet have been quite so effective without the mist? Thomas Savige named his property at Narracan Falls after a Longfellow poem. These books could be found in the 2,000-volume library of the Sale Mechanic’s Institute, and the subscription reading library run by Louis Roth, a bookseller, stationer and fancy goods merchant in Sale. Alternatively they could be borrowed from men like Rev. William Spence Login who, according to *Butler’s Directory* of 1866, had 200 volumes in his church library.

While these examples are admittedly patchy, taken collectively they indicate that colonial Gippslanders were familiar with the emotional and spiritual depictions of precipitation common in Europe, and that they continued to apply them in their new country. Each succeeding chapter will show examples relating to rivers, swamps and the absence of water, thus building the metaphorical world of water that colonial Gippslanders held.

**Conclusion**

Colonial Gippslanders went from a world of lush greenness maintained by regular predictable rainfall to one that fluctuated wildly; a world where it was possible to have 17 floods in one year, and to then have no rain for months on end. Because they were engaged in transferring northern hemisphere agricultural systems, reliant on seasonally specific and abundant rainfall, to such a place, the anxiety about precipitation was high. Their perception of northern European weather and hydrology as the norm emphasised the supposed abnormality of the colonial

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135 Adams, *So tall the trees*, p. 48.
136 *GM*, 9 January 1877, Sale’s library was the biggest, but other smaller institutes still had a large number of volumes available and they also subscribed to many popular journals and newspapers; *GT*, 15 February 1897, Roth advertised that ‘Latest works of Rider Haggard, Ethel Turner Fielding, Marie Corelli, etc, may be had’.
137 *Butler’s Directory*, 1866, p. 72.
situation. Unseasonal or heavy rain had important economic and social repercussions, highlighting the contrast between the green, wet lands of their birth and where they had come to.

This chapter illustrates the limbo that settlers were in. While some had traditional knowledge of weather, it was only relevant in Europe. The new meteorological science promised much, but for reasons of distance and disagreement, could not provide isolated settlers with the information they needed. Settlers tried to address their anxiety and uncertainty in a number of ways. They instituted systems of measurement in the hope that patterns would emerge, they adapted their building techniques to conditions as experienced, and they exchanged information with each other formally and informally. Fundamentally, though, there was nothing they could do to influence precipitation rates. Instead, they would channel their anxiety into channelling the surface waters of the catchment. Once water was on the ground, it was fair game.