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### Astronomical Observations

Australian Aborigines and Torres Strait Islanders had, in traditional times at least, a deep appreciation of, and rich knowledge about, astronomy and astronomical events. The content of these astronomies is broad-ranging and indicates a great degree of regional diversity. It is therefore not possible to talk of an 'Aboriginal astronomy'. As previously discussed, the night sky Australia-wide shows great variation, not only in its seasonalities but also in its geographical latitudes which, south to north, vary to the extent of some 33 degrees.

Astronomical observation and enquiry were not a separate area of knowledge or endeavour reserved for the chosen few. Astronomy was an integral part of Aboriginal life and was reflected in their cultural life of storytelling, song, dance, art and ritual. It is not unreasonable to hypothesise that some Aboriginal societies, at least, took great pride in their knowledge of astronomy and their particular astronomical concepts. Members of the Boorong of the Victorian Mallee, for example, proudly proclaimed to William Stanbridge in 1857, that they were 'better acquainted with the stars than any other tribe'.<sup>1</sup> Indeed, Charles Mountford went so far as to assert that 'it would appear from my limited research that many Aborigines of the desert are aware of every star in their firmament, down to at least fourth magnitude, and most, if not all, of these stars would have myths associated with them.'<sup>2</sup>

The early surveyor Mathews noted that 'all Aboriginal tribes have names for many of the principal fixed stars, and also for remarkable stellar groups.'<sup>3</sup> He considered that because the stars near the ecliptic and the zenith change their positions in the night sky more rapidly than

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1 In MacPherson 1881:79.

2 Mountford 1976b:449.

3 Mathews 1905:76.

those towards the poles, they more readily attract attention. Moreover, they could be more easily seen by people who camped in the then still thickly wooded country of Victoria and New South Wales. The horizon stars were barely visible in this context. Among the Wailwun in northern New South Wales, the star Phad (*Gamma Ursae Majoris*) and (probably) Merak (*Beta Ursae Majoris*), the only bright stars of Ursa Major<sup>4</sup> visible at that particular latitude, are known as *Ngung-gu*, ‘white owls’, for they are always low and move, as it were, ‘under the branches of the high trees.’<sup>5</sup>

The moon’s journey across the night sky is particularly important to Aboriginal people and is accompanied by numerous legends concerning the stars situated in the vicinity of its path. So Mathews considered that the Aborigines, at least groups in Victoria and New South Wales, had an equivalent of the zodiac.<sup>6</sup> The zodiac in the European cultural context is an imaginary belt of the night sky extending to seven degrees on each side of the ecliptic, within which are the apparent paths of the sun, moon and the principal planets. The orbits of the planets around the sun are in much the same plane. The orbital inclinations to the main plane of the solar system are 7° for Mercury, 3.5° for Venus, and less than 3° for Mars, Jupiter and Saturn. The European zodiac contains twelve constellations and hence twelve divisions or signs<sup>7</sup> remembered by the jingle:

The Ram, the Bull, the Heavenly Twins,  
And next the Crab, the Lion shines,  
The Virgin and the Scales,  
The Scorpion, Archer, and the Goat,

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4 Known variously as the Great Bear, the Plough or the Big Dipper.

5 Smyth 1972:286.

6 Mathews 1905:76.

7 It is worth noting that because of the precession of the equinoxes, each division now contains the constellation west of the one from which it originally took its name.

The man who holds the watering pot  
And fish with glittering tails.<sup>8</sup>

The Aboriginal Australians could also give, with a fair degree of accuracy, the time of the heliacal rising of any star.<sup>9</sup> They clearly knew that stars rose in the east and moved across the sky to the west, as does the sun. They also knew of the more gradual annual shift of the star groups, and based complex seasonal and ritual calendars on the location of particular stars at dawn or dusk.

However, when assigning any particular star significance, it was not automatically because of brightness, an aspect on which Europeans tend to concentrate in making their constellations. For example, a star's position in relation to the Milky Way was significant to the Aranda and Luritja peoples. They also, as did other groups, assigned to stars a class and a kin category. Yet, among the Boorong, a star's relation lineally to the horizon was significant.<sup>10</sup>

The idea, as was prevalent in European astronomy, of joining the brighter points of light to form patterns had some equivalents, for example, the vast *Tagai* constellation of the Torres Strait (and extending into Papua), but it was by no means the only way Australian Aboriginal groups made sense of and took meaning from the night sky. Often a group of less luminous stars formed a meaningful pattern, for example, second- and third-magnitude stars *Gamma* and *Delta Crucis* along with the less prominent *Gamma* and *Delta Centauri* formed the irregular quadrangular arrangement in Aranda and Luritja astronomy. It was the constellation of the Eaglehawk, and no star corresponded to any particular part of its anatomy.<sup>11</sup>

The people of Groote Eylandt assigned significance to a relatively small and inconspicuous group of stars, while apparently disregarding nearby and much brighter first- and second-magnitude stars. This

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8 Anon.

9 Piddington 1932:394.

10 MacPherson 1881.

11 Maegraith 1932:20.

constellation, *Unwala* (see Bark Paintings 9), is an unmarried spirit-crab who lives by himself. He is represented by the curl of stars *Sigma*, *Delta*, *Rho*, *Zeta* and *Eta Hydrae*, having an average magnitude of 4.4.<sup>12</sup> Procyon (*Alpha Canis Minoris*) and Regulus (*Alpha Leonis*), two adjacent bright stars (with magnitudes of 0.36 and 1.35 respectively) are apparently disregarded.<sup>13</sup> Among the Boorong in Victoria, the bright stars Procyon, Spica, Regulus and Formalhaut go unmentioned in their astronomy, whereas much fainter stars are assigned significance.<sup>14</sup>

In some instances, much greater patterns were seen than was the case for Europeans. In the example of the *Tagai*, the Torres Strait Islands constellation, the European constellations of Sagittarius, Scorpius, Lupus, Centaurus, the Southern Cross, Corvus, part of Hydra and one star of Ara are all joined up to form the ancestral hero, *Tagai*, standing with his fishing spear and fruit in hand, in an anchored canoe. To that celestial picture are added the crewmen represented by the open star cluster of the Pleiades and three stars in the belt of Orion, who were thrown overboard in the narrative associated with the constellation<sup>15</sup> (see Diagram 2, Drawings 1, 5, 6). The large Arnhem land constellation of *Tjilpuna* (see Bark Paintings 9, Diagram 1) which tells the story of the three fishermen, takes in the European constellations of Orion, the Hyades, the Pleiades and most of the bright stars to the far north and far south of these groups. It covers the largest part of the wet season sky from December to March.<sup>16</sup>

Colour was also significant in the designation of stars as significant. The Aranda, for example, distinguish red, white, blue and yellow stars. Antares (*Alpha Scorpii*) is classified as *tataka indora* (very red) and the stars of the Hyades are divided into a line *tataka* (red) nearest

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12 Haynes 1992:128.

13 Mountford 1956:479.

14 MacPherson 1881:41.

15 Sharp 1993:3–4.

16 Mountford 1956:493.

Aldebaran (*Alpha Tauri*), and a line of *tjilkera* (white).<sup>17</sup> The redness of Antares (*Alpha Scorpii*) is explained by this star being an ancestral woman who is decorated in red ochre.<sup>18</sup> The Gagadju also distinguish colour, for according to Bill Neidjie:<sup>19</sup>

I see pink star  
 I tell them 'That King Brown Snake'  
 I see his eye ...  
 that pink one.  
 That star he work.  
 He go pink, white, pink, white.  
 That King Brown he look at night.

Aboriginal groups of the Darling River in Western New South Wales thought that the planet Jupiter<sup>20</sup> was once a man who lived on roast yams and went red because he spent so much time over the fire cooking his favourite food.<sup>21</sup> Among the Weilwun in northern New South Wales on the Barwon River at the junction of the Namoi, Arcturus (*Alpha Bootis*) was simply called *Guembila*, meaning 'red'.<sup>22</sup>

Aboriginal groups also knew that within a certain distance from the south celestial pole, stars never fall below the horizon. The Aranda and Luritja people claimed that their constellation of the Eaglehawk as well as *Alpha* and *Beta Centauri* were always visible, although sometimes they were high in the sky and sometimes they were low down.<sup>23</sup>

As well as patterns of stars, individual stars could also represent aspects of culture important to Aborigines across the country. Individually, they have been shown to represent a whole creature, a

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17 Maegraith 1932:23.

18 Maegraith 1932:22.

19 Neidjie et al 1985:57.

20 It is more likely to be Mars.

21 Massola 1971:44–5.

22 Smyth 1972:286.

23 Maegraith 1932:24.

spirit ancestor, a possession, a place, a dwelling or a sacred site. Grouped together, as well as representing those objects already mentioned, in addition, they represented digging sticks, spears, canoes, tracks, campfires, tribal camps of related groups of people, animals, plants, food items and mythical ancestors. Moreover, qualities or states of being were signified. Among the Wailwun of northern New South Wales, for example, Canopus (*Alpha Carina*) was known as *Wumba*, meaning 'deaf', Venus was *Ngindigindoer*, meaning 'you are laughing', and Mars was known as *Gumba*, meaning 'fat'.<sup>24</sup> In addition, the perceived qualities of stars were assigned to ancestral beings. One manifestation of an ancestral being amongst western Arnhem Land people for example, was known as 'the running star'. He was pictured as a voracious creature who glowed and lapped up people with his long tongue.<sup>25</sup>

Yet, not only points or blurs of light were important in Aboriginal astronomies. The very dark patches between or beside the points and blurs of light were also distinguished, to a far greater extent than in European astronomy. On Groote Eylandt, for example, the European constellation of the Southern Cross (*Crux Australis*), the Pointers (*Alpha and Beta Centauri*) and the dark patch nearby known to Europeans as the Coal Sack, were seen as together forming a constellation (see Bark Paintings 8). The dark patch, as the story goes, was once a large fish which, while swimming in the waters of the celestial river was speared by *Alpha* and *Beta Crucis*, who were two brothers. The fish was dragged to the bank where the brothers divided it. They cooked their piece, each at his own fire, represented by *Delta* and *Gamma Crucis*. Nearby were two friends of the brothers, *Alpha* and *Beta Centauri*, who, at the time of the catch, had just returned from a hunt. They sat at their own campfire chanting whilst beating time with their boomerangs.<sup>26</sup> At Oenpelli, the Milky Way was similarly seen as a stream flowing across the sky. *Munguban*, the Coal Sack as Europeans know it, was seen as a large

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24 Smyth 1972:286.

25 Berndt and Berndt 1989:25.

26 Mountford 1956:486.

plum tree (see Bark Paintings 8), which, during the wet season in late December, provided the celestial inhabitants with much fruit.<sup>27</sup>

It would also appear that in some regions at least, moving stars (the planets) were distinguished from the more fixed stars. Among the Western Desert people, Venus, Saturn and Jupiter, which were seen to be continually changing position with one another, were looked upon as two brothers and a dog. Venus, the elder brother (*Iruwanja*), was waited upon by the younger brother, Saturn (*Irukulpinja*), and their dog, Jupiter. Saturn and Jupiter spent most of their time catching food for Venus.<sup>28</sup> The movements of Mars were also noted by the Jaraldi (Yaraldi) people in the lower Murray River area. Mars was seen to be a representation of an ancestral man and appeared to herald the spring (*riwuri*). As the ancestral man had eloped with the two wives of another ancestral man, he personified sexual activity and fertility.<sup>29</sup> The people of Mer (Murray Island) in the Torres Strait recognised planets as being different from stars because they identified them as not twinkling.<sup>30</sup>

Occurrences in nature were ascribed to particular sky phenomena at times. So, for example, among a Victorian group, survival of a particular species through a drought was attributed to a particular quirk in the constellation Europeans know as Coma Berenices, which was perceived as a tree with three large branches. At the junction of these branches was a small cavity which retained water despite the dry, parched earth all around. It was believed that birds drank at this tree cavity and were consequently sustained through the dry conditions.<sup>31</sup>

An interesting astronomy is displayed by the Boorong people of the Victorian mallee country. Based on observations made by William Stanbridge and reported to the Philosophical Institute of Victoria in September 1857, MacPherson suggests that the Boorong had developed

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27 Mountford 1956:487.

28 Mountford 1976b:450.

29 Berndt and Berndt 1993:75–6.

30 Rivers (in Haddon 1912 (4):219.

31 Observed by Smyth (in Nilsson 1920:132).

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a systematic grouping of their stars based on a lineal arrangement. Bright but isolated stars (that is, stars that do not conform to the particular lineal patterns) were not included in the groupings. Macpherson assuming that Stanbridge's observations were comprehensive, and placing the observations at the latitude where the Boorong lived at 36° S, located four significant linear groupings. These groupings were tolerably parallel to one another and to the horizon as they made their appearance in the eastern evening sky in their particular season. The lineal groupings that MacPherson distinguishes in Boorong astronomy consist of four triadic groups, each group representing three points in a line (at 36° S). Each of these triadic groups overlaps with one other group:

- Group 1:   The three stars in Orion's belt - *Delta, Epsilon* and *Zeta Orionis*  
              The three stars in Scorpius, Antares in the middle and those either side - *Tau, Alpha* and *Sigma Scorpii*  
              The three stars in Aquila, Altair in the middle and those either side - *Beta, Alpha* and *Gamma Aquilae*
- Group 2:   The triad in Orion's belt (above)  
              Aldebaran (*Alpha Tauri*)  
              The Pleiades
- Group 3:   The triad in Scorpius around Antares (above)  
              Arcturus (*Alpha Bootis*)  
              Two stars in the head of the Scorpion's tail - probably *Iota* and *Kappa Scorpii*
- Group 4:   Two stars near the head of Capricornus - probably *Delta* and *Gamma Capricornis* (or according to Smyth (1972: 434) a 'double star in the head of Capricornis'  
              Aquila triad (above)  
              Vega (*Alpha Lyra*)

Each of the four groups is associated with a separate mythic narrative, but they are interrelated.<sup>32</sup> In addition, the stars, like the ancestral

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32 From information in Smyth 1972:433–4.



beings they represent, have intermarried (see diagram 7).

MacPherson regards the arrangement as

‘an ingenious utilitarian scheme of the stars ... Necessity is the mother of invention, and no doubt the circumstances of aboriginal Herschels of the Mallee Scrub contributed to their success in the matter (of assisting observers in acquiring facility in distinguishing the different stars).<sup>33</sup>

Certainly, the Boorong themselves were very proud of their system.

## Unusual Events in the Night Sky

Unusual or unpredictable upper atmospheric events in the night sky have been observed and interpreted by Aboriginal groups, although records of these observations and interpretations are few and far between. As keen and very astute observers of their natural environment, Aboriginal people were very familiar with the night sky and unusual events were registered with curiosity and awe. However, one commentator, Haynes, has asserted that Aboriginal astronomy was concerned with ‘ongoing patterns of natural phenomena rather than with extraordinary occurrences.’<sup>34</sup> Although recorded reactions to actual unpredictable astronomical events are not prolific, nevertheless some do exist. It is not possible to conclude that Aboriginal people were more interested in one than the other.

Haynes finds their presumed greater interest in regular astronomical phenomena to be ‘understandable since one of the main functions of the mythology was to overcome the sense of helplessness otherwise inevitable in a people so completely dependent for their survival upon the natural world without technological means of controlling their environment.’<sup>35</sup> Haynes unjustifiably attributes a sense of helplessness

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33 MacPherson 1881:74–5.

34 Haynes 1992:139.

35 Haynes 1992:40

to Aborigines who lived within the framework of a traditionally based economy: there is no objective basis for doing so.<sup>36</sup>

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36 Sahlins (1972) has advanced the idea that European notions of hunter/gatherer societies, and in particular their economies - that they were meagre, and based on incessant and arduous labour - is an idea fuelled by a European bourgeois ethnocentrism based on a model of post-industrial economic scarcity. He suggests that hunter/gatherer economies were premised rather on an assumption of abundance and that they enjoyed a kind of material plenty. Their nomadic lifestyle attempted to ensure this. While leaner times were acknowledged, there was a fundamental belief that good seasons would return. While recent Australian research (reported in Altman 1991) in the post European contact situation has challenged Sahlins' notion of the 'original affluent society' (if affluence is measured in work-effort terms), there is evidence that despite differential resource bases, hunter-gatherer systems and techniques across the continent were extremely flexible. Chase and Sutton (1991) suggest that many Australian environments were so rich in resources, particularly coastal and riverine, that movements by small groups of people were regular and largely predictable over a relatively small localised seasonal range, all resources being within a day's walk. Reynolds gives a graphic description of the differences in European and Aboriginal thinking and orientation. 'The big difference lay in the fact that they (Aborigines) did not see the need to sit around and wait for the crops to grow. Confident in their knowledge of the environment and their ability to ensure, by appropriate ritual, its continued flowering, they arranged their timetable to return to an area when a new crop had matured and ripened' (1983:142). It is important to note that increase rites were significant for both natural and social reproduction. However, this view changed following European invasion: chronic insecurity apparently increased the desire to preserve and stockpile food. 'As old certainties vanished, clans sought new ways to maintain their food supply' (Reynolds 1983:51). Neidjie of the Gagadju people asserts this notion of assumed plenty: 'All these places for us ... all belong Gagadju. We use them all the time. Old people used to move around, camp different place. Wet season, dry season ... always camp different place ... Everybody camp, like holiday. Plenty food this place' (1985:40-1).

It should be noted that unusual night sky events have been recorded from the perspective of European astronomy.

## Eclipses

An eclipse of the sun was a feared event and among the Aranda, it was greeted with great dread and trepidation. They thought that an eclipse was caused by periodic visits of the *Arungquilta*, a term used to refer to 'an evil or malignant influence'. Narratives about *Arungquilta* suggest that it caused an eclipse by coming from its home in the west and trying to make an abode in the sun, threatening to permanently obliterate its light. This evil spirit could also take on the form of an animal. The *Arungquilta* could only be dragged out of the sun by the skill of traditional healers and it is thought that to date, they have done so very successfully. It is interesting to note that among the Aranda, the Magellanic Clouds are also regarded as being endowed with *Arungquilta* and were reputed to sometimes come down to earth and choke people whilst they were sleeping. *Arungquilta* also inhabited mushrooms and toadstools, and consequently they were not eaten. *Arungquilta* could also take the form of falling stars and could be seen streaking across the sky as lightning.<sup>37</sup> According to other narratives, the evil influence that caused an eclipse could take the form of a large black bird *tia*, which stood in front of the sun.<sup>38</sup>

Among the Ngadjuri people of the Eyre Peninsula in South Australia, an eclipse was seen to be the result of the killing of an old cannibal woman and her dogs by two lizard men. One of the lizard men subsequently got the sun back by throwing a boomerang to the east.<sup>39</sup>

In northwestern Arnhem Land, an eclipse of the sun was seen as the Sun Woman being covered by the Moon Man in the act of copulation.<sup>40</sup> However, there is a myth which indicates that when the moon is

37 Spencer and Gillen 1966:415–6.

38 Strehlow 1907:19.

39 Tindale 1974:135.

40 Warner 1937:538.

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in eclipse, it is seen as being his persistent lover, the sun, threatening to pursue and overtake him. The moon always succeeds in escaping.<sup>41</sup>

An eclipse of the moon among the Aranda was seen to be caused by the Moon Man hiding his face behind the possum fur which he was thought to be constantly spinning.<sup>42</sup> Among the Clarence River groups in New South Wales, an eclipse of the moon was thought to reveal the Moon Man's blood as the moon frequently appears red/orange during an eclipse.<sup>43</sup>

### Halos

A halo around the moon held significance for the people of Mowanjumu community in the Kimberleys.<sup>44</sup> It indicated the time when a boy was to be initiated. Among the Aranda, the appearance of a halo around the moon indicated that the Moon Man was spinning possum fur, rolling it with a flat hand on his upper leg.<sup>45</sup> Around the Clarence River area, the Moon Man (*Giwa*) was thought to have been killed while crossing the Culgoa River in the company of two women. However, he came back to life and invited many people from a neighbouring group to join him under a large sheet of leopard-wood bark (*Flindersai maculosa*), which he had propped up with forked branches. *Giwa* caused the bark to fall and everyone beneath it was killed. He rose to the sky to escape the inevitable vengeance which would be his lot. When a golden halo appeared around him, it was seen as his sheet of bark, (his reflection has been seen in leopard-wood bark ever since)<sup>46</sup> (also see Drawing 7 from Mabuiag in the Torres Strait.)

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41 Reed (1965:130) does not indicate the location of this myth.

42 Strehlow 1907:21.

43 Mathews 1994:60.

44 Utemorra et al 1980:46.

45 Strehlow 1907:21.

46 Mathews 1994:61.

## Aurora Australis

The Aurora Australis can be seen from the southern parts of the continent in the direction south towards Antarctica and the South Magnetic Pole. It was seen by some Gippsland groups in Victoria<sup>47</sup> as the fire of an ancestral hero proclaiming catastrophes and wars. Its southern sky flames were also noted by the Dieri of the Lake Eyre region, indicated in a dictionary of their language<sup>48</sup> wherein the word for 'Aurora Australis' was literally translated to mean 'a charcoal fire of indignation, an angry blaze'. Among western Victorian groups, the word for the Aurora Australis was *puae buae*, meaning 'ashes'.<sup>49</sup>

## Comets

Comets<sup>50</sup> appear to have evil portent in many societies, including those in Europe up until quite recently. Among the Pitjantjatjara people, comets were known as *wurluru*, and were seen as representing a large ancestral man who lived alone and occasionally hurled his spear across the darkened heavens. He was thought to be a ferociously powerful person, but not without redeeming qualities. He was both feared and respected and local tradition had it that he should not be looked at for long periods of time or he would cause the eyes to spin around.<sup>51</sup> An appearance of a comet in the early nineteenth century was regarded as a warning of impending catastrophe by South Australian groups,<sup>52</sup> as discussed earlier. Among western Victorian groups, comets were thought

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47 Worms 1986:112.

48 Prepared by S Gason in Worms 1986:112.

49 Dawson 1981:101.

50 Comet' is a word derived from the Greek, *aster kometes*, meaning 'hairy stars'.

51 Raymo (1986:6), when visiting Uluru to see the 1986 return of Halley's Comet found this to be true!

52 Reynolds 1983:89.

to be the representations of a great spirit.<sup>53</sup> A comet seen at Mapoon in Queensland in May 1901 was believed to have been caused by a fire lit by two old women.<sup>54</sup> And among the Aranda and Luritja groups of Central Australia, comets were seen as spears thrown by an ancestral hero in his attempt, through magical practices, to make his wife obedient to him.<sup>55</sup>

## Meteorites or Shooting Stars

Shooting stars, frequently represented in myth, were variously perceived across the continent. Among the Walbiri, for example, it was thought that sacred places on earth had fallen out of the Milky Way as shooting stars.<sup>56</sup> They were also seen as the way by which traditional healers could return from their sky-world visits,<sup>57</sup> as being important in the process of making healers<sup>58</sup> and as being a signal that exorcism in a healing ritual had been completed and was successful.<sup>59</sup> There is evidence that they also heralded to a prospective father, the approach of his newborn child. It was a sign that the spirit-child was 'moving on the sky-path to be born to the man's wife'.<sup>60</sup>

Shooting stars were also regarded as a sign that someone had died,<sup>61</sup> as the discarding of a shell when a fish (the star) died,<sup>62</sup> or as a manifestation of a spirit ancestor, *Nimparipari* of the Bathurst and Melville

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53 Dawson 1981:101.

54 Roth 1984(5):8.

55 Strehlow 1907:30.

56 Warlukurlangu Artists 1987:127.

57 Gunson 1974:52.

58 Elkin 1945:86.

59 In the Wellesley Islands, Cawte 1974:110.

60 Harney and Elkin 1949:142.

61 Rose 1992:70; Peck 1933:169; Montagu 1974:155; Piddington 1932:394.

62 Piddington 1932:394.

Islands.<sup>63</sup> The Tiwi of these islands saw a shooting star as the single eye of the one-eyed spirit men, who made it their business to steal bodies and suck out their blood. The evil eyes that streaked across the sky were looking for their next prey.<sup>64</sup> On the Pilbara, a shooting star was seen as a long-legged goanna.<sup>65</sup> Among the Plangermairrener people of Tasmania, shooting stars were seen as the women *Puggareetya* thrown across the sky by Snake on whom she used to play tricks.<sup>66</sup> And a meteor among western Victorian groups was considered to be a 'deformity'.<sup>67</sup>

A myth whose only location is somewhere 'in (NSW) basalt country'<sup>68</sup> explains that a shooting star indicated that someone had taken a waratah from ground that did not belong to him or her. Apparently, the Aborigines used to bring waratah stems to the blacksmiths in the early days of the colony because 'they thought that the sparks from the anvil were the same fire as that that came from the sky'.<sup>69</sup> In another myth that explains the origin of the redness of flowers such as the waratah, there was a notion that stars 'loosened from their holds came flashing to earth,' and that fragments of the red, glowing molten masses were received into certain plants giving them their redness.<sup>70</sup>

In the Bloomfield River area of Queensland, falling stars were likened to moving (bird-like) firesticks, and called *gi-we*. When a person fell sick and was far from his home country, his or her fellow travellers would throw a lighted firestick up into the night sky in the direction

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63 Berndt and Berndt 1974:81.

64 Haynes 1992:139.

65 von Brandenstein and Thomas 1975:3, 57.

66 Everett in Noonuccal 1990:115–19.

67 Dawson 1981:101.

68 Peck 1925:79–86; 1933:160–6.

69 Peck 1933:168.

70 Peck (1933:202–3) seems to have confused the Magellanic Clouds with the dark patches in the Milky Way (1933:203), although in the seventeenth century, the dark patches were called *Macula Magellani*, Black Magellanic Cloud.

of the sick person. The relatives would hear them cry and see the message and know that one of their kinsmen or women was ill.<sup>71</sup> If a falling star fell to earth around the Brisbane area at a time of inter-group conflict, it was regarded as a sign that someone sick was doomed, as it was seen as the enemy's firestick falling down. The Tully River people in Queensland also saw falling stars as firesticks of the spirits of deceased enemies who did such things as starting bush fires. A falling star also meant the advent of any enemy and, if a person saw one, he or she was obliged to shout and make as much noise as possible. The following morning, a group would venture out in the direction of the meteorite to look for tracks of their 'would-be destroyer'.<sup>72</sup> Around Proserpine, a falling star indicated that an enemy had been killed, whereas around Pennefather River, people saw it as a female spirit of a deceased person pouring water over yams to help them grow. Around Bloomfield in Queensland, falling stars were thought to be quartz crystals.<sup>73</sup>

Among the Ngalia people of Central Australia, meteorites were seen as glowing stones thrown down to earth by the *Walanari*, two ancestral men whose camps were in the Magellanic Clouds. They threw down meteors to express their pleasure at totemic rituals being performed in their honour, or contrarily, displeasure when they thought they were being discussed inappropriately.<sup>74</sup> The *Walanari* punished evil-doers and rewarded those who kept the law. Among the Aranda and Luritja groups of Central Australia, meteorites were considered to be large venomous snakes (*kulaia*) with big, fiery eyes. They flew through the air and dropped into waterholes, thus making the waterholes places to be avoided.<sup>75</sup>

A meteor shower appeared to be significant in a myth explaining the arrival of the first kangaroo among south-eastern New South Wales

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71 Roth 1983(5):8.

72 Roth 1983(5):8.

73 Roth 1983(5):8.

74 Mountford 1976b:457.

75 Strehlow 1907:30.



Aboriginal people living around Mount Kosciusko, Goulburn, the Currockbilly Ranges, Mittagong, Burragorang, Kiama and the Nepean River.

A night in the daytime descended in a second, blotting out everything. But in the heavens a wondrous light appeared. Long streams of liquid fire started from the south, and shot sheer across the heavens from pole to pole. They waved from west to east. Red and yellow, purple and brown, pink and grey, golden and black, white and pale green. All these stretched from pole to pole, waved and crossed, and passed away towards the east.<sup>76</sup>

### **Earthshine<sup>77</sup>**

The phenomenon of earthshine, or ashen light, was seen among the Tiwi of Bathurst and Melville Islands, as the spirit of Japara the Moon Man who regularly dies as a result of his excessive behaviour of eating too many mangrove crabs.<sup>78</sup>

### **Crepuscular Rays and Arches**

Crepuscular rays and arches, as well as being, among some groups, paths to the Land of the Dead, were also seen as heralding distinctive twilights. Among western Victorian groups, for example, a crepuscular arch in the west in the morning was known as ‘peep-of-the-day’; an upper was known as a ‘black cockatoo twilight’ and was thought to come from the constellation of Orion. The crepuscular rays in the west were known as ‘rushes of the sun’.<sup>79</sup>

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76 Smith 1992:21–3.

77 Earthshine is sunlight reflected from earth. Close to new moon, earthshine reflected by the moon back to the earth enables the whole lunar disk to become visible, the old moon in the new moon’s arms.

78 Roberts and Mountford 1974:100.

79 Dawson 1981:101.

## Terrestrial Luminescence/Phosphorescence

In the Forrest River area, west of Wyndham in north-west Australia, phosphorescence in the water was seen as evidence of the presence of the Rainbow Serpent.<sup>80</sup>

## Glow-worms

Among western Victorian groups, it was a common notion that glow-worms took their light from Butt *kuee tuukuung*, Antares (*Alpha Scorpii*), whose name meant 'big stomach'.<sup>81</sup>

A curious, observant and philosophical people, the Australian Aborigines had a deep interest in their natural surroundings. The night sky was an extension of the terrestrial landscape and thus was of equal interest to them. It also acted both as a projection of social and intellectual life as well as a source of inspiration to them. Their astronomical knowledge, although not a separate or discrete epistemology, was nevertheless, detailed and extensive. It was significant to all aspects of their cultural life.

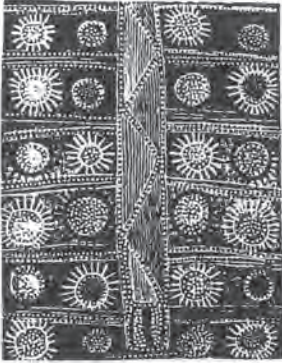
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80 Elkin 1930:350.

81 Dawson 1981:99.

# Bark Paintings 1

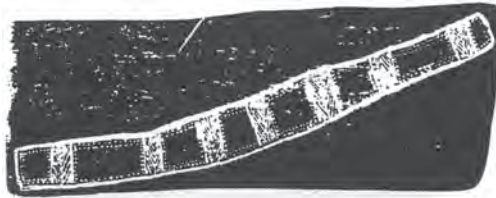
(from Mountford, Melbourne University Press, 1956)



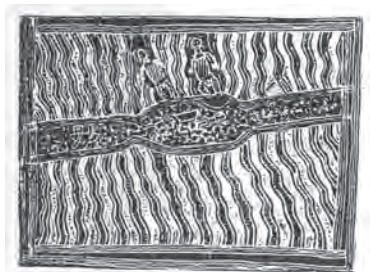
The Milky Way, Millingimbi



The Milky Way and Coal Sack, Oenpelli



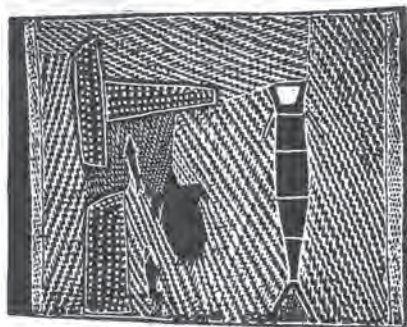
The Milky Way, Groote Eylandt



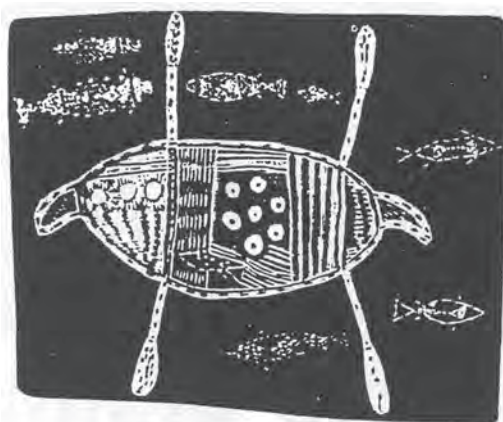
The Milky Way, Yirrkala

## Bark Paintings 2

(from Mountford, Melbourne, University Press, 1956)



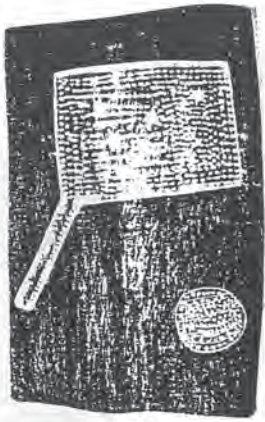
Orion and the Pleiades, Yirkala



Orion and the Pleiades, Millingimbi

### Bark Paintings 3

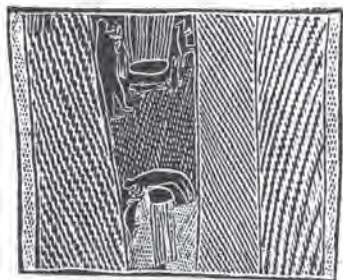
(from Mountford, Melbourne University Press, 1956)



Orion and the Pleiades, Groote Eylandt

## Bark Paintings 4

(from Mountford, Melbourne University Press, 1956)



The Magellan Clouds, Yirrkala



(Above) The Magellan Clouds, Grootte Eylandt



(Left) The Southern Cross and Pointers, Yirrkala



The Morning Stars, Oenpelli

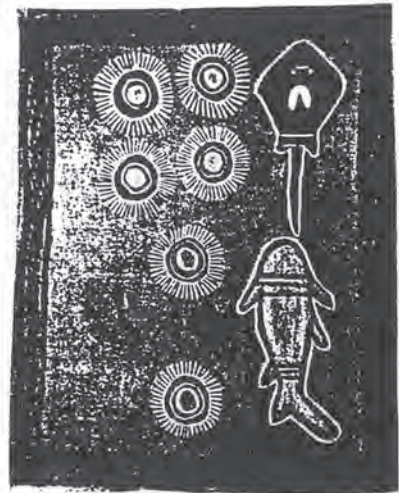


## Bark Paintings 5

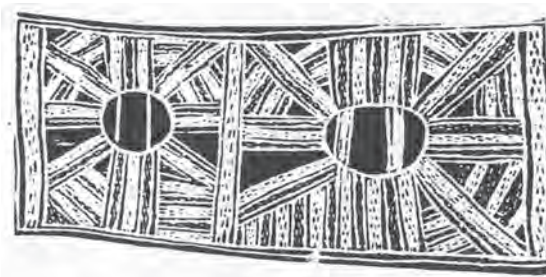
(from Mountford, Melbourne University Press, 1956)



The Sun Woman, Grootie Eylandt



Venus, Jupiter and their Children, Grootie Eylandt



The Sun Woman, Yirrkala

## Bark Paintings 6

(from Mountford, Melbourne University Press, 1956)



The Moon Man, Yirrkala

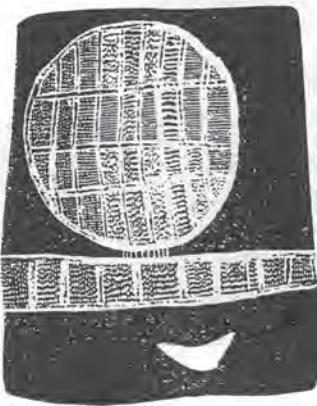


## Bark Paintings 7

(from Mountford, Melbourne University Press, 1956)



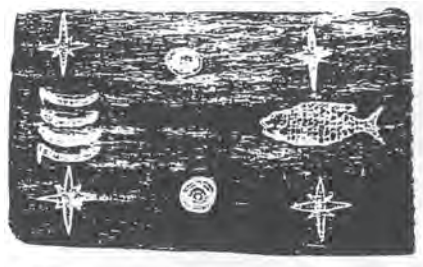
The Moon Man, Millingimbi



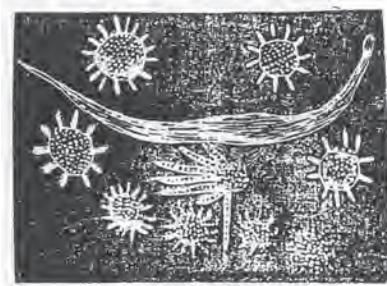
The Moon Man, Groote Eylandt

## Bark Paintings 8

(from Mountford, Melbourne University Press, 1956)



The Southern Cross, Groote Eylandt



The Southern Cross, Oenpelli

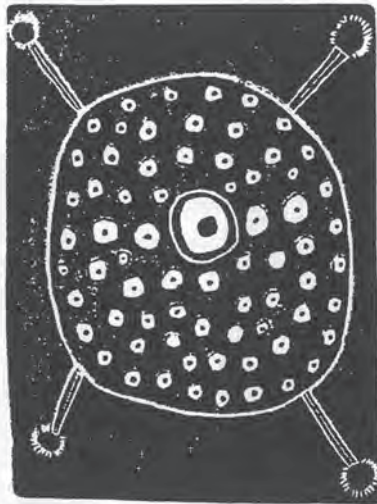
The Pointers, Groote Eylandt

## Bark Paintings 9

(from Mountford, Melbourne University Press, 1956)



The Crab, Groote Eylandt



Walagugu and the Tjirupun, Oenpelli

## Bark Paintings 10

(from Mountford, Melbourne University Press, 1956)



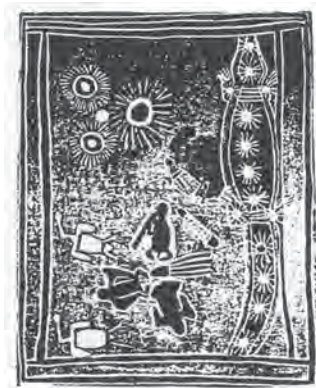
The Scorpion, Yirrkala



The Scorpions, Groote Eylandt



The Opossum Man, Kapali, Oenpelli



The Crocodile, the Opossum  
and the Ibis Men, Yirrkala