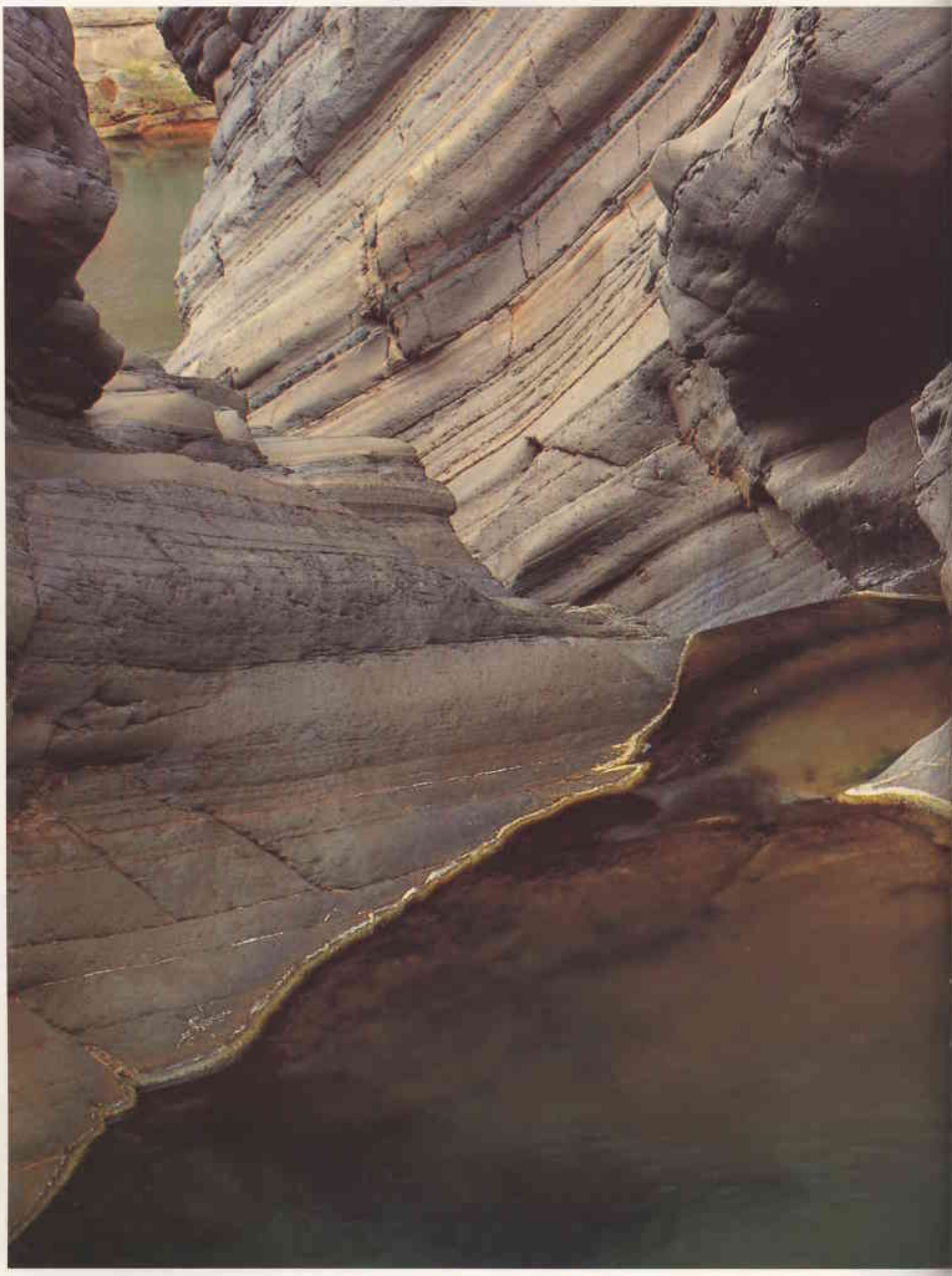
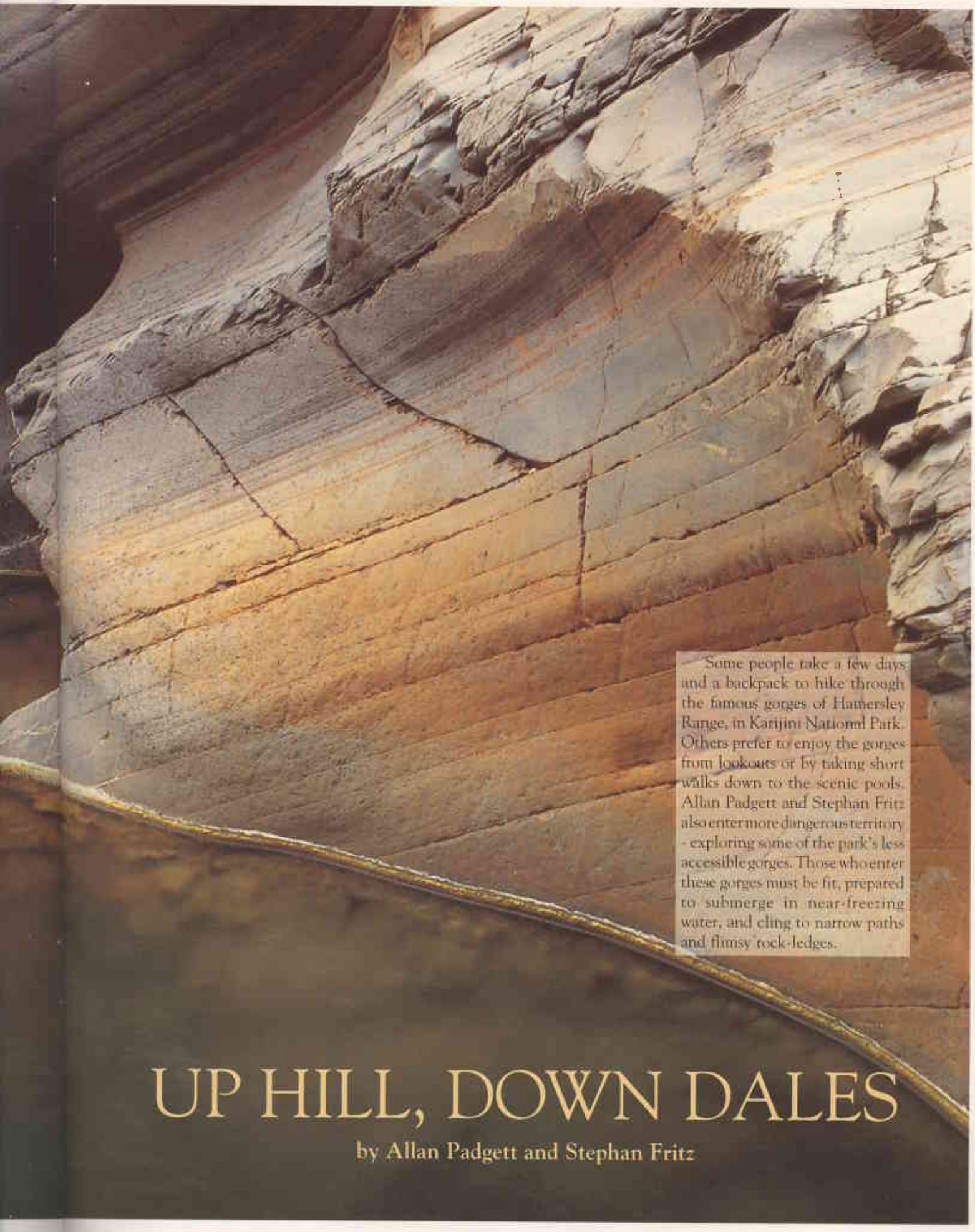




UP HILL, DOWN DALES

by Allan Padgett and Stephan Fritz

Some people take a few days and a backpack to hike through the famous gorges of Hamersley Range, in Karijini National Park. Others prefer to enjoy the gorges from lookouts or by taking short walks down to the scenic pools. Allan Padgett and Stephan Fritz also enter more dangerous territory - exploring some of the park's less accessible gorges. Those who enter these gorges must be fit, prepared to submerge in near-freezing water, and cling to narrow paths and flimsy rock-ledges.

The approach to the Hamersley Range from the Fortescue River gives no indication of the massive gorges inside Karijini National Park. From this northern perspective the escarpment, built from fine sediments deposited in the sea over 2.5 billion years ago, rears to about 250 metres above the surrounding plains.

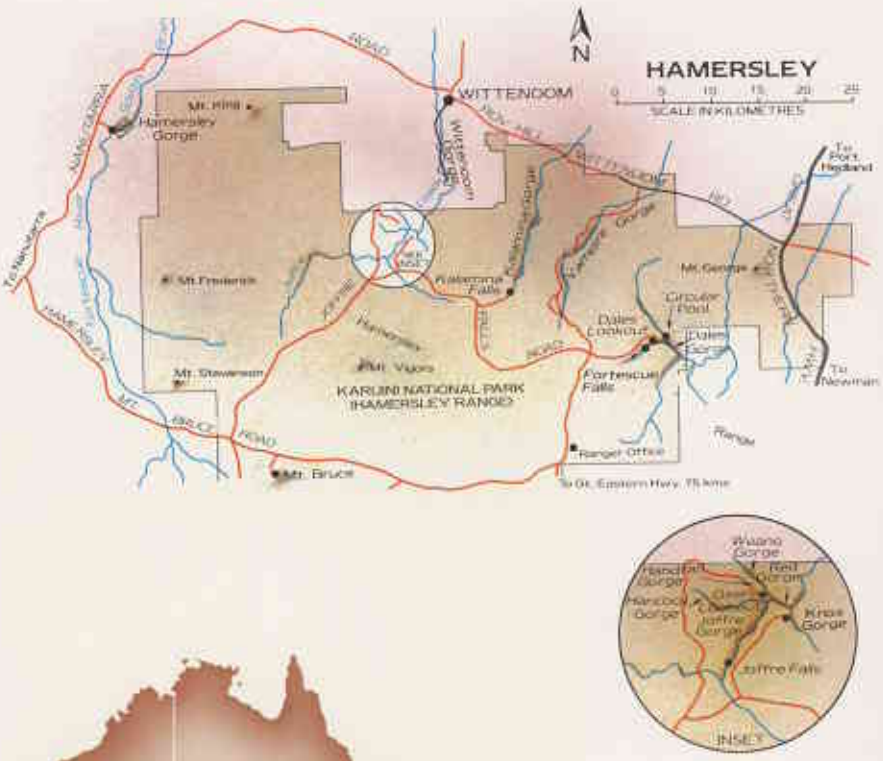
Within the park, towards the ranger station, is a crossroads with signposts announcing destinations which have become well-known to visitors to the Pilbara. Circular Pool, Dales Gorge and Fortescue Falls lie to the east of this junction. To the west are Kalamina, Knox, Joffre, Red, Hancock and Weano Gorges. Nothing quite prepares the traveller who, in passing over some insignificant creek, discovers after a little more driving that the creek has become a massive incision, probing 100 metres into the earth.

Emerging from small creeks lined with the brilliant white trunks of coolibah (*Eucalyptus coolibah*) and surrounded by countless clumps of spinifex springing from dusty red gravels, each gorge offers a unique experience. All plunge deeply through a parade of geological history (see **Geology of the Gorges**).

Kalamina Gorge is readily accessible, with an easy path from the carpark to the gorge. From the top, the essential character of the gorges is evident. The steep, rich red, iron-saturated rock walls shelter tranquil pools. A curved waterfall denotes the start, where permanent water trickles over ledges holding clumps of fern. The rim of the gorge is defined by clumps of spinifex and the twisted white trunks of snappy gum (*Eucalyptus leucophloia*).

The caustic vine (*Sarcostemma australe*) clambers from its tenuous hold on the rockface, bereft of foliage but with photosynthetic green stems. Without leaves, the plant has less surface area exposed to long months of high temperatures, an adaptation that conserves precious water.

The smooth rock platforms on the floor of the gorge alternate with pebbles; for most of the year, the creek forms a series of pools. Clumps of fringing reeds shadow the cool, clear pools, where fish are busy foraging; tall, flaky-soft trunks of cajeput (*Melaleuca leucadendra*) rear from the margins. The cajeput has a shallow root system spread over a large



area, and its specialist tissue allows oxygen to penetrate. This gives it the ability to withstand waterlogged conditions for extended periods. The microclimate at this level is far removed from the hotter, drier conditions on the rim. The walk within Kalamina Gorge is a good introduction to the gorge system, as it is relatively easy to climb into and negotiate.

Dales Gorge is only a short drive east to the Fortescue recreation area. A stroll of 100 metres allows visitors to view Circular Pool, deep within the gorge. The weather-beaten landscape of Dales Gorge has been gouged by millions of years of rain and flood, revealing the banded iron formations of the walls.

Most visitors are content to view Circular Pool and the remainder of Dales Gorge from the rim walk. Those with a greater sense of adventure and more agility venture down the precipitous track that tumbles into the depths of the gorge. Unlike Kalamina, this entry is not for most people. For those able enough, the effort is repaid many times over. Rock platforms step upwards, in shades of grey, pink, orange and buff; while

Previous page:
Rock pool in Hamersley Gorge.
Photo - Chris Garnett

Opposite:
Huge cajeputs rooted to thousands of layers of sedimentary rock at Dales Gorge.
Photo - Chris Garnett ▶

Stephan Fritz, John Parker and Russell Bone were part of a team that conducted a safety audit of the gorges.
Photo - Allan Padgett ▶▼

One of a series of permanent waterfalls in Dales Gorge below Fortescue Falls.
Photo - Allen Padgett ▶▶▼

Native fig trees grow in seemingly impossible positions on the rock face of the gorges.
Photo - Chris Garnett ▶▶▶▼

sheets of water fall off and cascade down. Species of sedge, grass and rush cling to the edges of deeper pools, and emerge from those which are shallower. Numerous saplings of river gum (*Eucalyptus camaldulensis*) and cajeput have successfully established themselves and resisted torrents of seasonal rain. The highwater mark is shown by a stain on the gorge walls, and by long-dead branches wedged among rocks and piled against tree trunks.

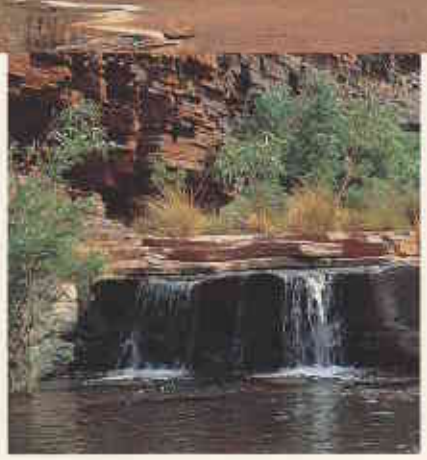
Circular Pool nestles at the base of steep walls from which water drips and seeps, providing a continuously moist environment. Numerous ferns sprout vigorously from ledges slippery with algae and, for most of the year, the pool is deep and inviting.

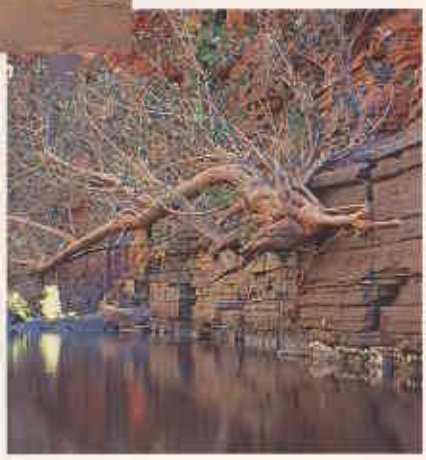
The walk through Dales Gorge toward Fortescue Falls, away from Circular Pool, passes through tall thickets of grasses and cajeput. The sedimentary nature of the gorge walls is obvious at every step; at one point a fig emerges from a vertical face, and many of its exposed roots indicate its penetration into unseen water sources deep within the striated and compressed layers of rock. Birds that eat the fleshy fruits of this species deposit the undigested seeds on rock ledges. After the seeds germinate in small pockets of soil, the fig's roots grow downwards, and can sometimes be traced entering permanent water 10 metres below.

Close to Fortescue Falls a number of broad pools appear, similar to those close to Circular Pool but larger, and with greater volumes of water spilling over. The landscape at one such pool is dominated by a white-barked gum, rearing in contrast to the adjacent red cliff and the background of spinifex, with shallow water in front reflecting the sky. The falls are a must on most travellers' itineraries; a track allows visitors access from the car park above. Emerging from the cliff face above the Falls is a small population of white cypress (*Callitris columellaris*), surviving in this protected position because of the absence of fire.

Leaving Dales Gorge and travelling 50 kilometres westward, then strolling a short distance from the carpark, a view of Knox Gorge spreads into the distance. The gorge is deep and has a rich range of colours. Plants cling to precipitous rock walls, and far below are the white trunks of cajeputs and eucalypts. The track into this gorge is steep and hazardous; again, most visitors stay on the lookout points and have no desire to venture into the belly of the gorge.

Visitors intending to walk through Knox Gorge need to be properly informed of the dangers of proceeding through to Red Gorge. A ranger must be advised and close attention paid to signs at the carpark about visitor safety. For the few who venture further, the greatest surprise is in discovering that the broad reaches of Knox Gorge narrow imperceptibly to a dark fissure that is impossibly slippery, forcing crab-like progress. The gorge narrows further, bringing to mind images of the gorge in flood and thoughts of escape. Going on becomes even less attractive when it appears that a five-metre leap into a pool from a steeply sloping, and wet, rock ledge is the next step. At this stage the warning which visitors receive from rangers that this trail is only for the experienced becomes real. The jump is taken with heart in mouth, the ice-cold water is deep enough to absorb the impact, and a minute or so





GEOLOGY OF THE GORGES

by Alan Thorne, Geological Survey of Western Australia

The rugged beauty of Karijini National Park results from a unique combination of geology, climate and natural vegetation. Of these, geology has probably had the greatest influence in shaping the landscape.

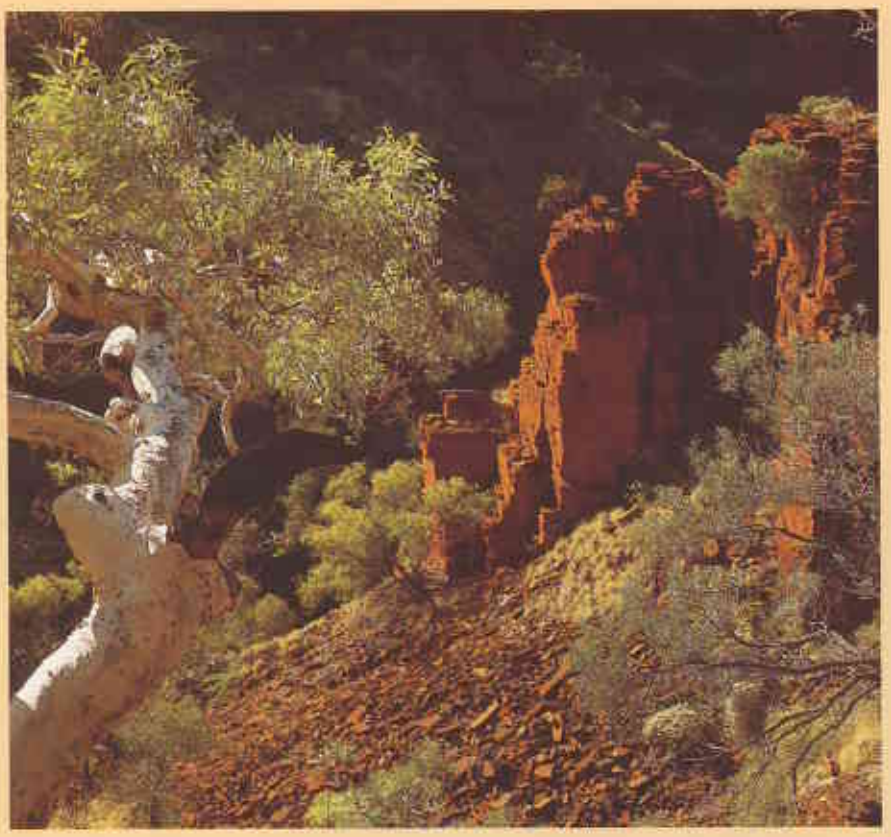
Rocks exposed in and around the gorges originated as fine-grained sediment which accumulated on the sea-floor 2 500 million years ago. Many of these sediments laid down in the oceans were unusually rich in iron and silica. Conditions on earth were quite different to the present day. The atmosphere contained much less oxygen, and the only forms of life were simple bacteria and algae.

Blue-green bacteria were the first organisms to possess chlorophyll, which captured and converted energy from the sun into sugars, by absorbing carbon dioxide and water. Oxygen, released through photosynthesis, combined with soluble iron in the ancient seawater to form iron-rich compounds. Over eons, these sediments fell to the ocean floor to form banded, iron-rich deposits which were transformed by the pressure of further sediments laid down over them. Trapped water within the sediments was driven out and they gradually turned into tough, well-bedded rock.

Later, horizontal compression caused the rocks to buckle and develop numerous vertical cracks (joints), before being lifted to the surface to form dry land. Erosion over millions of years finally sculptured the rocks into the present day landscape.

Many creeks have exploited joints and other fractures cutting across the rocks. These water courses are characteristically straight and often parallel to neighbouring valleys. Angular creek junctions occur in areas where two or more directions of jointing are present. Soft, easily eroded shale and dolomite, occurring beneath the main iron formation layers, has enabled the creeks to cut back rapidly into the Range. Spectacular gorges and waterfalls are the result. Plunge pools occur at the foot of many of the falls, such as Circular Pool and Joffre Falls.

The slope and step appearance of many valley sides results from the alternation of weak and resistant rock types. Shale and dolomite generally form the gentler slopes, while iron formation outcrops are marked by notches and steep cliffs.



The sedimentary strata have collapsed onto the floor of Knox Gorge, because of erosion.
Photo - Chris Garnett ▲▲

The stepped walls of Knox Gorge result from the alternation of weak and resistant rock types.
Photo - Allan Padgett ▲

The slippery, well-worn surface of Hancock Gorge.
Photo - Chris Garnett ◄

Luxuriant ferns thrive on the moist rock ledges at Circular Pool.
Photo - Chris Garnett

later, paddling on an inner tube across what appears to be the entrance to Red Gorge, the fear has gone and been replaced by a sense of satisfaction. For the moment ...

From this pool a ledge, looking deceptively narrow and harmless, leads on to another jump! But this time there is greater uncertainty about the depth of the pool another five metres below. Still, the choices are not all that broad; to retreat up the previous waterfall would be virtually impossible without the right skills and equipment. So the adventurers go over again, with the first jumper calling out encouraging comments to the reluctant forces assembled above. Final egress into the junction of Knox, Red and Wittenoom Gorges made the effort worthwhile. Vertical red walls soar 100 metres from the sandy bed of the gorges, hot and silent in the midday sun.

The walk - and paddle - upstream through Red Gorge winds along the base of towering cliffs to Junction Pool, where Red, Joffre, Weano and Hancock Gorges meet. This must become a cauldron when cyclones pass and flood waters crash together at this point, shown by the huge boulders that were strewn there by raging water. From here, leaving the gorge may well call for more fortitude than that required to negotiate the waterfalls of Knox Gorge. Options include climbing out on the wet and slippery, highly polished rocks of Hancock Gorge, or paddling through pools of cold water and scaling boulders and cliff faces along the six kilometres of Joffre Gorge.

At the upper margins of the gorges there are safe views, as long as care is taken toward the edges, where scree slopes can make movement hazardous. Platforms have been built at some particularly good viewing points, including Joffre Falls, Knox Gorge and Circular Pool. The well-known natural rock platform of Oxer's Lookout serves the many thousands of visitors who travel vast distances to admire the conjunction of the four gorges far below. The views from lookouts into Red Gorge and Joffre Gorge are particularly inspiring: the former is magnificently coloured and very deep; the latter forms a natural amphitheatre with water cascading over steep rocky steps after heavy rainfall.

The carpark above Weano Gorge is close to the gravelly walk which dips and winds into the gorge, passing the familiar white and gnarled trunks of snappy gum. As the gorge narrows in its deeper sections, the walls towering above close in around Handrail Pool, which is accessible along a moderately steep, but slippery, path. A metal handrail allows the agile visitor to clamber onto shaded rocks surrounding the cool waters of the pool. Sitting silently in this tranquil place, deep within Weano Gorge, the visitor is again encouraged to reflect on the power of water in shaping this unique landscape, and on the immense passage of time over which such erosion occurred.

Venturing further west, the traveller reaches Hamersley Gorge. A series of pools connected by cascades is visible from the rim of this far smaller and shallower gorge. A safe, stepped pathway allows access for most visitors. The highly coloured layers of the walls of the gorge twist and contort, reflecting the geological forces which uplifted and bent this landscape millions of years ago. A short and easy walk takes the visitor past striking rock formations and on to a cool, clear pool shadowed by overhanging rock walls covered with ferns that flourish in the permanently moist atmosphere.

Whatever the motivation and physical ability of visitors, the park's gorges offer special recreational opportunities. Travelling through the arid Pilbara landscape, with its iron-capped hills and mesas and spinifex growing on stark red plains punctuated by brilliant white eucalypt trunks, is one thing. It is quite another thing to experience the gorges. They are not only ruggedly beautiful, but provide the chance to explore 2 500 million years of geological activity. ⊡

CALM Planning Officer Allan Padgett (phone 364 0777) is coordinating a management plan for Karijini National Park. Stephan Fritz is Operations Officer for CALM's Pilbara Region (phone 091-868 288).

A wave of colour is spreading from Shark Bay to Jurien and inland to Meekatharra. Our story on page 10 takes you into Wildflower Country.

LANDSCOPE

VOLUME SEVEN NO. 1 SPRING EDITION 1991

The WA Museum is 100 years old. It houses a staggering four million specimens of insects, marine animals, fish, birds, reptiles and frogs. Page 22.

Seven species of microscopic dieback-disease fungi are attacking WA's unique wildflowers. See page 28.

The rugged Pilbara landscape has some hidden delights. On page 16, go up hill to Hamersley Range, then down Dales and other spectacular gorges.

How does WA's conservation heritage look to the people who look after it? Turn to page 26 for some great photographs from a recent competition run for CALM staff.

C O V E R

Out now! Wildflowers are blooming in the vast tracts of country north of Perth, especially in the northern sandplains and Murchison, which is experiencing a bumper wildflower season following heavy winter rains. Philippa Nikulinsky's illustration shows some of the wildflowers for which WA is justly famous: the splendid everlasting, buttercup, red leschenaultia, Sturt's desert pea, catspaw, wattle, native wisteria, black kangaroo paw, flame pea, and scaevola - all covered in the newly released book Wildflower Country. *See page 10.*

F E A T U R E S

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