

FEATURES

TERROR FROM THE SKIES

The tornado which ripped through Merimbula last weekend is a common occurrence in Australia as SIMON TOROK explains.

HOW MANY of us would like to have a large sum of money fall at our feet from the sky? Starting out as a freelance journalist, I have been frequently dreaming about this sort of thing happening lately. But I was surprised to discover during some research into the Merimbula tornado last Sunday that this is not just the stuff of dreams.

There are eyewitness accounts of the heavens raining money, frogs, blood and even fish. Is there a belt of organic matter around the outer atmosphere? Are unidentified flying objects dumping material, having completed their extraterrestrial experiments or meals?

These explanations were published in books earlier this century, but we now know that meteorology can explain these bizarre occurrences satisfactorily. Even so, after reading the following, you may never again express that it is raining cats and dogs with the same degree of hyperbole.

Last Sunday, the water off the coast of NSW was just beginning to decrease from its peak warmth from

decrease from its peak warmth from summer. When the very cold air associated with the storms moved across the state a particularly unstable situation arose.

Tornadoes form when the warmer, wetter air rises and the cool, heavier air descends. With this occurrence and if there is enough strength and curvature to the winds, a tornado can form over land or water.

The Merimbula storm left a typical, narrow strip of damage and was described as a tornado by onlookers. The reason we can see the funnel-shaped tornado is because, as the vortex descends from the parent cumulonimbus storm cloud, the increased pressure causes condensation to occur and water droplets swirl around, heading downwards. From the base of the tornado, dust and debris reach up to meet the descending column.

When tornadoes occur over water they are called waterspouts. When they occur over Australia we call them willy-willys or cock-eyed Bobs.

The name Cockeyed Bob arises because of the anvil shape of the parent storm cloud, which has a cockeyed sort of appearance. But in the United States, which has more and more devastating tornadoes than Australia, they are

called Texan twisters! Such a name commands a much greater amount of respect, but the only difference between the Texan twister and the Australian willy-willy is the location.

Admittedly, the US has conditions for tornadoes more often — cold dry

for tornadoes more often — cold dry air comes down from the Rockies and warm moist air comes up from the Gulf of Mexico, meeting in "Tornado Valley", the region from Texas to Kansas.

But tornadoes are surprisingly frequent in Australia: a severe one occurs somewhere about every three years. They are more likely to occur from November to February and tend to be reported in the afternoon when ground heat is at a maximum. The breakdown of reported tornadoes is: Western Australia 22 per cent, South Australia 9 per cent, Queensland 13 per cent, NSW-ACT 24 per cent and Victoria/Tasmania 32 per cent. However, people tend not to find out about them and the popular myth persists that Australia does not have tornadoes. The only Oz that people generally associate with tornadoes is the one that the Wizard lives in.

This is perhaps because a lot of the tornadoes occur in unoccupied, outback areas. Another, more cynical reason is that even when they are reported, they do not appear on the news because there are seldom any spectacular photos or home videos of them. In North America there are fanatics actually chasing storms who video these killer tornadoes, so whenever there is a twister in America it even appears in the news over here.

But they do occur in Australia and more than 40 people have been killed by them this century. It should be noted that downbursts associated

noted that downbursts associated with severe thunderstorms can sometimes leave a circular footprint, the debris flattened in one direction. Therefore before the Bureau of Meteorology classifies a storm as tornadic, evidence must exist of debris scattered in all directions, signs

must be present on radar, or confirmation of a funnel cloud must be made visually by the public.

The first tornado report I could find was of one that touched down in Windsor in 1826. A more devastating tornado occurred in Chetwynd in the Western Districts of Victoria in 1861. Large trees were torn out of the ground or snapped off, several people were lifted into the air and one man died after being carried more than 50m.

The damage caused by a tornado is attributable to several factors.

- Extremely high winds of up to 500 km/h can blow objects out of the ground and into stationary objects. A block of wood has been known to become impaled in a sheet of iron.

- The severe decrease in pressure causes explosions to occur, similar to a bomb going off. This is because pressure remains relatively constant inside, for example, a house or car, while the environmental pressure pushes outward in a sudden rush to reach equilibrium with the outside environment.

- Damage is also caused by lifting and dropping. But sometimes objects lifted into the air have been lowered gently as they are caught by the up

lifted into the air have been lowered gently as they are caught by the up-draughts around the base of the tornado. There have been cases of cows coming back to land safely, and people being unhurt even after being lifted 10m into the air.

Twenty years ago, in Sandon, also in the Western highlands of Victoria which is becoming known as an Australian version of Tornado Valley, a 6km trail of damage was left with a width of 400m. This severe damage over a narrow strip is the usual footprint of a tornado, occurring for any length from tens of metres to tens of kilometres.

An elderly couple was killed when their car was lifted 10m into the air, carried over the top of another occupied car and dumped in a ditch. The man's body was found naked, the tornado having stripped him of his clothes.

In Brisbane in 1973 a tornado hit the western suburbs, causing estimated at \$3 million. Although funnel

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clouds and vortices were observed, one newspaper claimed that "it could not have been a tornado, because tornadoes do not occur in Australia."

Last year a tornado was observed in Warragul, Victoria, reported by an elderly lady with an illustrious style of speech who telephoned

the Weather Bureau to say she could see a cloud that looked like a sword coming down from the sky. And, of course, try convincing some of the 34 people injured in Merimbula last weekend that tornadoes do not exist and you would probably get a punch in the nose.

These facts should dispel the myth that Australia does not have tornadoes. It should also demonstrate that they can lift up just about anything.

So what about those more bizarre meteorological occurrences? A gentleman by the name of Charles Fort (an appropriate name in this field) travelled around the world for 27 years early this century reading or

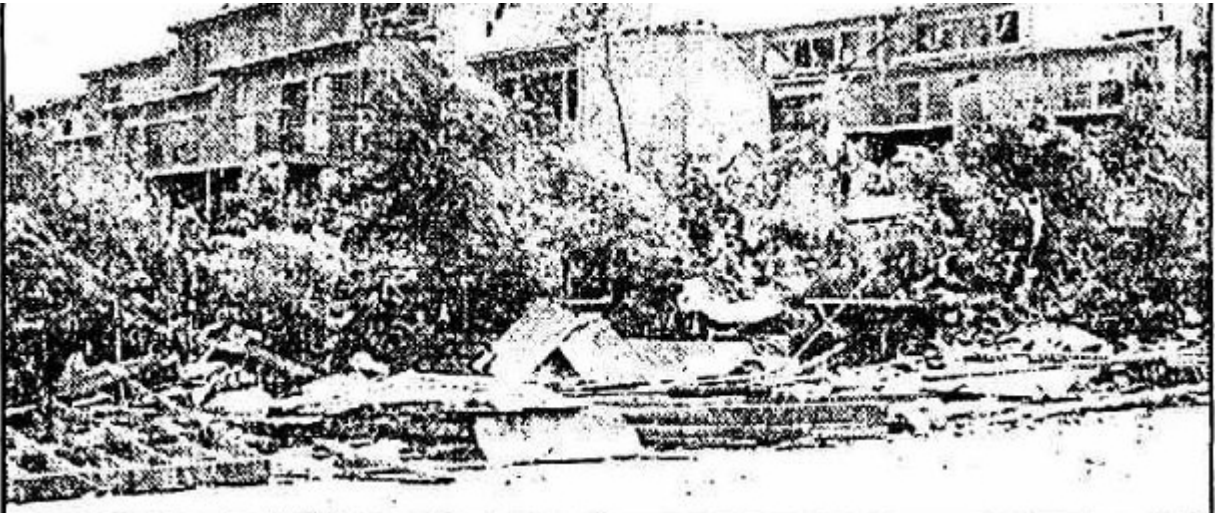
years early this century reading archived reports of such events. He noted, for example, rainfalls of snails in England, eels in the US, mussels in Germany, and other falls of frogs, spiders and even snakes. These were not only reported in newspapers, but also in the scientific literature.

Ironically, although severe storm reports are on the increase, either because of better observation networks or real atmospheric changes (a full debate of this is beyond anything I can discuss here), more recently there have been fewer reports of bizarre weather events. The observations tend to be anecdotal, giving them less credibility than in previous centuries when eyewitness accounts played a larger role in science.

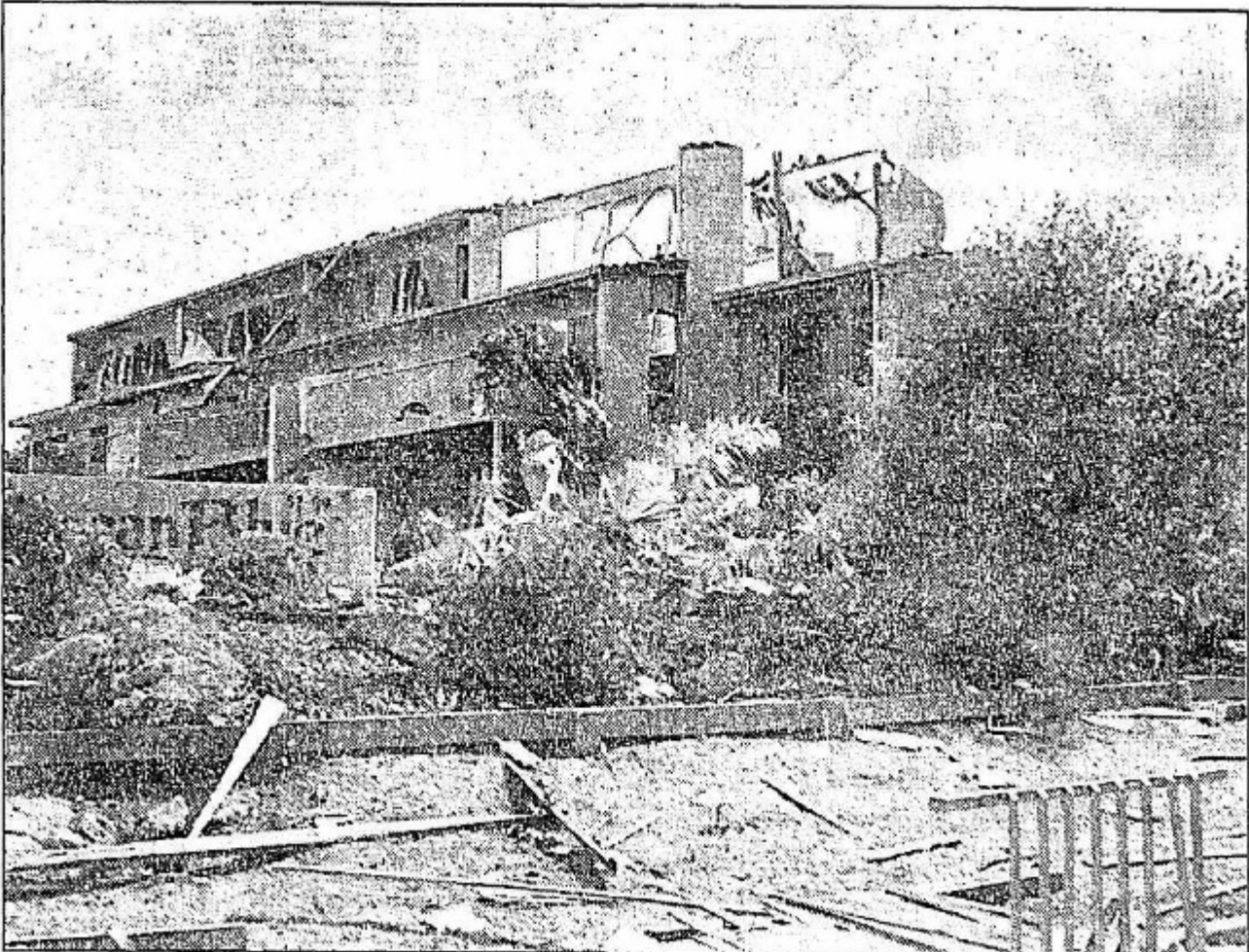
Nonetheless, I found more than 20 reports of fish raining down over Australia in the past 50 years.

For example, in 1879 in Victoria, a narrow rainstorm passed through Berrybank, leaving pools of water containing thousands of minnows. A man on the northern NSW coast woke up after a stormy night in 1973 to find the roof of his house covered with fish. In Killarney, 320km from the Northern Territory coast, three fish storms occurred in February 1974. In the Northern Territory last year, fish showers again fell many





Holidaymakers were evacuated after these units were damaged.



Pictures: John Leach/SouthNews

A holiday unit at Merimbula which was damaged by the tornado which struck the town last Sunday night.

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kilometres from the coast. Where do all these fish come from? And why do they usually appear to be of a consistent type and size? And why do only the fish rain down? What about all the seaweed, mud, and other debris?

Studies of tornado photos has revealed various shades through the funnel, indicating an internal structure that carries different sized particles, apparently in discrete jets of air. So what probably happens is that a tornado scoops through a lake, heavier objects such as fish are whisked up an internal jet, while

lighter stuff is thrown right out of the tornado and heavier things fall out straight away. The fish, in a compact parcel, are then carried into the parent storm cloud to be rained down away from the tornado. Possibly, if the vertical development reaches high enough into the atmosphere, as severe storms tend to do, the fish could be carried for hundreds of kilometres in a jet stream, to be dumped in clear skies without any oceans or storm clouds in sight.

The precipitation of "blood" can also be explained in a scientific manner. Coloured sand or dust has been

known to be transported on high-level winds after being whipped up by severe wind gusts. Rain then passes through the dust laden atmosphere, falling to earth as an eerie parody of

falling to earth as an eerie parody of blood. Europe has been known to receive rain tainted red by the dust from the Sahara. A mountain in Switzerland was even covered with red snow back in 1755.

These occurrences have also been known in Australia, with dust from the Red Centre dyeing the eastern states' precipitation a similar colour. A "rain of blood" in Melbourne was reported by the *Argus* at the turn of

the century. It was explained that "the clothing of persons who happened to be outdoors was covered with tiny red spots." On this particular occasion a lurid red dust storm had been observed in Broken Hill a few days earlier. This must have then been followed by southerly winds and mixed with the rain.

A more morbid explanation of the falling organic remains is perhaps that within the violent internal structure of a tornado cattle and debris can be beaten beyond recognition. The remains could then be transported and deposited in a similar way to other objects.

And what about my dream of finding money falling at my feet?

Strangely enough, in 1940, in the former USSR, a collection of 1000 rare 16th century coins rained down in view of a group of school students. There was a tornado in the vicinity, and the coins had been a hidden treasure, covered with a layer of

den treasure, covered with a layer of soil. The tornado came through, tore up the ground and transported the wreckage, including the coins, into the air. An internal vortex of the tornado siphoned off the coins, all of equal weight and size, transported them through the parent storm and dumping them near the appreciative school kids. It sounds improbable, but freakish conditions do occur.

The only question remaining is: are these events ever forecast? Well, the answer is of course not. Although the Bureau of Meteorology had forecast storms for last Sunday, but can you imagine the evening weather report telling us that "a severe storm will move across the city tomorrow, bringing snow to the Alps and fish above 1000m."

The occurrences are of course very rare, and entirely unpredictable. Still, I will keep checking the international forecasts for severe weather, and if I hear predictions of money showers somewhere in the world, you can guarantee I will be on the first aeroplane over there.

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