

The chart is oriented for
April 15 at 10 p.m. NZST
May 1 at 9 p.m. "
May 15 at 8 p.m. "
June 1 at 7 p.m. "

Evening sky in May 2023

To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). Stars rise in the east and set in the west, just like the sun. The sky makes a small extra westward shift each night as we orbit the sun.

Venus is the 'evening star' appearing in the northwest soon after sunset and setting around 8 pm. Reddish Mars appears above and right of it when the sky darkens. Sirius, the brightest true star, is midway down the western sky. Directly below it are bright stars Rigel and Betelgeuse. Canopus is southwest of overhead. Crux, the Southern Cross, and the Pointers, Alpha and Beta Centauri, are southeast of the zenith. Orange Arcturus, in the northeast, often twinkles red and green.

Chart produced by Guide 8 software; www.projectpluto.com. Labels and text added by Alan Gilmore,
Mt John Observatory of the University of Canterbury. www.canterbury.ac.nz

The Evening Sky in May 2023

Venus is the 'evening star' setting in the northwest 2½ hours after the Sun. It is swinging out from the Sun as it catches up on Earth on the inside lane, so sets later. It is 130 million km from us mid-month. In a telescope it looks like a first-quarter Moon. When the sky is dark, **Mars** appears above and right of Venus, looking like a medium brightness orange-red star. At mid-month Mars will be at the top of an equally spaced line with **Castor** and **Pollux**, the heads of **Gemini** the Twins. Mars holds its position night-to-night while the Twins slip slowly down the sky. The crescent Moon will be below Venus on the 23rd, between Venus and Mars on the 24th, and to the right of Mars on the 25th.

As the sky darkens **Sirius** appears midway down the western sky. It is the brightest of all the stars but much fainter than Venus. It twinkles with all colours when setting in the southwest around 11 pm. Sirius, 'the Dog Star', marks the head of **Canis Major** the big dog, now head down, tail up. **Canopus**, second brightest star, is southwest of overhead.

Below Sirius are bluish **Rigel** and reddish **Betelgeuse**, the brightest stars in **Orion**. Between them is a line of three stars, Orion's belt. To southern hemisphere star watchers, the line of three makes the bottom of 'The Pot', now tipped on its side.

Crux, the Southern Cross, is southeast of the zenith, to the right of 'The Pointers'. **Alpha Centauri**, the brighter Pointer, is the closest naked-eye star, 4.3 light years* away. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. **Canopus** is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

Following the Milky Way down into the southeast finds **Scorpius**. Orange **Antares** marks the Scorpion's body. Its upside-down tail curves to the right of Antares. **Antares** is a red-giant star like Betelgeuse: around 12 times the mass of the sun but wider than Earth's orbit. It is 600 light years away and 19 000 times brighter than the sun.

Orange **Arcturus** is the brightest star in the northern sky. It often twinkles red and green when low. Arcturus is the brightest red star but, at 37 light years, is much closer than Antares. It is about 120 times brighter than the sun.

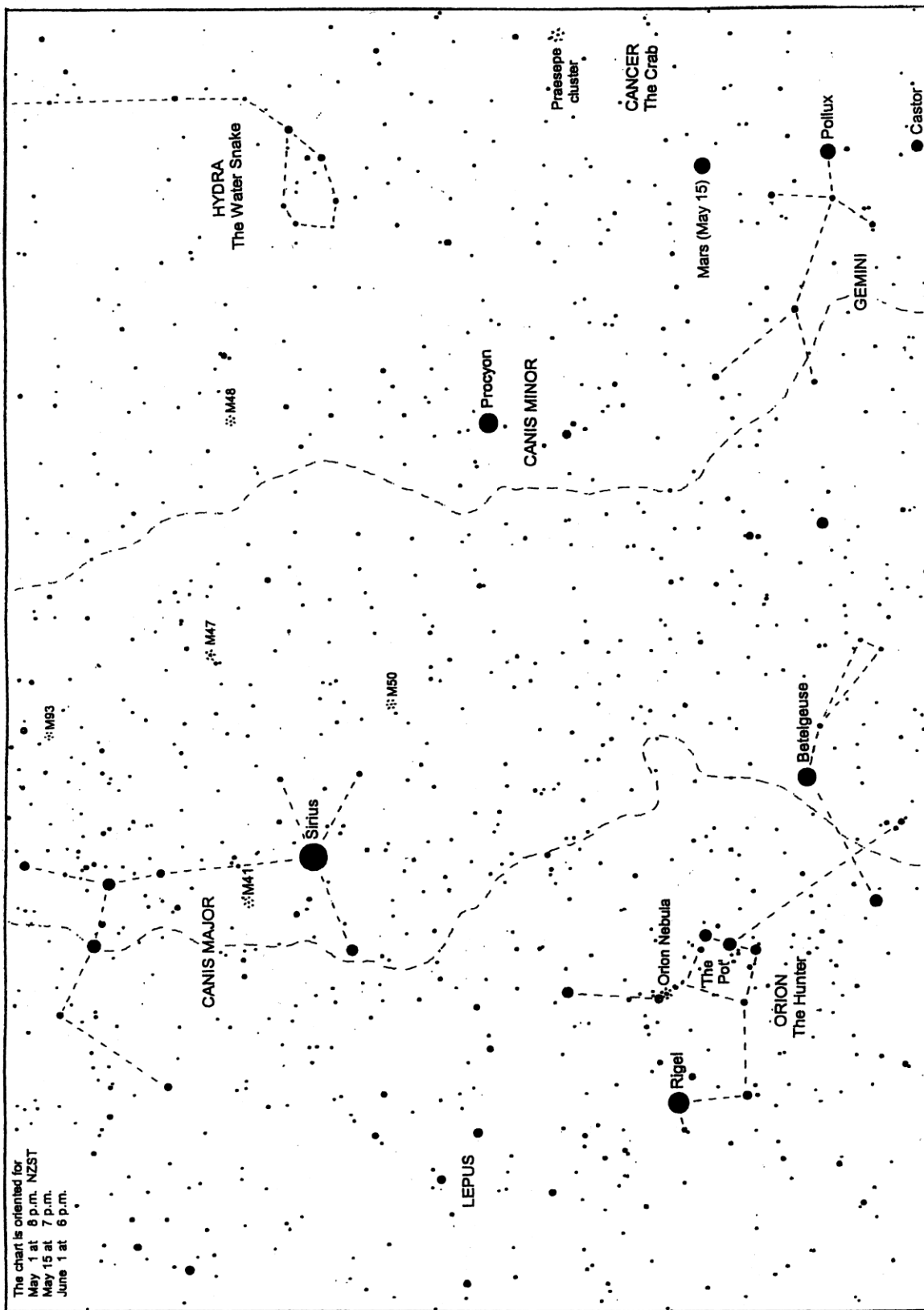
The **Milky Way** is brightest in the southeast toward Scorpius and **Sagittarius**. In a dark sky it can be traced up past the Pointers and Crux and fading toward Sirius. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The nearby outer edge is by Orion where the Milky Way is faintest. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in **Carina** and Scorpius.

The Clouds of Magellan, **LMC** and **SMC**, are midway down the southern sky, easily seen by eye on a dark moonless night. They are small galaxies compared to our Milky Way Galaxy. The Large Magellanic Cloud is 160 000 light years away and the Small Cloud is 200 000 light years away.

Bright planets are in the morning sky. Saturn rises due east around 1 a.m., looking like a medium brightness cream-tinted star. It is north of the zenith at dawn. Golden Jupiter rises around 5 a.m. and is the brightest 'star' in the dawn sky. Mercury first appears as a faintish (3rd magnitude) star below and right of Jupiter around the 10th. It slowly climbs toward Jupiter and brightens. By the 20th it is a medium-bright 'star' 7° below and right of Jupiter. It continues to brighten but starts slipping lower after that. The Moon will be by Saturn on the 14th, and near Jupiter and Mercury on the 18th.

The full moon will look a little odd in the late morning hours on May 6th as it grazes the fuzzy edge of Earth's shadow, the penumbra. The Moon's bottom-right edge will be darkest around 5:30 a.m.

*A **light year (l.y.)** is the distance that light travels in one year: nearly 10 million million km or 10¹³ km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.



Northwest Evening Sky in May 2023

The chart shows the northwest sky at dusk. Venus is just off the bottom edge of the chart till mid-May. It appears beside Castor and Pollux near the end of the month. Sirius is due west at dusk, often twinkling like a diamond. Directly below Sirius is Orion with 'The Pot' at its centre.

Chart produced by Guide 8 software, www.projectpluto.com. Labels added by Alan Gilmore, University of Canterbury's Mt John Observatory. www.canterbury.ac.nz

Interesting Objects in the Northwest Evening Sky in May 2023

Brilliant Venus is a pointer to this region. It is just below the chart area till mid-month when it appears left of Castor and Pollux (so it isn't on the chart.) **Sirius** is the second brightest star in the area after Venus, and the brightest true star. Below Sirius is **Orion** the Hunter. Sirius marks the head of one of the two dogs following the hunter down the sky. **Procyon** marks the lesser dog. The pair of stars making **Gemini** the Twins are low in the north. Above and right of them is a glowing spot, the **Praesepe** star cluster marking the shell of **Cancer** the Crab.

Mars looks like a medium-brightness red star similar to **Pollux** and **Castor**, the Gemini twins. At the beginning of the month Mars is left of the Twins and a little higher than them. By mid-May it is on a line with the two stars. They slip down the sky night-to-night while Mars holds its position. At the end of May **Venus** is nearly above the Twins, near where Mars was earlier. Mars is 280 million km away, mid-month, so tiny in a telescope. Venus is catching us up. It is 130 million km away in mid-May.

Sirius is the brightest star, though star-like Venus and Jupiter, and sometimes Mars, are brighter. Sirius appears bright because it is 23 times brighter than the sun in true brightness and because it is relatively close at 8.6 light years (l.y)* away. Sirius was often called 'the dog star' being the brightest star in Canis Major, one of the two dogs that follow Orion across the sky. Canis Major is heading down the western sky. The dog's hindquarters are marked by the four bright stars above Sirius. Sirius often twinkles like a diamond when it is low in the sky, as the air breaks its light into separate colours.

Orion the Hunter, or warrior, is now upside down in the west in our southern hemisphere view. The line of three stars makes Orion's Belt. The line of faint stars above and left of the belt form Orion's Sword in the northern view, hanging from his belt. To most southern hemisphere sky watchers the belt and sword form **The Pot** or The Saucepan, now tilted on its side.



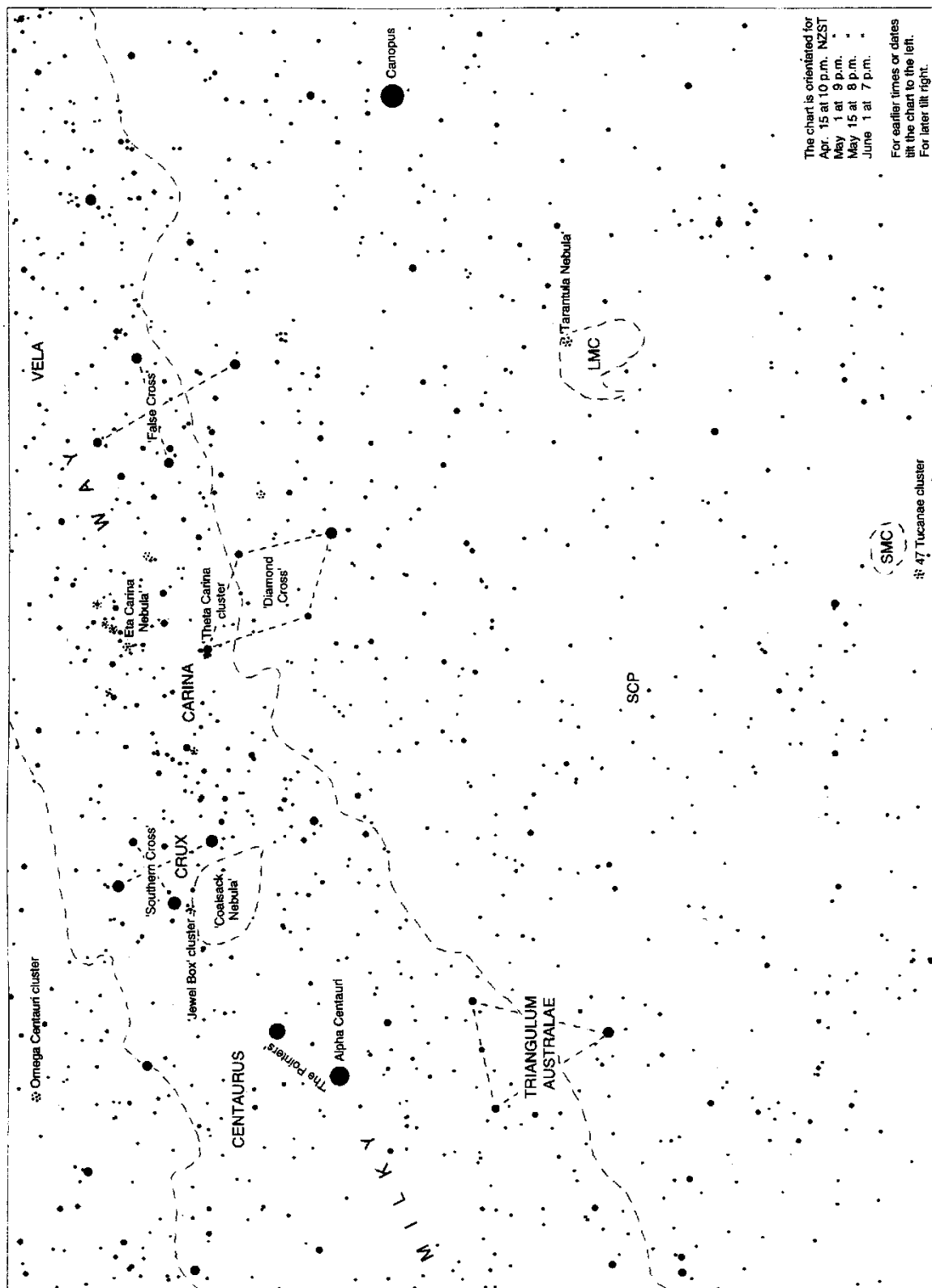
The **Orion Nebula** is visible in binoculars as a misty glow around the middle stars of Orion's Sword or the handle of The Pot. It is a vast cloud of dust and gas about 1300 l.y. away and more than 20 l.y. across. Ultra-violet light from a massive, extremely hot star in the cloud causes it to glow. Some stars in this region are less than a million years old and a few of the brightest may be much younger still. The sun, by contrast, is 4.6 billion years old. There are many bright and dark nebulae in this part of the sky. The Horsehead nebula, a favourite of astronomy books, is beside the top star of Orion's Belt, but too faint to be seen in small telescopes.

Rigel is a blue 'supergiant' star 40 000 times brighter than the sun and 800 l.y. away. Its surface temperature is 12 000°C, giving it a bluish colour. **Betelgeuse** is a red giant star around a 1000 times bigger than the sun -- five times wider than Earth's orbit -- but only around 20 times heavier. It is mostly very thin gas around a dense hot core. It is 9 000 times brighter than the sun, about 600 l.y. away, and has a surface temperature of 3000°C. The sun is 5500°C. **Procyon** is a relatively close star, just 11 years away. It is about 7 times brighter than the sun.

The **Praesepe cluster** marks the shell of **Cancer** the crab. To the eye, in a dark sky, it is a spot of light bigger than a full moon. The cluster is also called the Beehive and binoculars show why. It is some 580 light years from us. It formed in a gas cloud about 625 million years ago. Because it is old, its brightest stars long ago burned out. So its stars appear more similar in brightness than is the case with the Pleiades/Matariki cluster (~100 million years old) or the Jewel Box (~16 million years old.)

The Milky Way is faint in this region as we are looking toward the nearby edge of the Galaxy's disk. Several star clusters visible in binoculars or small telescopes are marked with asterisks.

*A **light year (l.y.)** is the distance light travels in one year: about 10 million million km (10^{13} km) or 6 million million miles. Light from the sun reaches us in 8 minutes. Light from the moon gets here in 1 second. Sunlight takes 4 hours to reach Neptune, the outermost significant planet, and 4 years to reach Alpha Centauri, the nearest star.

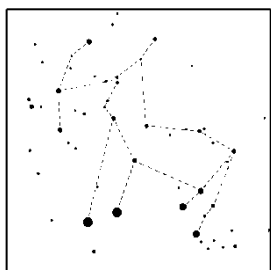


Southern Evening Sky in May

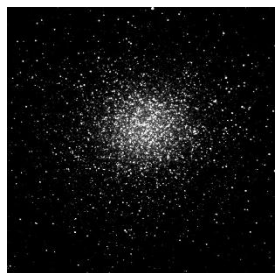
The chart shows the area of sky from just south of overhead to midway down the southern sky. Interesting star clusters and nebulae are indicated with asterisks. They are described on the other side of this page.

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Interesting Objects in the Southern Sky



Centaurus, with the bright 'Pointers', and **Crux**, the Southern Cross are south-east of overhead, the tightest grouping of bright stars in the sky. Originally Crux was the hind legs of the Centaur, the horse-man of Greek mythology. The complete Centaur, with bow, is outlined at left. It was only in the 17th Century that Crux was split off as a separate constellation. The slow wobble of Earth's axis allowed this part of the sky to be seen from more northerly places in ancient times. The fainter Pointer and the three bluish-white stars of the Crux are all super-bright stars hundreds of light years away. Alpha Centauri is just 4.3 light years* away and the reddish top star of Crux is 90 light years from us.



Omega Centauri, also southeast of the zenith, is a globular cluster, a ball-shaped cluster of millions of stars. Its total mass is six million times the sun's mass or weight. It is 17 000 light years away and 200 light years across. Globular clusters are very ancient, around 10 billion years old, twice the age of the sun. Omega Centauri is the biggest of the hundred-odd globulars randomly orbiting our galaxy. It may originally have been the core of a small galaxy that collided with the Milky Way and was stripped of its outer stars.

47 Tucanae, by the SMC, is a similar sort of cluster 16 000 l.y. away.

Coalsack nebula, left of Crux, looks like a hole in the Milky Way. It is a cloud of dust and gas 600 light years away, dimming the distant stars in the Milky Way. Many 'dark nebulae' can be seen along the Milky Way, appearing as slots and holes.

The Jewel Box is a compact cluster of young bright stars about 7000 light years away. The cluster formed around 16 million years ago. To the eye it looks like a faint star close by the second-brightest star in Crux. A telescope is needed to see it well.



Eta Carinae nebula, a luminous spot in the Milky Way to the right of Crux, is a glowing gas cloud about 8000 light years from us. The thin gas glows in the ultra-violet light of nearby hot young stars.

The golden star in the cloud, visible in binoculars, is Eta [Greek 'e'] Carinae. It is estimated to be to be 80 times heavier than the sun. It is four million times brighter than the sun but is dimmed by dust clouds around it. It is expected to explode as a supernova in the next few thousand years. Many star clusters are found in this part of the sky.

Large & Small Clouds of Magellan (LMC & SMC) appear as two luminous clouds, easily seen by eye in a dark sky. They are galaxies like the Milky Way but much smaller. Each is made of billions of stars. The Large Cloud contains many clusters of young bright stars seen as patches of light in binoculars. The Large Cloud is 160 000 light years away, the Small Cloud 200 000 light years; very close by for galaxies.



Tarantula nebula is a glowing gas cloud in the LMC. The gas glows in the ultra-violet light from a cluster of very hot stars at the centre of the nebula. The cloud is about 800 light years across. It is easily seen in binoculars and can be seen by eye on moonless nights. This nebula is one of the brightest known. If it was as close as the Orion nebula then it would be as bright as the full moon.

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