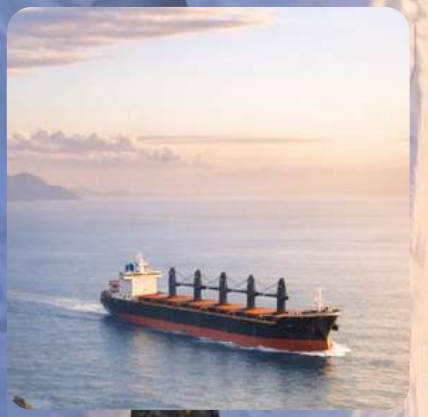
COMPANY OF MASTER MARINERS OF SRI LANKA

QUARTERLY NEWSLETTER

EIGHT BELLS



WWW.CMMSRILANKA.LK

Contents

EDITOR MESSAGE

The maritime profession continues to play a vital role in human survival. It evolves in response to advancing technology, regulatory changes, and shifting operational demands. Amidst these transformations, the core principles of seamanship, leadership, and professional integrity remain essential for safe and efficient operations at sea. The Company of Master Mariners is dedicated to upholding these values while providing a platform for experienced professionals to connect, contribute, and advance the profession.

As senior mariners, our collective experience carries immense responsibility. Leadership today extends beyond command and technical skills; it also demands sound judgment, mentorship, and a steadfast commitment to the human aspect of seafaring. Sharing knowledge and lessons learned is crucial for maintaining high professional standards and supporting the next generation of Masters and young seafarers alike. This is becoming ever so important with the challenges the modern day seafarers are facing on a daily basis.

We have an exciting line up of articles lined up for you in this months' edition of Eight Bells.

Rajitha Semage
Editor

Wishing you fair winds and following seas.

P.B. Karndawala
Memorial lecture

The P.B. Karandawala Memorial lecture continues to be an integral part of the CMM calendar. This year the Ms. Subashini Abeysinghe, Research Director from Verite Research institute delivered a powerful lecture on a very timely topic “COMPETING, COMPLEMENTING AND GROWING_ Sri Lank’s position in India’s maritime growth story”.

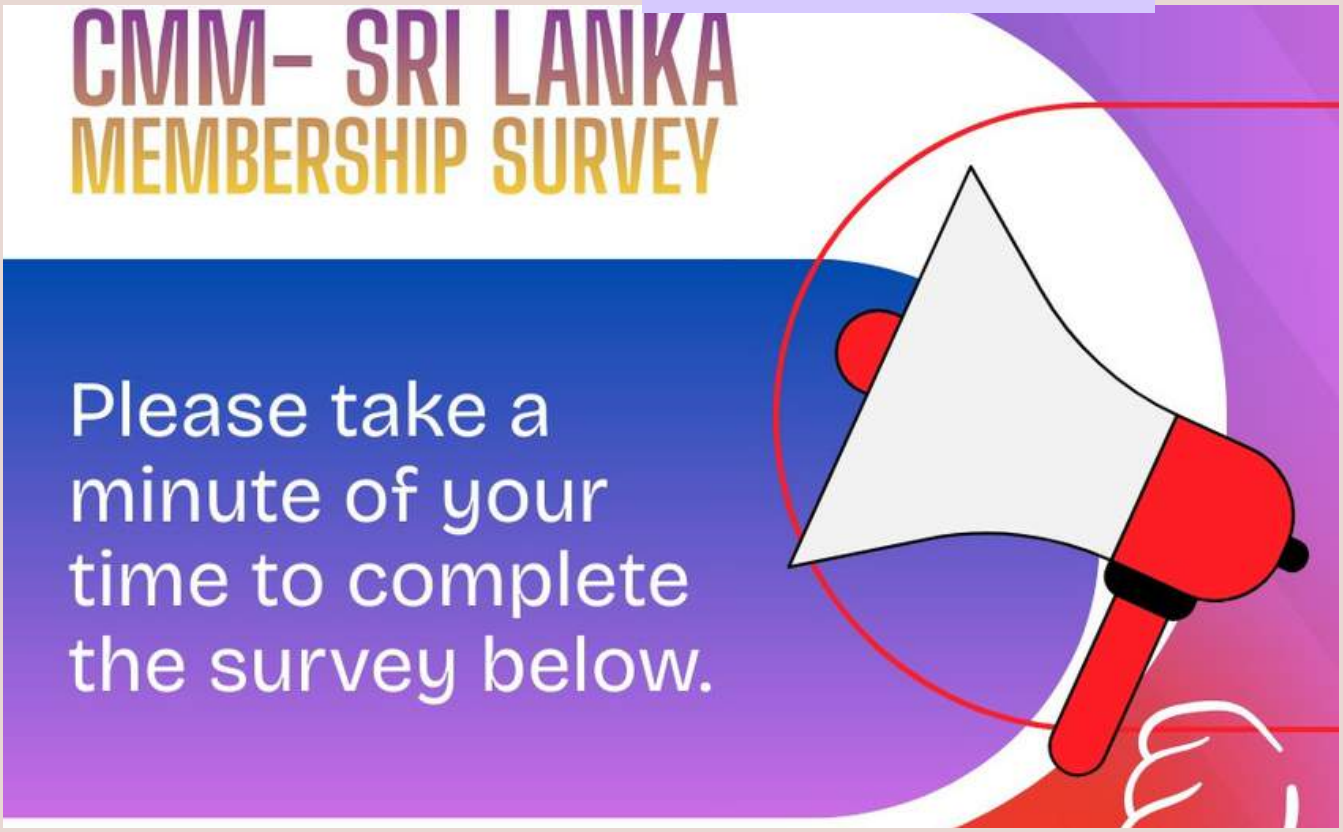
The lecture was held on 26th February 2026 at the GAP HQ auditorium. One of the highlights of the evening was the special speech delivered by Mrs. Karandawala. She reminded the audience of her time with late Mr. Karandawala and the importance of the associations like CMM and CILT and its duty towards delivering the message to the community beyond shipping.

Here are some of the photographs of the evening for those of you who were not able to attend this event.


gap
HQ
COLOMBO 07

MEMBERSHIP

SURVEY



CMM is currently at 420+ members strong. But it was noted that the numbers on the official whatsapp group and on the email group was far less than the total membership number. It was with this in mind, the council approved a membership survey which was conducted during the month of February 2026. We managed to increase the numbers on both our official communication channels. But the total number is still short. The next membership survey would be launched very soon to update the contact details of the members. We extend our warm gratitude to those who completed the initial survey.

Capt.Dhakshina Perera writes

CLASSICAL CELESTIAL NAVIGATION

Navigation, once rooted deeply in the science of the stars, is witnessing a gradual shift. Classical celestial navigation—long regarded as the backbone of safe ocean passage—is becoming a diminishing art in the presence of advanced electronic systems such as GPS, radar, and integrated bridge solutions. While these modern tools provide accuracy, efficiency, and convenience, they also reduce reliance on traditional methods that demanded deep understanding, skill, and discipline.

The navigator.....

For a navigator, three fundamental requirements have always remained unchanged: knowing one's position, determining the direction to sail, and calculating the distance to be covered. From ancient times, mariners relied on a variety of techniques to satisfy these needs—ranging from coastal piloting and dead reckoning to observing celestial bodies such as the sun and stars.

As this subject is of particular interest for me, it has led to a deeper exploration of historical navigation techniques. However, since the primary focus of this paper is on nautical tables, only the most relevant aspects will be summarized here, while a more comprehensive discussion on ancient navigation methods will be presented in separate papers.

Ancient Sri Lankan Maritime Technology

The evolution of maritime technology in Sri Lanka has been truly impressive. Given its depth and importance, it will be critically reviewed and discussed in a separate paper.

Nautical Tables

As navigation evolved, there was a significant shift toward the use of mathematical formulas and precomputed tables. This development marked a turning point in maritime history, where empirical knowledge began to merge with scientific precision. Navigators were now able to solve complex astronomical and trigonometric problems more efficiently, leading to improved accuracy in position fixing and voyage planning.

Ancient Nautical tables

As early as the 3rd millennium BC in Babylonia, observers began systematically recording the motions of the Sun, Moon, planets, and stars. The invention of writing on clay tablets, which emerged toward the end of the 4th millennium BC in Uruk, played a crucial role in preserving this knowledge.

By the 3rd millennium BC, records of stars and constellations were being inscribed on these tablets, marking an early attempt to document the night sky. Advancing into the 2nd millennium BC, more detailed texts describing astronomical phenomena began to appear. Notably, Babylonian tablets from the first half of this period contain records of celestial omens, reflecting both observational astronomy and its connection to cultural and religious interpretations.

Babylonia and the city of Uruk were located in ancient Mesopotamia, in what is now modern-day Iraq, between the Tigris and Euphrates rivers (Sadly, regions that once nurtured some of the earliest advancements in human knowledge are today affected by modern conflicts, leading to the loss and damage of invaluable heritage.)

Image 01 - Babylonian Map of the World (6th Century BCE)

Image 02
The astronomers of Babylonia, scratching tiny marks in soft clay, used surprisingly sophisticated geometry to calculate the orbit of what they called the White Star — the planet Jupiter (approx. 3rd Century BC).

DUVEGALA INSCRIPTION OF SRI LANKA
(දුවේගල සෙල්ලිපිය)

Ancient Sri Lankans were also engaged in maritime activities and likely possessed practical navigational knowledge suited to regional seafaring. Unfortunately, much of this knowledge has been lost over time, leaving behind only fragmentary evidence.
Brahmi rock inscriptions discovered in Sri Lanka, dating back to the 3rd century BC, record the donation of caves to the Sangha by individuals identified as Navika (sailors). These inscriptions provide valuable insight into the presence of seafaring communities in ancient Lankan society. Of particular interest is the Duwegala inscription, which is noted for a marking interpreted as a depiction of a Sailing Vessel.
Together, these records suggest that ocean-going navigators engaged in trade were an important and active segment of early Sri Lankan society.
This resembles that word “Navika(නාවික)” is approx. 2300 years or more old.

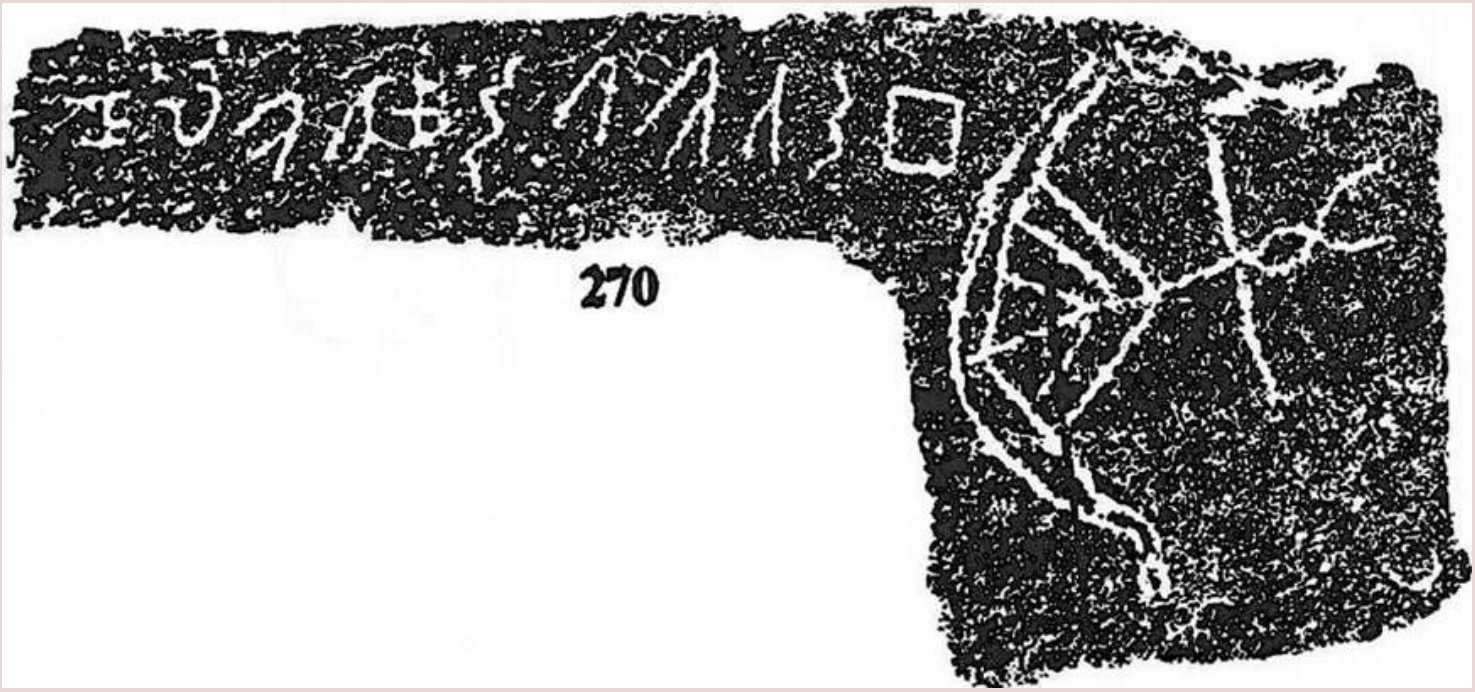


Image 04 – Duvegala Inscription with a sailing vessel (3rd Century BC)

"It would be difficult to understand the nautical tables without understanding time...."

Horoscope

In the second half of the 1st millennium BC, particularly in Babylonia, new methods for predicting future events began to emerge, including what are often referred to as early "horoscopes." However, these Babylonian texts should not strictly be called horoscopes in the technical sense.

Babylonian astronomers, particularly during the last seven to eight centuries BC in Babylonia, maintained systematic, night-by-night records of a wide range of astronomical phenomena. These observations included the motions of the Moon, planets, and other celestial events. Over time, careful analysis of these records enabled them to identify recurring lunar and planetary cycles. By recognizing these patterns, Babylonian scholars were able to predict future astronomical events based on past observations, marking one of the earliest known uses of empirical data for scientific prediction.They were using celestial observations were mainly used to predict:

- Fate of the king
- Wars and invasions
- Stability of the kingdom
- Natural events

This observation suggests that Babylonian astronomical practices, particularly their reliance on lunar cycles for calculation and prediction, find a parallel in the traditions of Sri Lanka. In Sri Lankan culture, the Moon continues to play a central role in both religious and social life, most notably through the observance of Poya Day, which marks each full moon.

Furthermore, traditional Sri Lankan calendar systems were largely based on lunar cycles, reflecting a deep-rooted understanding of the Moon's phases in organizing time and cultural activities. This similarity highlights how different ancient civilizations, despite geographical separation,

independently recognized the importance of lunar cycles in structuring both scientific observation and daily life.
Sri Lankan Lunar Calendar (Luna was also the Roman goddess of the Moon).
In Sri Lankan Buddhist chanting traditions, certain gatha (verses) include the phrase “Dasamase Urekatva”,(දස මාසේ උරෙකත්වා..) ” which refers to a period of ten months in the mother’s womb. At first glance, this appears to differ from the modern understanding of human gestation, which is typically around nine months according to the Gregorian calendar (Introduced in 1582 by Pope Gregory XIII)
However, this apparent difference can be explained by the use of lunar months rather than solar (calendar) months. In traditional timekeeping systems, including those used in Sri Lanka, a lunar month is approximately 29.5 days. Therefore, ten lunar months correspond closely to the modern medical estimate of gestation (about 280 days).
Julian Date (Not Julian Calendar - The Julian calendar is a solar-based calendar introduced by Julius Caesar in 46 BC)
Astronomical and navigational calculations often use the Julian Day system rather than the Gregorian calendar because it provides a continuous and unambiguous measure of time. Unlike calendar dates, which involve months, varying day lengths, and leap years, the Julian Day system counts time as a simple sequence of days (and fractions of a day).
This makes it particularly useful in astronomical computations, where precision and continuity are essential.
In publications such as the Nautical Almanac, values like Greenwich Hour Angle (GHA) and declination are tabulated for practical use. While navigators typically use tabulated data, the underlying astronomical formulas used to generate these values are often based on continuous time scales such as Julian Days rather than conventional calendar dates.
Julian Date (JD) is a continuous count of days and fractions of a day since a fixed starting point (January 1, 4713 BC, at noon UTC)
As the Nautical Almanac is published annually, its data—such as GHA and declination—are computed in advance using precise astronomical formulas based on the Julian Day Number, enabling accurate prediction of celestial positions.

For example, to calculate GHA (Sun) for year 2027 following formula can be used (partial formula only more corrections need to be done)

Mean Longitude of the Sun (degrees) can be given by

$$L = 280.46646 + 36000.76983 \cdot T$$

Where....

$$T = \frac{JD - 2451545.0}{36525}$$

The JD is used for calculations due to the exception of complications like leap years.
The Julian Day Number is used for calculations as it avoids complications associated with calendar systems, such as varying month lengths and leap years.

Horoscope- Greek

The word horoscope comes directly from the ancient Greek “hōroskopos”

- Hora - means hour
- Skopos – observer

It is evident that in Hellenistic Astronomy, astronomical calculations were fundamentally based on two key parameters: time and the observer’s position.

This same principle continues in modern celestial navigation, where these elements are represented through quantities such as Local Mean Time (LMT)” Hora” and the Local Hour Angle (LHA)” Observer” of a celestial body.

Even in the Sri Lankan context, the concept of time is traditionally expressed using the term hora” හෝරාව”, reflecting an early system of timekeeping that aligns with astronomical observation.

What the Greeks Actually Meant

In ancient Greek astronomy and astrology, the hōroskopos referred specifically to the ascendant — the degree of the ecliptic rising above the eastern horizon at the exact moment of birth. This is still called the rising sign in modern astrology (Lagna ලග්න) .

What is meant by the ecliptic is closely related to the zodiac. The zodiac can be understood as a belt of constellations lying along the ecliptic, through which the Sun, Moon, and planets appear to move.

Because the Earth’s axis is inclined by approximately 23.5°, the ecliptic is tilted with respect to the observer’s horizon. As the Earth rotates, this inclined zodiac belt appears to move across the sky.

At any given moment, one specific point of the zodiac is rising on the eastern horizon. This point is known as the ascendant, or lagna. In astrology, this rising zodiac sign at the exact time and place of birth is referred to as the person’s lagna.

Navigators for Astrology calculations

As navigators, we can almost be considered excellent astrological calculators, since we work with highly precise data from the Nautical Almanac, using time measured to the second and positions calculated to decimal accuracy. With this level of precision, it is possible to determine celestial configurations for a given moment with a high degree of accuracy (Or even to make Horoscopes).

For example the accuracy of Rahu and Kethu (The Shadow Planets) , which is the ascending and descending node of the moon relative to the ecliptic As the plane of the moon is 5.1° inclined to the Ecliptic.

If you look at your Horoscope Rahu and Kethu sits in opposite houses. Astronomically ascending and descending node of the moon are 180 degrees away from each other

Moon, Rahu , Kethu

The Moon is the fastest-moving object in the celestial sphere, advancing more than 13° each day relative to its previous position. Because of this rapid motion, determining its exact position requires a high level of precision. Navigators, using accurate data from the Nautical Almanac and precise timekeeping, are able to calculate the Moon’s position far more accurately than traditional astrologers.

For example, the accuracy involved in determining ***Rahu and Kethu*** (often referred to as the shadow planets) can be understood astronomically as the ascending and descending nodes of the Moon relative to the ecliptic. Since the plane of the Moon’s orbit is inclined by about 5.1° to the ecliptic, these nodes are the two points where the Moon’s path intersects it.

In a horoscope, Rahu and Kethu are always positioned in opposite houses. Astronomically, this is because the ascending and descending nodes of the Moon are always 180° apart from each other.

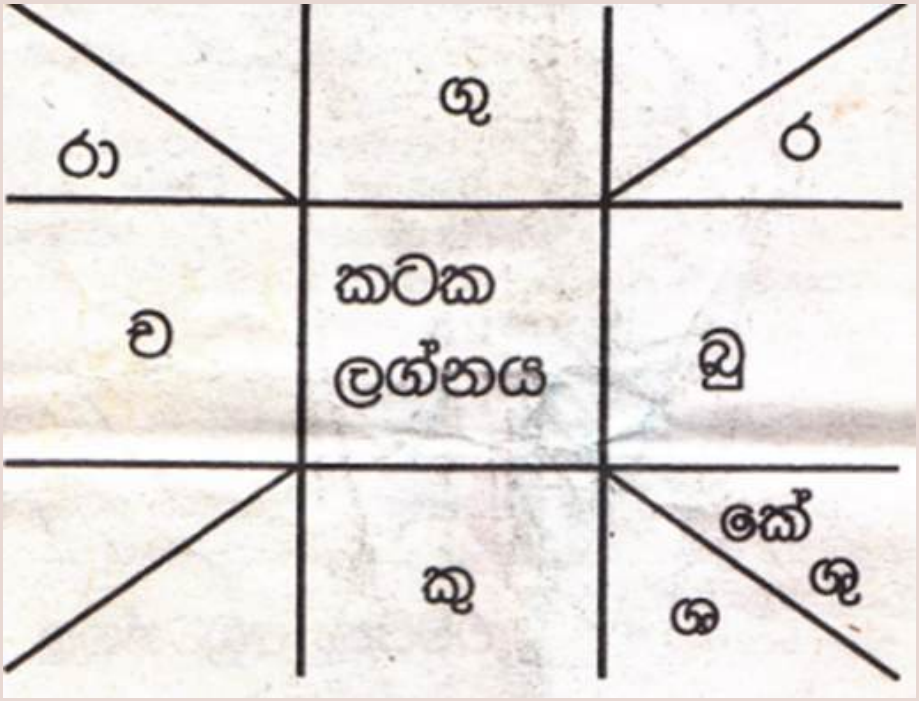


Image 05 – Rahu and Kethu in opposite houses.

Because Rahu and Ketu are on one axis, Vedic astrology treats them as two poles of a single life theme rather than two unrelated influences.
If someone gives you their horoscope and Rahu and Ketu are not in opposite houses — that horoscope is astronomically wrong.

Rahu Kalaya (රාහු කාලය)

Please Note that.....
"It is not my intention to challenge beliefs or persuade anyone to accept or reject a particular system. Rather, the aim is simply to highlight the scientific and astronomical principles behind these calculations. As navigators, we have a close connection to such computations, and this perspective allows us to appreciate the underlying accuracy and methodology involved."

In the Nautical Almanac, sunrise, sunset, and twilight times can be calculated with a high degree of accuracy, and it has long been standard practice for navigators to compute these times when planning and taking celestial sights. The day is divided based on sunrise to sunset — the duration of daylight. This daylight period is divided into 8 equal parts. One of these 8 parts belongs to Rahu each day.

$$\text{Duration of one part} = \frac{\text{Sunset time} - \text{Sunrise time}}{8}$$

Approximate times

Sunday	8th part	4:30 PM - 6:00 PM
Monday	2nd part	7:30 AM - 9:00 AM
Tuesday	7th part	3:00 PM - 4:30 PM
Wednesday	5th part	12:00 PM - 1:30 PM
Thursday	6th part	1:30 PM - 3:00 PM
Friday	4th part	10:30 AM - 12:00 PM
Saturday	3rd part	9:00 AM - 10:30 AM

Image 06 – Rahu Kalaya segment as per Hindu astrological traditions. The times are approximations only, the actual times depend on exact Sunrise and Sunset times.

And always the 1st part omitted.

For an observer on a vessel making way, Rahu Kalaya will not coincide exactly with that of a person stationary on land, as the observer's position and local time are continuously changing.

Similarly, for an observer at higher latitudes, Rahu Kalaya may be extended due to the longer daylight periods and the variation in sunrise and sunset times.

This highlights how such time-based systems depend on the observer's position and the motion of celestial bodies, showing the strong link between traditional practices and astronomical principles.

To Be Continued

EXCITING NEWS

A brand New CMM T Shirt is released. New Look and new design of the the T-Shirt is as below. You can now start purchasing it on the upcoming events for just

Rs. 2,000.00.

Rs. 2,000.00

member get together

get registered

coming up

NEXT QUARTER

1. MEMBER GET TOGETHER ON 26TH APRIL 2026
2. ANNOUNCEMENT OF THE ANNUAL GENERAL MEETING

Obituary

REST IN PEACE

Capt S.K. Ratnasinha

1962 - 2026

With deep sadness, we announce the passing of our beloved husband, father, and grandfather, Captain Suresh Kumara Ratnasinha, who departed this life on 14 March 2026.

A respected leader, a proud family man, and a person who touched and helped many throughout his life. He carried himself with dignity and earned the love and respect of all who knew him. His memory and legacy will forever live in our hearts.

Lovingly remembered by his wife, children, and grandsons.

Viewing
21 March 2026 | 9:00 a.m. – 4:00 p.m.
The Respect by Jayaratne, Borella

Cremation
Borella Cemetery (Kanatte General Cemetery), Colombo

THE END