Chapter-1   Class-2

Seasons and Time

ROTATION OF THE EARTH AND CALCULATION OF TIME

PLAY

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THE MIDNIGHT SUN

The Sun shines even at midnight! Not for a single day, but for six months throughout, in the Arctic and the Antarctic Circles. But don't think that the Sun will be vertically overhead during those days. The Sun can be seen only on the horizon. The remaining six months are shrouded in darkness. Daylight lasts only for one or two hours. The land will be covered with snow. Human life and limited agriculture here are all scheduled according to the peculiarities of this climate.

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LOCAL TIME.

-The time estimated at each place, based on the position of the Sun is termed as the local time.

-In the ancient period, time was calculated based on the apex position of the Sun and the length of the shadow

-When the Sun is vertically overhead, it is noon.

What will be the hardships if there are several local times in a country?

- **Cannot prepare a railway time table applicable throughout the country.**

- **Cannot give announcements about radio Programmes.**

. **Cannot conduct an examination with same question paper all over the country.**

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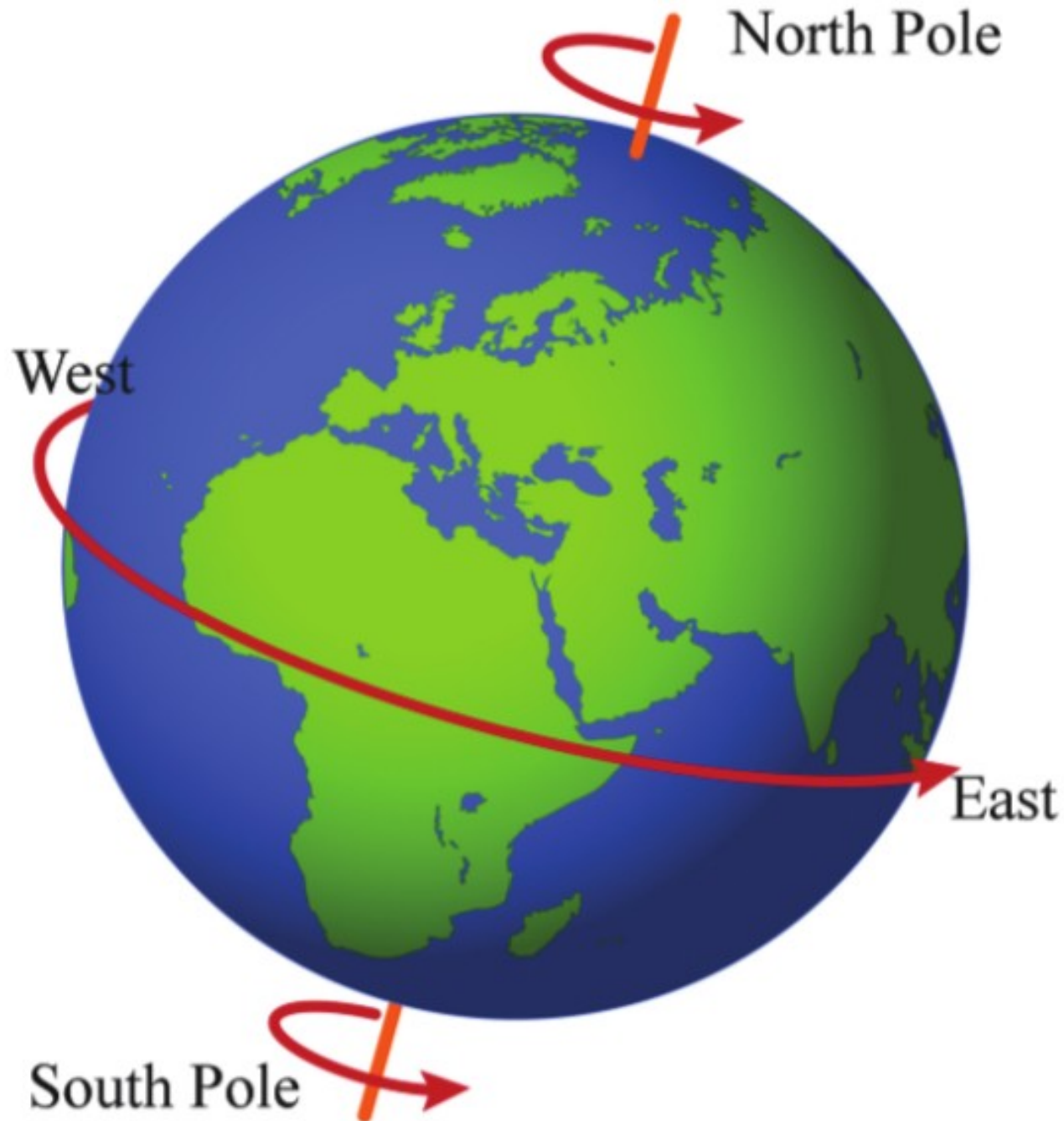
Rotation of the Earth

- **Day and night occur due to rotation of the Earth**
- **The Earth rotates from west to east**
- **It takes 24 hours to complete one rotation.**
- **As the Earth rotates from west to east, the Sun rises in the east.**

**The people of which Indian State can see the Sun rise first?**

- Arunachal Pradesh

Calculation of Time

- **The angular distance of the Earth is 360°.**
- **We will get 360 longitudes if we draw one longitude each for each degree of angular distance.**
- **The time required to complete a 360° rotation is 24 hours.**
- **On converting 24 hours into minutes 24 X 60 = 1440 minutes**
- **That is, the time required for the completion of one rotation = 1440 minutes.**
- **The time required for the Earth to complete the rotation of 1° longitude is 1440/360 = 4 minutes.**

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- **So the time required for the rotation of 15° longitudinal area is 15 X 4 = 60 minutes (1 hour).**
- **In other words, 15° longitudinal area of the Earth passes by the Sun within a period of one hour.**

- **From a definite longitude, the time is estimated to increase by 4 minutes towards the east and decrease by 4 minutes towards the west for every degree of longitude.**
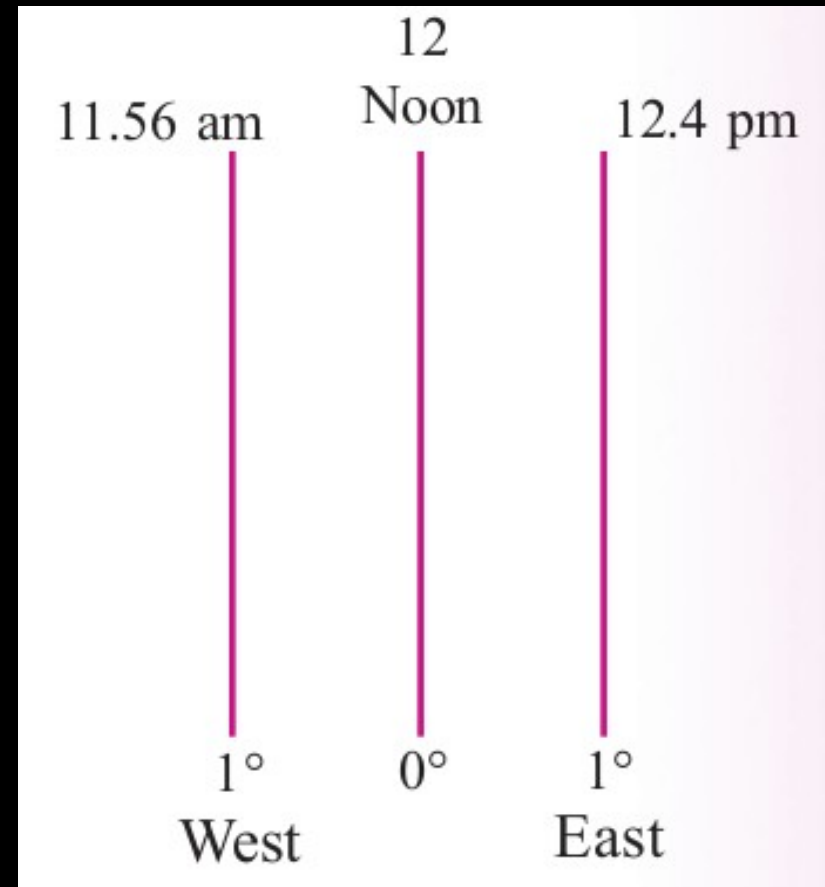
Greenwich Time (GMT) and Time Zones

Greenwich Time (GMT) and Time Zones

-The zero degree longitude is known as the Greenwich Meridian.

-It acquires its name from Greenwich, the place where the Royal British Observatory is situated and through which this line passes.

-Time is calculated worldwide based on the Greenwich Line.

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-Hence this line is **also known as the prime** Meridian.

-**The local time at the prime meridian is known as the Greenwich Mean Time.**

-Based on the Greenwich Meridian, the world is divided into 24 zones, each with a time difference of one hour.
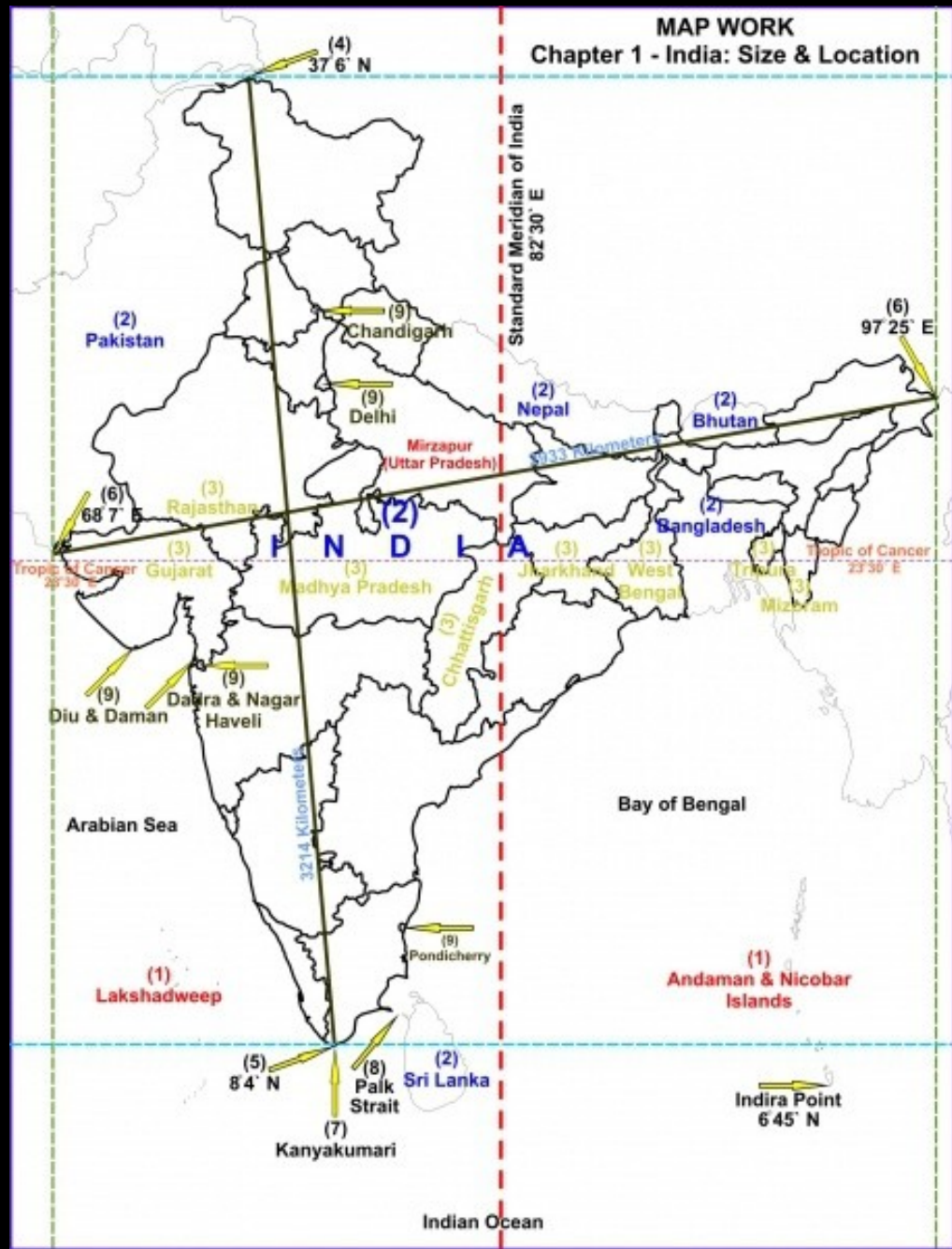
-**These are known as time zones.**

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What would be the longitudinal extent of each time zone?

- 15°

Standard Time

-Each country in the world considers the longitude that passes almost through its middle as the standard Meridian.

-The local time at the longitude that passes through the middle of a country is known as the standard time.

-The time at the longitude that passes through the middle of a country is selected as the common time for the whole country.

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MAP WORK
Chapter 1 - India: Size & Location

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Indian Standard time (IST)

-The longitudinal extent of India is from 68°E to 97°E.

-The 82 1⁄2°E longitude which passes almost through the middle has been fixed as the standard meridian of India.

-The local time along this longitude is generally considered as the Standard Time of India.

-This is known as the Indian Standard Time.

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# Find the difference between the Indian Standard Time and the Greenwich Mean Time?

-5 1/2 hour plus.

Calculate the time at each 15° longitude east and west of the Greenwich Line up to 180° longitude and complete the table.

Time at Greenwich - Friday 10 A.M.					
To the west of Greenwich			To the east of Greenwich		
Longitude	Day	Time	Longitude	Day	Time
15⁰	Friday	9 am	15⁰	Friday	11 am
30⁰	Friday	8 am	30⁰	Friday	12 noon
45⁰	Friday	7am	45⁰	Friday	1pm
60⁰	Friday	6am	60⁰	Friday	2pm
75⁰	Friday	5am	75⁰	Friday	3pm
90⁰	Friday	4am	90⁰	Friday	4pm
105⁰	Friday	3am	105⁰	Friday	5pm
120⁰	Friday	2am	120⁰	Friday	6pm
135⁰	Friday	1am	135⁰	Friday	7pm
150⁰	Thursday	12midnight	150⁰	Friday	8pm
165⁰	Thursday	11pm	165⁰	Friday	9pm
180⁰	Thursday	10pm	180⁰	Friday	10pm

International Date Line

10 pm Friday

10 pm Thursday

Siberia

Alaska

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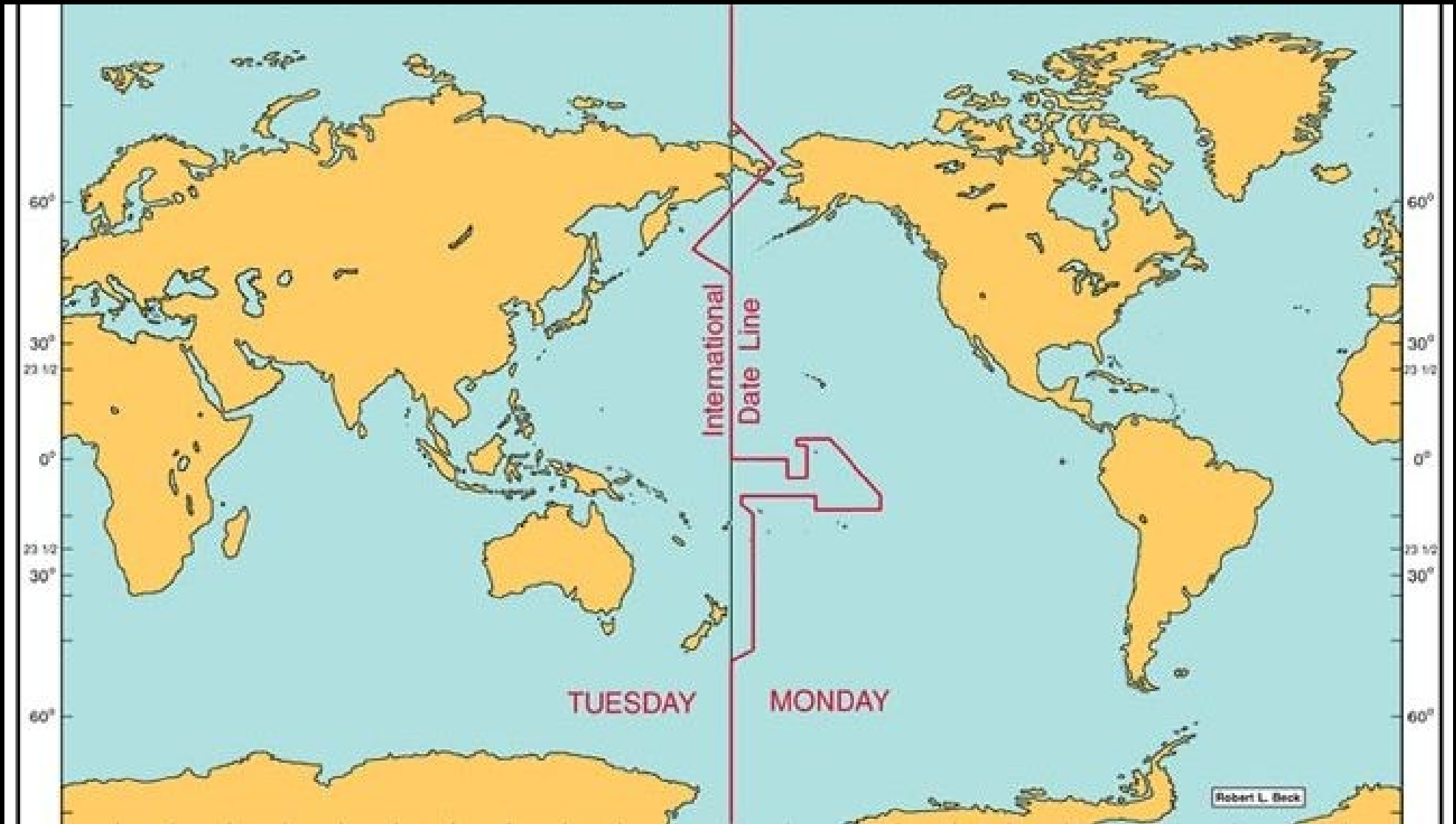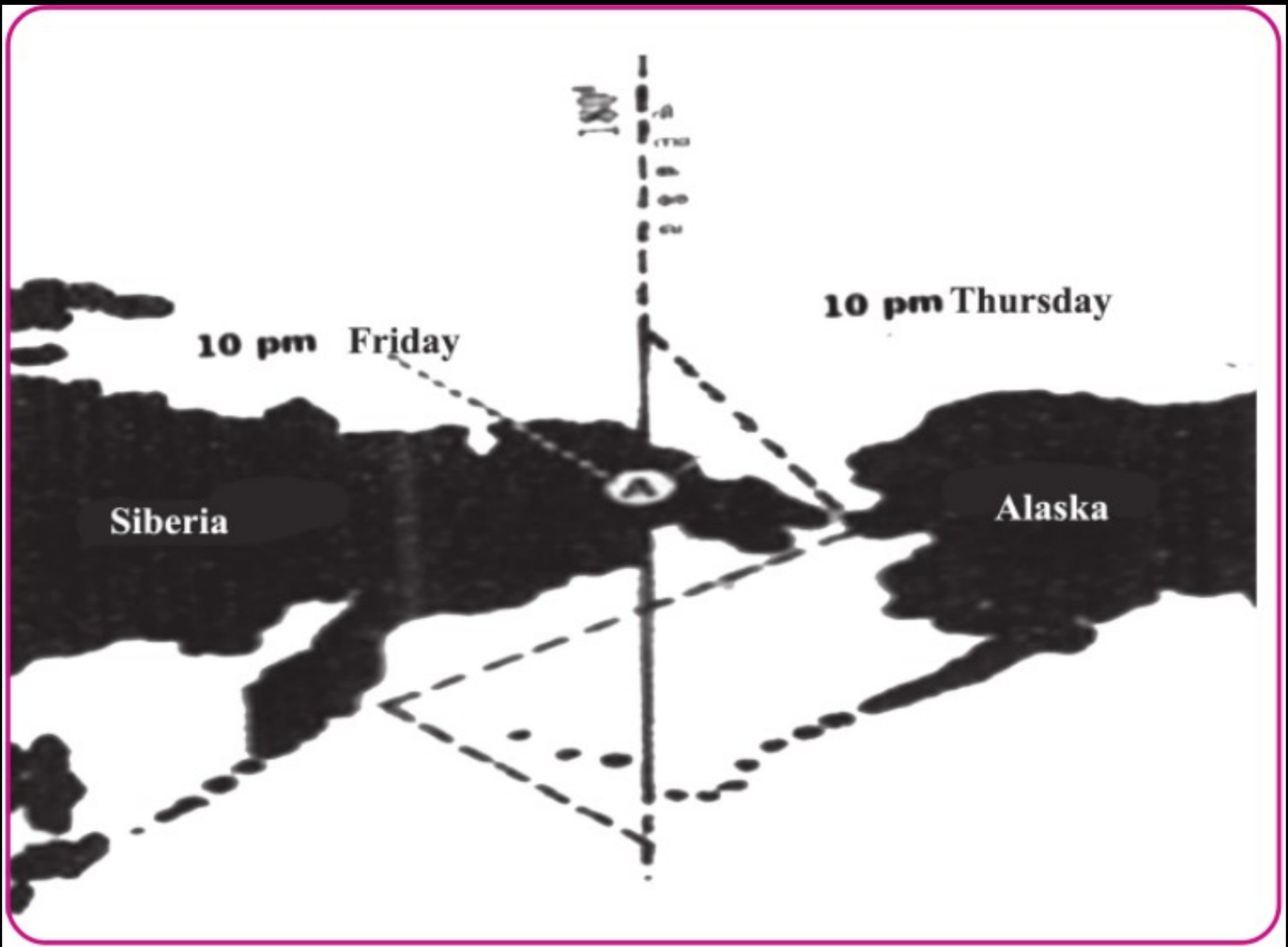
International Date Line

-180° longitude is known as International Date Line.

-There is a difference of 24 hours, at 180° longitude to the east and west of Greenwich.

-If 180° longitude passes through a country, the places situated East and West of this line will be having two different days.

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-To avoid this difficulty the line is drawn with Bend.

-It passes through Bering - strait in Pacific Ocean.

-The travellers who cross this line from the East calculate the time by advancing it by one day and those who cross the line from the west deduct one day.

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ALL THE BEST

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