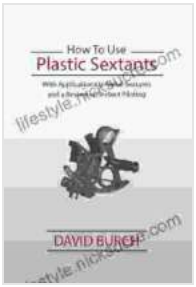
A Comprehensive Guide to Using Plastic Sextants for Celestial Navigation

Celestial navigation is the art of using the stars and planets to determine one's position on the Earth. It is a valuable skill for sailors, pilots, and anyone else who needs to be able to navigate without the use of modern technology.

One of the most important tools for celestial navigation is the sextant. A sextant is a device that measures the angle between two objects. This information can be used to calculate the altitude of a celestial body above the horizon, which can then be used to determine one's latitude and longitude.



How to Use Plastic Sextants: With Applications to Metal Sextants and a Review of Sextant Piloting by David Burch

4.8 out of 5

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Sextants can be made from a variety of materials, but plastic sextants are becoming increasingly popular due to their affordability, durability, and ease

of use. In this article, we will provide a comprehensive guide to using plastic sextants for celestial navigation.

Parts of a Plastic Sextant

A plastic sextant consists of the following parts:

- **Frame:** The frame of the sextant is made of a durable plastic material. It is typically rectangular or triangular in shape and has a graduated scale along one edge.
- **Index arm:** The index arm is a movable arm that is attached to the frame. It has a vernier scale that can be used to read the angle of the sextant.
- **Horizon mirror:** The horizon mirror is a half-silvered mirror that is mounted on the frame. It reflects the horizon and the celestial body being measured.
- **Index mirror:** The index mirror is a fully silvered mirror that is mounted on the index arm. It reflects the celestial body being measured.
- **Shades:** Shades are used to reduce the glare from the sun or other bright objects. They are typically made of a dark material and can be attached to the horizon mirror or the index mirror.

Using a Plastic Sextant

To use a plastic sextant, follow these steps:

1. **Set the index arm to zero:** Loosen the index arm screw and slide the index arm until the zero mark on the vernier scale is aligned with the zero mark on the graduated scale.

2. **Hold the sextant at eye level:** Hold the sextant at eye level with your arm extended. The frame should be vertical and the horizon mirror should be facing the horizon.
3. **Look through the horizon mirror:** Look through the horizon mirror with your left eye. You should see the horizon and the celestial body being measured.
4. **Move the index arm:** Move the index arm until the celestial body is reflected in the index mirror. The celestial body should be in the center of the field of view.
5. **Read the angle:** Read the angle on the vernier scale. The angle is the altitude of the celestial body above the horizon.

Calculating Your Position

Once you have measured the altitude of a celestial body, you can use this information to calculate your latitude and longitude.

To calculate your latitude, you will need to know the following information:

- The altitude of the celestial body
- The declination of the celestial body
- The time of day

The declination of a celestial body is its angular distance north or south of the celestial equator. The time of day is important because the Earth's rotation causes the celestial bodies to move across the sky.

To calculate your latitude, use the following formula:

Latitude = 90° - Altitude - Declination

To calculate your longitude, you will need to know the following information:

- The altitude of the celestial body
- The declination of the celestial body
- The time of day
- The Greenwich Mean Time (GMT)

The GMT is the time at the Royal Observatory in Greenwich, England. It is used as the standard time for navigation.

To calculate your longitude, use the following formula:

Longitude = (GMT - Local Time) x 15°

Plastic sextants are a valuable tool for celestial navigation. They are affordable, durable, and easy to use. With a little practice, anyone can learn to use a plastic sextant to determine their position on the Earth.

If you are interested in learning more about celestial navigation, there are a number of resources available online and in libraries. You can also find courses and workshops on celestial navigation at many sailing schools and community colleges.

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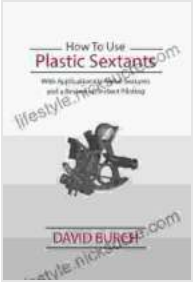

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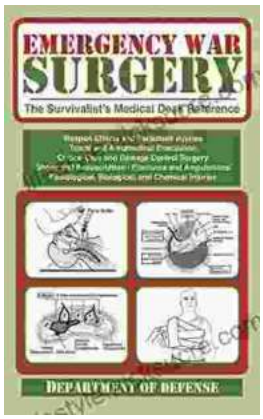

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