# The Ferry Problem

## *Background*

In the middle of the ocean, there are a small group of five islands. Each one has several ferries running from it each day. You are to organise a trip that will allow you and some friends to ride on ***each ferry once***. You are allowed to visit each island as many times as you want.

## *Questions for the map on the next page*

1. Is it possible for a person to take each ferry only once and ride on every ferry and end up back where they started?

    - Make sure you list the ferries that you would ride on in the order that you would travel.
    - Make your starting and finishing point clear.
    - Does the starting point matter?

2. If there is no answer to question 1, where would you put an extra ferry to make it so that you can make the trip as described?

3. If you do not need to finish at the same place as you started, is it possible to make the trip?

## *History*

This question was first posed as the Königsberg Bridges question where people wondered if it was possible to cross each of seven bridges only once. The bridges connected four islands together. People puzzled over this problem for years until, Leonard Euler solved it in the 1730s.

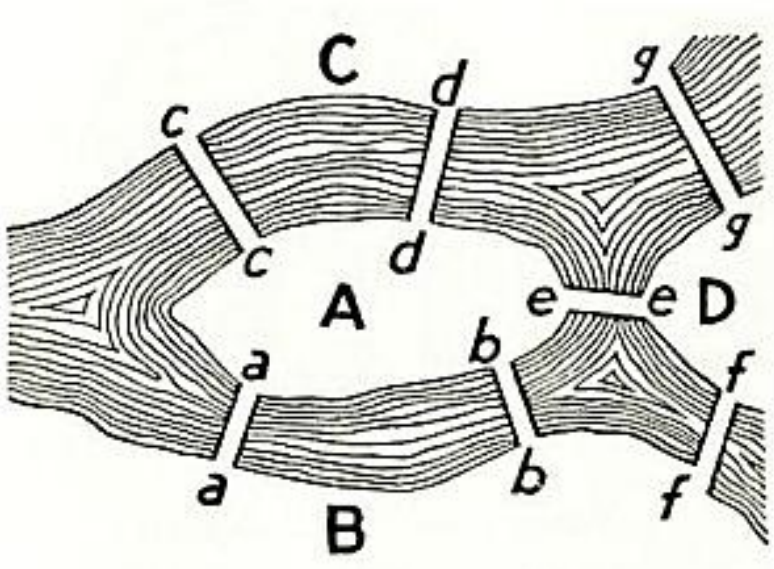
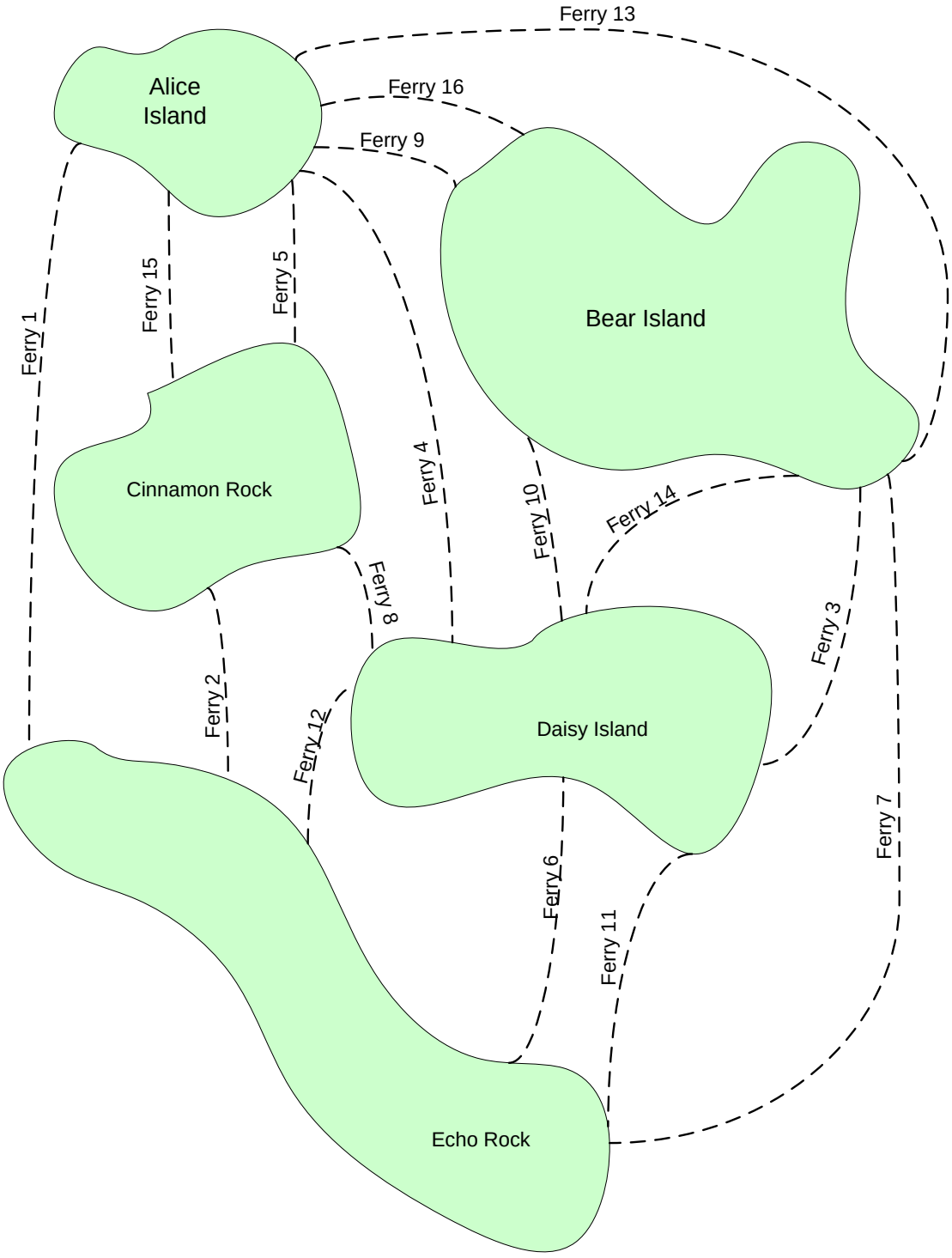



FIGURE 98. *Geographic Map: The Königsberg Bridges.*


Ferry 13
Alice Island
Ferry 16
Ferry 9
Ferry 15
Ferry 5
Ferry 1
Bear Island
Cinnamon Rock
Ferry 4
Ferry 10
Ferry 14
Ferry 8
Ferry 3
Ferry 2
Ferry 12
Daisy Island
Ferry 6
Ferry 11
Ferry 7
Echo Rock