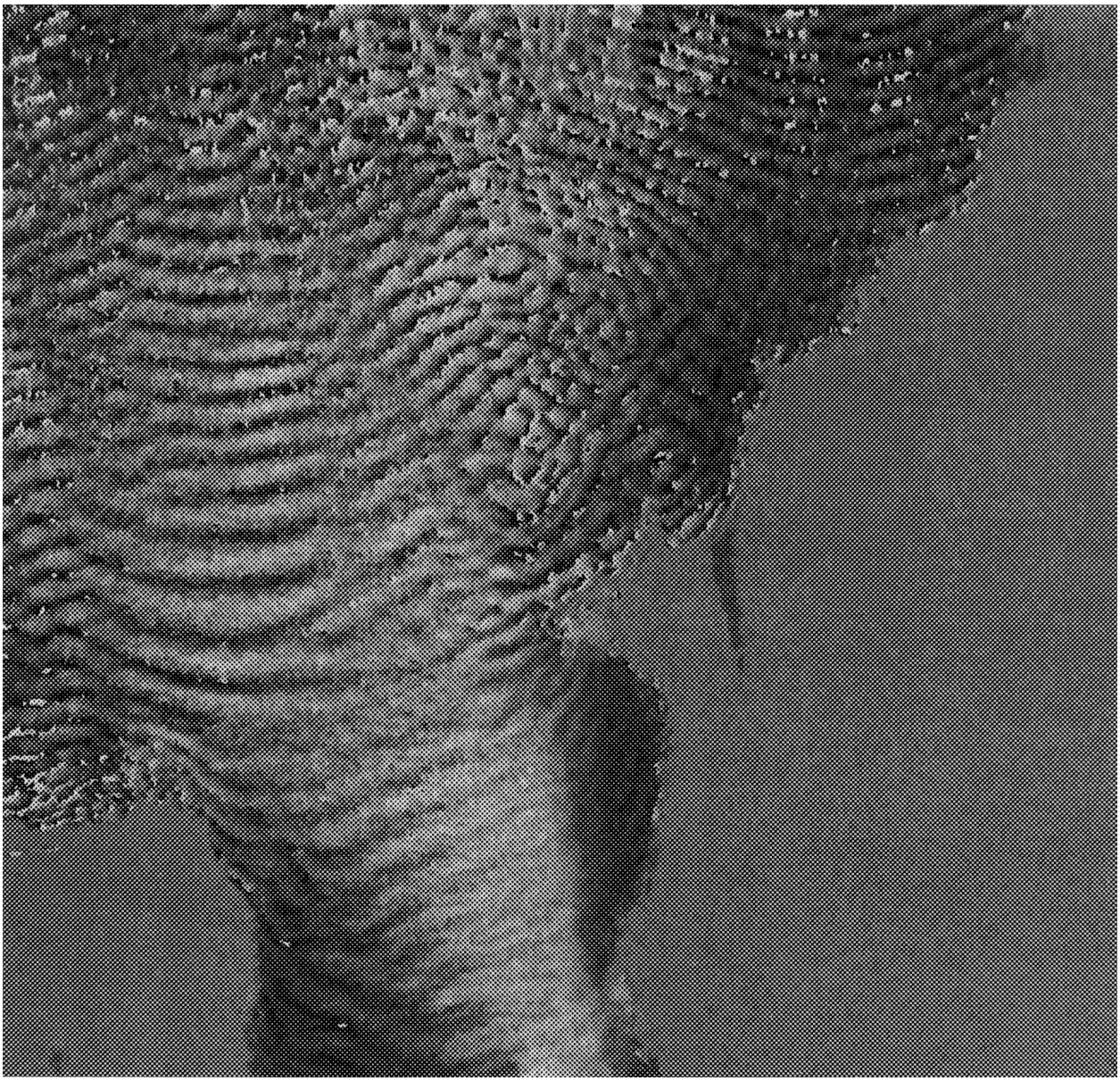

Figure II-1-22. Radar image of the sea surface in the entrance to San Francisco Bay

the region of generation are called *swells*. These waves have a much more limited range of variability, sometimes appearing almost monochromatic and long-crested.

(2) When the wind is blowing and the waves are growing in response, the sea surface tends to be confused: a wide range of heights and periods is observed and the length of individual wave crests may only be a wave length or two in extent (short-crested). Such waves are called wind seas, or often, just sea. Long-period waves that have traveled far from their region of origin tend to be more uniform in height, period, and direction and have long individual crests, often many wave lengths in extent (i.e., long-crested). These are termed swell. A sea state may consist of just sea or just swell or may be a combination of both.

(3) The ocean surface is often a combination of many wave components. These individual components were generated by the wind in different regions of the ocean and have propagated to the point of observation.