

# Handbook of Technology

SECOND EDITION



EDITED BY

Henry C. Lee and R. E. Gaensslen

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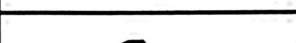


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| RIDGE CHARACTERISTICS   |                   |
|---|-------------------|
|  | RIDGE ENDING      |
|  | BIFURCATION       |
|  | LAKE              |
|  | INDEPENDENT RIDGE |
|  | DOT or ISLAND     |
|  | SPUR              |
|  | CROSSOVER         |

**Figure 1.1** Ridge characteristics. (Drawn by John Berry.)

## Introduction

The fascinating story of the development and use of fingerprints in the last hundred years will only be properly appreciated if the reader is acquainted with some knowledge of dactyloscopy; therefore I will briefly outline the basic details of this science. The inside surfaces of the hands from fingertips to wrist and the bottom surfaces of the feet from the tip of the big toe to the rear of the heel contain minute ridges of skin, with furrows between each ridge. A cross section of a finger would look exactly like the cross section of a plowed field. Whereas on a plowed field the ridges and furrows run in straight parallel lines, on the hands and feet the ridges and furrows frequently curve and, especially on the fingertips and toe ends, the ridges and furrows form complicated patterns. The ridges have pores along their entire length that exude perspiration; hence, when an article is picked up, the perspiration runs along the ridges and leaves an exact impression of the ridges, just as an inked rubber stamp leaves its impression on a blank sheet of paper.

Ridges and furrows have evolved on the hands and feet to fulfill three specific functions:

1. Exudation of perspiration
2. Tactile facility
3. Provision of a gripping surface

The ridges and furrows form seven basic characteristics, as shown in Figure 1.1. Some authorities consider that only two types of characteristics

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