

TABLE 31-1 TESTING PRIMARY SENSATION

| Sense | Test Device | Endings Activated | Fiber Size Mediating | Central Pathway |
|-------------------|-------------------------------------|---|----------------------|----------------------|
| Pain | Pinprick | Cutaneous nociceptors | Small | SpTh, also D |
| Temperature, heat | Warm metal object | Cutaneous thermoreceptors for hot | Small | SpTh |
| Temperature, cold | Cold metal object | Cutaneous thermoreceptors for cold | Small | SpTh |
| Touch | Cotton wisp, fine brush | Cutaneous mechanoreceptors, also naked endings | Large and small | Lem, also D and SpTh |
| Vibration | Tuning fork, 128 Hz | Mechanoreceptors, especially pacinian corpuscles | Large | Lem, also D |
| Joint position | Passive movement of specific joints | Joint capsule and tendon endings, muscle spindles | Large | Lem, also D |

Abbreviations: D, diffuse ascending projections in ipsilateral and contralateral anterolateral columns; Lem, posterior column and lemniscal projection, ipsilateral; SpTh, spinothalamic projection, contralateral.

whose eyes are closed, is required to identify the site of touch. *Bilateral simultaneous stimulation* at analogous sites (e.g., the dorsum of both hands) can be carried out to determine whether the perception of touch is extinguished consistently on one side (*extinction* or *neglect*). *Graphesthesia* refers to the capacity to recognize, with eyes closed, letters or numbers drawn by the examiner's fingertip on the palm of the hand. Once again, interside comparison is of prime importance. Inability to recognize numbers or letters is termed *agraphesthesia*.

Stereognosis refers to the ability to identify common objects by palpation, recognizing their shape, texture, and size. Common standard objects such as keys, paper clips, and coins are best used. Patients with normal stereognosis should be able to distinguish a dime from a penny and a nickel from a quarter without looking. Patients should feel the object with only one hand at a time. If they are unable to identify it in one hand, it

should be placed in the other for comparison. Individuals who are unable to identify common objects and coins in one hand but can do so in the other are said to have *astereognosis* of the abnormal hand.

LOCALIZATION OF SENSORY ABNORMALITIES

Sensory symptoms and signs can result from lesions at many different levels of the nervous system from the parietal cortex to the peripheral sensory receptor. Noting their distribution and nature is the most important way to localize their source. Their extent, configuration, symmetry, quality, and severity are the key observations.

Dysesthesias without sensory findings by examination may be difficult to interpret. To illustrate, tingling dysesthesias in an acral distribution (hands and feet) can be systemic in origin, e.g., secondary to hyperventilation, or induced by a medication such as acetazolamide.

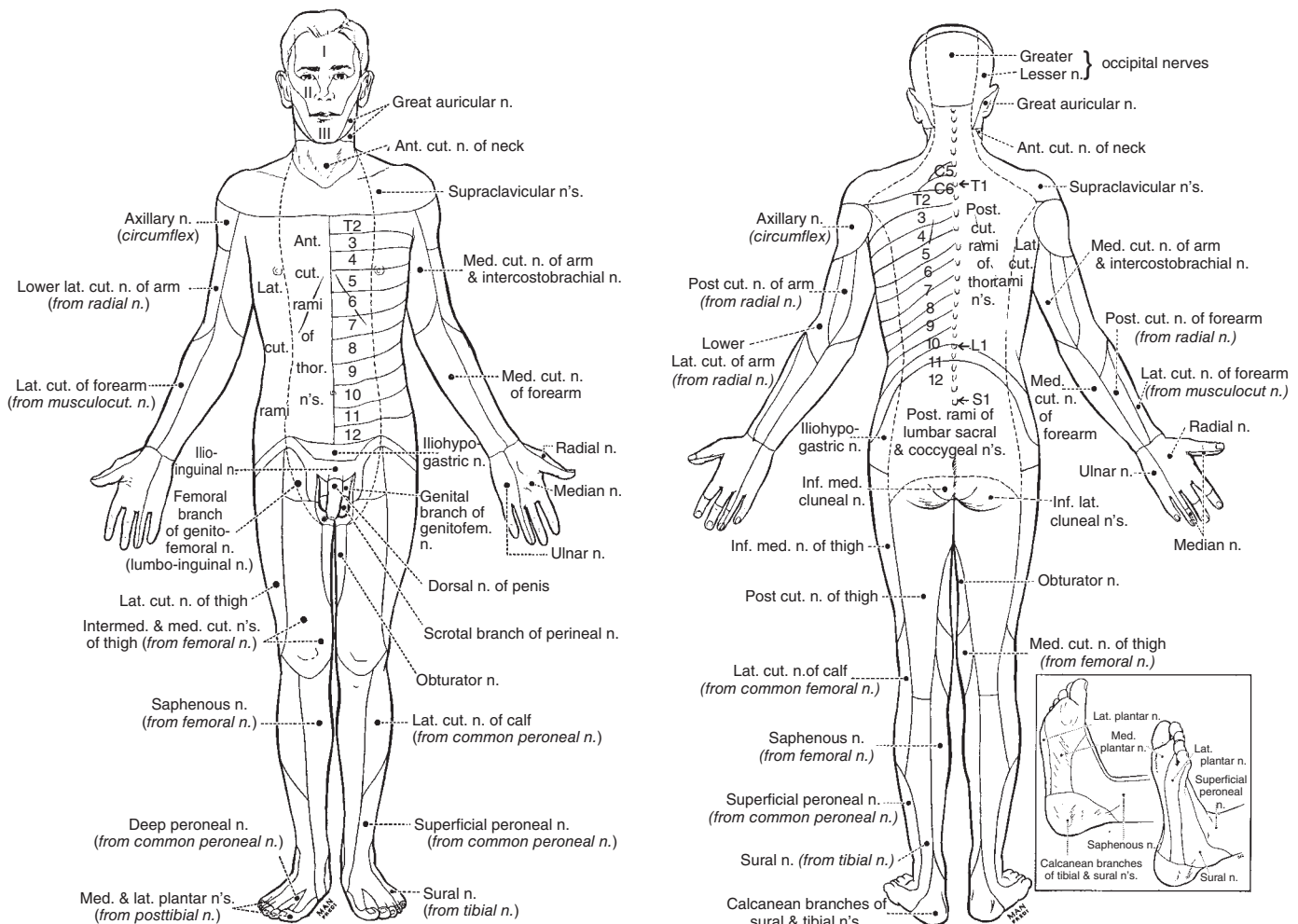


FIGURE 31-2 The cutaneous fields of peripheral nerves. (Reproduced by permission from W Haymaker, B Woodhall: *Peripheral Nerve Injuries*, 2nd ed. Philadelphia, Saunders, 1953.)