

incidence of chronic roentgen-dermatitis and roentgen-cancer among these occupational groups during the coming years will reflect properly whether or not the lessons learned by the medical profession have been utilized by individuals who may not be prepared to appreciate fully the slow and insidious destructive biological action of an invisible physical agent.

An occupational exposure to radioactive substances is found among the personnel of manufacturing laboratories and of medical therapeutic radium-departments, especially if radioactive preparations are handled with bare hands or with insufficiently long applicators, or when radioactive material is handled inaptly and too slowly, causing an undue exposure of the finger tips. However, in view of the very powerful and penetrating nature of the gamma-rays emitted by some of the radioactive elements, proper protection of these parts is not possible, and harmful exposures result whenever radioactive substances are handled too often and over too prolonged periods.

III. GEOGRAPHICAL DISTRIBUTION AND INCIDENCE

Because the injurious biological effects exerted by the penetrating rays emitted from roentgen-tubes and radioactive substances were not known, and the danger connected with their contact was not appreciated, it was not long after the discovery of these radiating agents that the first chronic precancerous cutaneous lesions (chronic roentgen- and radium-dermatitis) were observed among the manufacturers of roentgen-equipment and the medical operators of roentgen-apparatus and radium-preparations. The number of individuals sustaining such injuries because of lack of any precautionary measures was considerable during the early period of the use of these actinic agents, but the incidence of such harmful effects has decreased considerably in more recent times following the introduction of adequate protective measures. The following is a list of investigators who reported the occurrence of cases of occupational, accidental or medicinal chronic roentgen-dermatitis: Marcuse (1896); Oudin, Barthélemy and Darier (1897); Richer and Londe (1897); Kienböck (1900); Beck (1902); Hallopeau and Gadaud (1902); Unna (1904); Mühsam (1904); Wyss (1906); Dessauer (1907); Kassabian (1907); Schümann (1907); Dean (1908); Lindenborn (1908); Deutschländer (1908); Rawling (1909); Porter (1909); Coenen (1909); Albers-Schönberg (1910); Rosenbach (1910); Hesse (1911); Bichler (1914); Ribbert (1914); Gavazzeni and Minelli (1915); Dautwitz (1922); Rowntree (1922); Dohan and Kienböck (1922); Dubreuilh and Chaussé (1925); Cole (1925); Flaskamp (1930); Holthusen (1931); Fuss (1932); Turchini (1932); Bordier (1933); Béclère (1933); and Laborde and Leclercq (1936); Saunders and Montgomery (1938).

Reports on the occurrence of chronic radium-dermatitis were published among others by Walkhoff (1900); Holznecht and Exner (1903); Guyot (1909); Walkhoff (1913); Giesel; Gudzent and Halberstaedter (1914);