Cancer formation was observed in the traumatized skin of mice, when burns or scarifications were made at places remote from the tarred areas (Kreyberg; Polettini; and Akimoto). While these experiments usually demonstrated a systemic effect of local tar applications, they represent additional evidence for the activation of neoplastic growth by direct application of tar to freshly injured tissue. In the evaluation of such experimental results proper consideration must be given to the fact that in small animals, such as mice, the tarred area is in relatively close proximity to the scarified or burned area. This permits the rather ready direct or indirect transfer of tar applied to the injured skin by licking, rubbing, and scratching of the tarred area, especially if several mice are kept in the same cage, which will, thus, be filled with a fair amount of tar containing dust.

Experiments of Ludford; Bang; Bonne; Derom; Raposo; Giuffrida; and Koose and Cordes showed that cicatrized skin is more resistant to the carcinogenic action of tar than normal skin. It is noteworthy that Bang did not succeed in producing cancers in mice whose skin had been tarred once and burned afterwards, or had been treated with boiling tar once. Several investigators, using rabbits in their tests, failed to obtain support for the conception of a sensitizing, systemic effect of tarring upon the neoplastic development in scarified or burned areas of the skin, located remotely from the area painted with tar. Bonciu and Guérin, who tarred the inner surface of one ear of 14 rabbits, and produced burns by applying a red-hot, glass rod to the other ear, obtained cancers in the tarred ears, and, merely, epithelial hyperplasias in the burned ears. Under these experimental conditions, the mechanical transfer of tar from one ear to the other is difficult, and, for this reason, these observations provide more valid evidence than those obtained in mice.

Application of tar to an epidermis covering a fresh scar tissue, i.e., a delicate loose, well-vascularized tissue, or production of a moderate, inflammatory response by physical or chemical means in a tarred skin, may hasten the development of tar tumors, may increase their incidence, and may induce the transformation of previously benign tar papillomas into malignant growths, by activating dormant potentialities. It is possible that such local injuries, enhancing the vascularization and, thereby, the blood supply of restricted areas, may predetermine the site of future, neoplastic growths within a larger tarred area (Deelman). Severe traumatization, resulting in extensive tissue destruction and old, sclerotic, poorly vascularized scarring, appears to create environmental conditions impairing nutritive conditions of tissue essential for neoplastic response to tar. It is probable that local variations in the vascularization of different parts of a tarred area are responsible for the appearance of neoplastic proliferations on isolated points, and not throughout the entire area.

Site. Similar considerations have been advanced to explain apparent discrepancies in the susceptibility of different parts of the skin to tar cancer. Cie-