provoking, the available evidence does not suggest that such an etiological mechanism is operative in the development of occupational tar and pitch cancers.

The histological changes described, which precede the formation of benign and malignant tar and pitch tumors, preclude the possibility that these neoplasms are of dysontogenetic origin, of embryonic cell rests, or congenital tissue malformations, as expressed by the Cohnheim theory of cancerigenesis. Kimla suggested that chronic, proliferative stimulation exerted by tar upon the epidermis created an allergic status. Consequently, tar cancer might be regarded as the local and multicentric growth manifestation induced by the production of a permanent, allergic, proliferative stimulus.

Warburg's theory of cancerigenesis announced that cancer resulted from the presence of a local oxygen deficiency of cells, causing the development of cells possessing a marked, anaerobic, glycolytic metabolism. Kreyberg, pointing to this theory, asserted that conditions existing in the tarred skin at various periods favored the production of such cellular, metabolic changes, and, thereby, the creation of malignant cells. Kreyberg stated that hyperplastic lesions in the tarred skin occurred when an extraordinary degree of hyperemia and an abundant, cellular, nutritional state existed. Malignant transformation of these manifestations appeared when severe, circulatory disturbances had ensued in the underlying, vascular tissue, interfering with adequate oxygen supply of the epidermal cells.

Similar claims were made by Orr, who studied the cutaneous changes produced in the skin of mice through repeated applications of 3.4-benzpyrene, the carcinogenic chemical isolated from tar. He contended that cancer developed in the skin of these animals on the basis of a chronic, passive congestion of connective tissue. This is caused by the development of fibrous scars in the deeper connective tissue, and interferes with the proper nutrition of overlying, epidermal cells. Some support for these assertions was supplied by the results of metabolic studies conducted by d'Allessandro and Büngeler. They observed that the tissues of various organs of tarred mice possessed an increased glycolytic metabolism.

A conception, opposing in many respects that advanced by Kreyberg, was propounded by Guldberg; and Ulesco-Stroganova. Commenting upon the observations made by Kreyberg, concerning the appearance of intravascular hyalinized thrombi at the time of the epithelial cancerization, Guldberg stated that these formations were actually artefacts. This investigator emphasized, in contrast to Kreyberg, the necessity of proliferative and dilatatory, vascular reactions as prerequisites for epithelial growth. This condition was stressed previously by Itchikawa and Baum in relation to the development of tar cancer. Reference was made by Guldberg to a statement of Virchow asserting that hyperemia and dilatation of blood vessels always accompany cellular regeneration and proliferation, although they cannot occasion such processes.