

a report of Mishell on the excessive incidence of cutaneous malignancy among guano workers, an observation, originally recorded by Richer and subsequently cited by Green and continued to be quoted in the literature without further verification.

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CHEMICAL TRAUMATIC CARCINOMA

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3. PHYSICAL AGENTS

A. ACTINIC AGENTS

a. SOLAR AND ULTRAVIOLET RAYS—I. PHYSICAL AND TECHNOLOGICAL ASPECTS

Solar rays consist of non-corpuscular electro-magnetic waves of varying wave-lengths. Depending upon their wave-lengths, these elicit in part in the human eye sensations of different colors. In addition to the *visible part* of the solar spectrum, extending between rays of 7,000 ångstrom units (red) to 4,000 ångstrom units (violet), there exist *invisible parts* on both sides of this zone, that is, the infrared and ultraviolet rays.

The infra-red part of the solar spectrum contains rays of from 7,000 to 8,000 ångstrom units, while its ultraviolet portion is composed of rays of from 4,000 to 2,000 ångstrom units.

Still shorter ultraviolet rays emitted by the sun are absorbed in the atmosphere before they reach the surface of the earth.

Apart from this natural source of visible and invisible solar rays, several artificial rays used in medical therapeutics as well as for certain industrial purposes exist. Mercury vapor lamps produce mainly ultraviolet rays, while carbon or metal arc lamps emit in addition to these rays varying amounts of visible and infrared rays, depending upon the type of carbons used. The ultraviolet rays emitted from these sources are shorter than those obtained from the sun, being as short as 1,500 Å.U. With a progressive shortening