

reducing the direct contact of the skin with the mineral oil. Scott proposed, for the same purpose, the use of crude castor oil, as substances belonging to the paraffin series were insoluble in castor oil. The wearing of rubber gloves by especially exposed workers was recommended by Derville and Guermontez. However, gloves made from natural rubber are rather easily penetrated by oil and deteriorate rapidly under its influence. It may be possible to manufacture gloves from certain types of synthetic rubber which may prove more satisfactory in this respect, as these synthetic products are rather resistant to oil.

c) *Technical*. Somerford stated that "the ideal means of preventing carcinoma among oil workers would be the substitution of an oil possessing all the necessary lubricating properties, but with the carcinogenic constituents removed." Similar requests have been made by Legge; and Bridge and Henry with the argument, that such a procedure represented the only effective means for the complete eradication of this type of occupational neoplasm. The painstaking work of Twort and his co-workers has done a great deal in showing methods by which this goal can be accomplished. These investigators recommended the following procedures for the reduction or destruction of carcinogenic agents contained in mineral oils:

- (1) oxidation or reduction of oils,
- (2) exposure to ultraviolet rays and radium emanation,
- (3) treatment with sulfuric acid (Edeleanu process),
- (4) treatment with sodium hypochlorite, and
- (5) blending with non-carcinogenic mineral oils or saponifiable animal or vegetable oils, to obtain a dilution of the injurious oil below the carcinogenic level.

Through the importation of lubricating oils from other countries, which were used with the shale oils exclusively employed in the English textile industry formerly, there occurred in England, during recent years, a gradual change to a lubricating oil with a lower carcinogenic potency than previously (Henry). Although one of the suggestions made by Twort for the amelioration of a bad situation seemed to have been adopted, this development was not prompted by any desire of the manufacturers to introduce a measure preventing the further occurrence of oil cancer among their employees (Henry). Certain improvements made recently in the production methods of oils and paraffins, and in the machinery and manufacturing techniques of industries which use lubricating oils, have tended to decrease the formerly existing hazard (introduction of refrigeration method and centrifugal separator method in the paraffin industry; and replacement of mule-spinning by ring-spinning). But progress in this field appears to be very slow. In 1937 Twort and Twort wrote in an English trade journal, "Little has been done in the past five to ten years in the direction of making carcinogenic lubricating oils less likely to induce inflammation or carcinoma." The morbidity and mortality statistics of oil and paraffin cancer in England bear out this statement.