

PHYSIOLOGY

Scientists Differ on Role Of Cigarette Tar in Cancer

CIGARETTES are both blamed with and exonerated of the charge of causing cancer in two divergent articles made public in the *American Journal of Cancer*.

Dr. William D. McNally, assistant clinical professor of medicine at Rush Medical College, Chicago, holds that the tar of cigarette smoke contains irritating substances which could account for the recorded increase of cancer of the lung.

Dr. Emil Bogen and his associate, Russell N. Loomis of Olive View, Calif., contend that whatever cancer-producing effect the use of tobacco may have, it cannot be ascribed to the chemical effect of the tar in tobacco smoke or distillate.

The tar of cigarette smoke, Dr. McNally found, contains nicotine, ammonia and other substances, all irritating, which could account for "cigarette cough," for the chronic bronchitis of the cigarette smoker, and for a condition found in heavy smokers known as leukoplakia, or smokers' tongue or smokers' patches. These irritating substances could also account for the increase in cancer of the lung which has been recorded in recent years.

"The temperature is not an important factor unless the cigarette is burned down to the last centimeter, when the hot smoke becomes more irritating," Dr. McNally reported.

"With a tarry residue of 4.84 to 15.29 per cent., a definite risk attaches to the smoking of a cigarette, especially since 6.56 to 11.58 per cent. may be absorbed or retained in the body. Cigarettes should not be smoked too short, as the last two centimeters retain most of the tar and other products of incomplete combustion."

Dr. McNally's report was based partly on observations of other investigators and partly on his own observations of the effect on rats of the water-soluble products from the smoke of 100 cigarettes. These were sprayed into the mouths of some rats, applied back of the ear to others and on shaved spots on the backs of still others.

Dr. Bogen and Mr. Loomis became interested in the effects of tobacco tar

when the advertising for a particular form of cigarette holder, which removes most of this tarry substance from the smoke, implied that the substance is harmful. When they started their inquiry there was a dearth of scientific information on the subject.

White Mice Tarred

In this study, tobacco tar was applied to the back of the necks of one group of white mice, and gas-house tar, known to have cancer-producing properties, was applied to the back of the necks of another group. In the first group there were no skin changes, while in the second, the usual common type of tar tumors appeared promptly.

"In the light of these findings, it appears highly improbable that the tar obtained during the act of smoking is an important factor in the development of cancer of the oral cavity of man," Dr. Bogen and Mr. Loomis concluded.

These findings, however, do not invalidate the prevailing, though not quite unanimous, clinical observation that cancer of the mouth is unduly prevalent

among persons accustomed to using tobacco. Even though the tarry substance settling out from the tobacco smoke may not show any cancer-producing properties, there are many other factors involved in smoking which may prove cancer-producing.

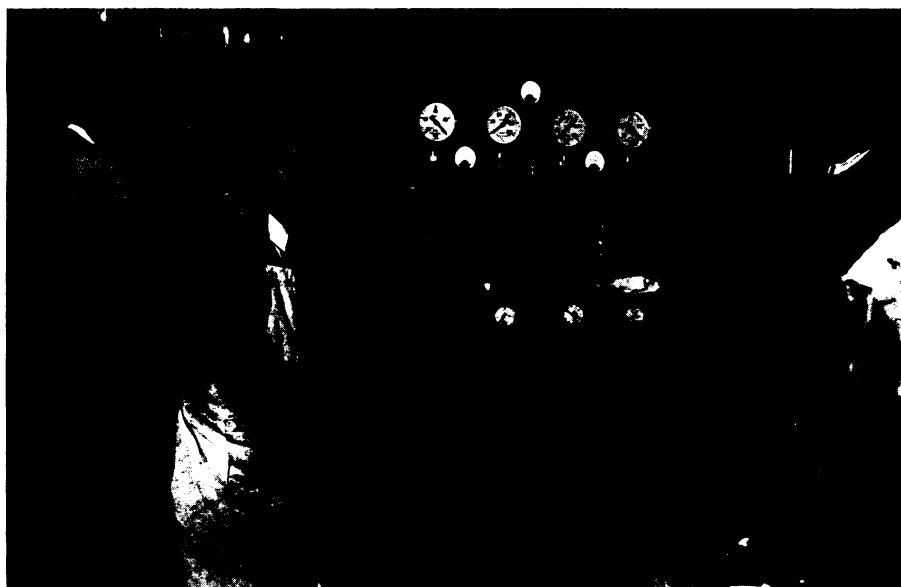
Among these the California investigators mentioned the mechanical irritation from the presence of a solid object in the mouth, such as pipe or cigarette holder; the temperature of the smoke which may produce imperceptible repeated burns of lips and tip of tongue; and the effect of other substances in the tobacco smoke, though there is as yet no evidence that any of these substances actually can produce cancer.

"Any substance so widely and commonly used as the cigarette cannot be as dangerous and deleterious as the propaganda of the more fanatical 'no tobacco' advocates might lead one to infer," the Californians pointed out.

Moderate amount of smoking may not produce visible injury to a sound individual, they reaffirm. However, the possibility of damage not perceptible by casual observation cannot be ruled out.

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Although the health movement in the South was slow in starting, and the difficulties were great, it has grown more rapidly there in the past twenty years than elsewhere in the United States.



TURNING ON THE COLD

Though they did not cause mercury in thermometers outdoors to fall, these scientists of the California Institute of Technology at Pasadena liquefied hydrogen at temperatures lower than 250 degrees below zero Centigrade (-418 degrees Fahrenheit) in the world's newest cryogenic laboratory being put in operation in Pasadena. They are, left to right, A. Foche and S. A. Macallister, and Dr. Alexander Goetz, in charge. The frigid liquid gases will enable scientists to penetrate a little-explored field, that is, the study of metals at extremely low temperatures.