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THE CASE FOR THE SMOKER
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Some new and surprising scientific findings on today's most controversial medical question

THE CASE FOR THE

You've no doubt been reading some of the reports charging that there is a cause-and-effect relationship between cigarette smoking and lung cancer. They've stirred a lot of comment. As a result of this, perhaps you, like many others, have lost sight of the fact that there are two sides to the question of how much blame for cancer should fall on smoking.

You may have concluded that there is only one side to the question and that the case against smoking has been proven to the satisfaction of everyone. This is a wrong conclusion. There is a case, also, for the smoker, and it has been built up by impartial and experienced researchers, some of them medical scientists of national reputation.

Smokers, of course, will be particularly interested in this, and there still are plenty of them. World tobacco consumption is greater now than ever in the past, a United Nations report shows, and cigarette smoking throughout the world is on the increase. In the United States cigarette smoking fell off in 1953 and 1954, the U. S. Internal Revenue Service figures show, but it has been sharply on the gain in 1955.

The public, although shocked by the cancer-and-smoking reports, evidently is unwilling to give up smoking, and in this consideration of the case for the smoker we shall see why some noted cancer experts also are not convinced by the reports.

Foremost in the minds of many authorities is this fact: For years researchers have tried to find a specific chemical substance identifiable as a carcinogen in tobacco. A carcinogen is a substance causing cancer.

They've found substances in arsenical dusts, coal tar, petroleum derivatives and many other things which, when isolated and purified, are extremely powerful carcinogens even when diluted. However, experienced researchers report that they have never been able to isolate or identify any specific substance in tobacco-smoke derivatives that is accused of causing cancer even on the skins of mice.

The charges against tobacco, and particularly against cigarettes, are therefore based on other kinds of evidence. One of these is statistical—and it is challenged by other figures that are contradictory. The other kind of evidence is experimental—and this one is challenged by contradictory experiments.

As you probably know, the experimental evidence that has caused the most comment was reported by two investigators, Drs. Ernest L. Wynder and Evarts A. Graham. They painted the shaved backs of 81 mice with tobacco-smoke tar, applying this concentrate three times a week for 71 weeks. Mouse-skin cancers developed in 36 of the 81 animals.

What this meant is still disputed. Some scientists point out that cancer has been caused in mice and rats with such things as glucose, olive oil and even tomato juice. These mice are bred, they say, to develop cancer even without anything special done to them. When Dr. Wynder's group tried again with tobacco tars on another kind of mouse, they got 12 mouse-cancers in 86 mice. Using still another kind of mouse, they noted only two cancers in 89 mice.

Even in Dr. Wynder's experiments no specific substance was reported in the tobacco tar as being isolated or identifiable as the cause of the cancers that developed in the mice.

Their first experiment still stands as the only report on record in which tobacco tar in some way is claimed to have caused mouse cancer with any significance. Other able investigators have tried the same thing before and since and have not been able to duplicate the findings reported by Dr. Wynder's group. The most exhaustive research in this respect seems to be that of the noted Yale University pathologist, Dr. Harry S. N. Greene, and his associates.

"We've been interested in this question in our laboratory for 10 years," says Dr. Greene. "We've tested a variety of tobacco products—tobacco from various brands of cigarettes, cigarette papers and cake and crud from my pipe.

"In testing for substances that might produce cancer, it has been customary with others to paint these substances on the skin of adult mice. We have what I believe is a much more sensitive test object, and that is tissue from unborn mice.

"The desired organ is dissected from an unborn mouse, impregnated and saturated with the suspected substance, and then this fragment is placed under the skin of an adult mouse. It grows there.

"Now, if this tissue has been saturated with one of the ordinary cancer-producing substances such as the coal tar products, cancer develops in the fragment in about 30 to 40 days in almost 100 per cent of cases. But in the lungs that we've infiltrated or saturated with tobacco products, there has been no change whatever from normal.

"We've used this great variety of tobacco products and we've used more than 800 animals, and have held the animals for more than a year. But not in any single case have we found anything in the transplants remotely resembling cancer."

The British Empire Cancer Campaign, reporting in July of this year, says that British research has produced similar results. Intensive tests, the report said, have failed to prove a connection between smoking and cancer.

One set of experiments was begun in 1953 at Leeds University with a machine smoking 36 cigarettes at a time. Extracts from the resulting tars have been injected into mice, thus far with no cancerous result.

"This suggests," the report says, "that at most any carcinogenic (cancer-causing) properties possessed by the tars used are very attenuated (slight)."

In many other university and hospital laboratories, the report discloses, large groups of mice and hamsters have been exposed for the greater part of their lives to tobacco smoke, without a single instance of lung cancer developing.

In the minds of many observers, this settles the question of tobacco tar and mouse cancer. If the Yale laboratory and the British investigators can't make one (tobacco tar) produce the other (cancer), the observers think, they'll have to look for another kind of evidence to link smoking and cancer.

The other kind of evidence commanding the most attention, as you will recall, is based on the number of cigarettes smoked and the prevalence of cancer among the smokers. Here, too, one conclusion contradicts another.

First, there is the contention, familiar to everyone, that blame falls on cigarettes because their consumption has paralleled the long rise in lung cancer deaths since the turn of the century.

But similar parallels with the lung cancer rise can be worked out for many other factors in modern life—the use of fuel oil, the consumption of carbon black in auto tires, the use of asphalt in street paving.

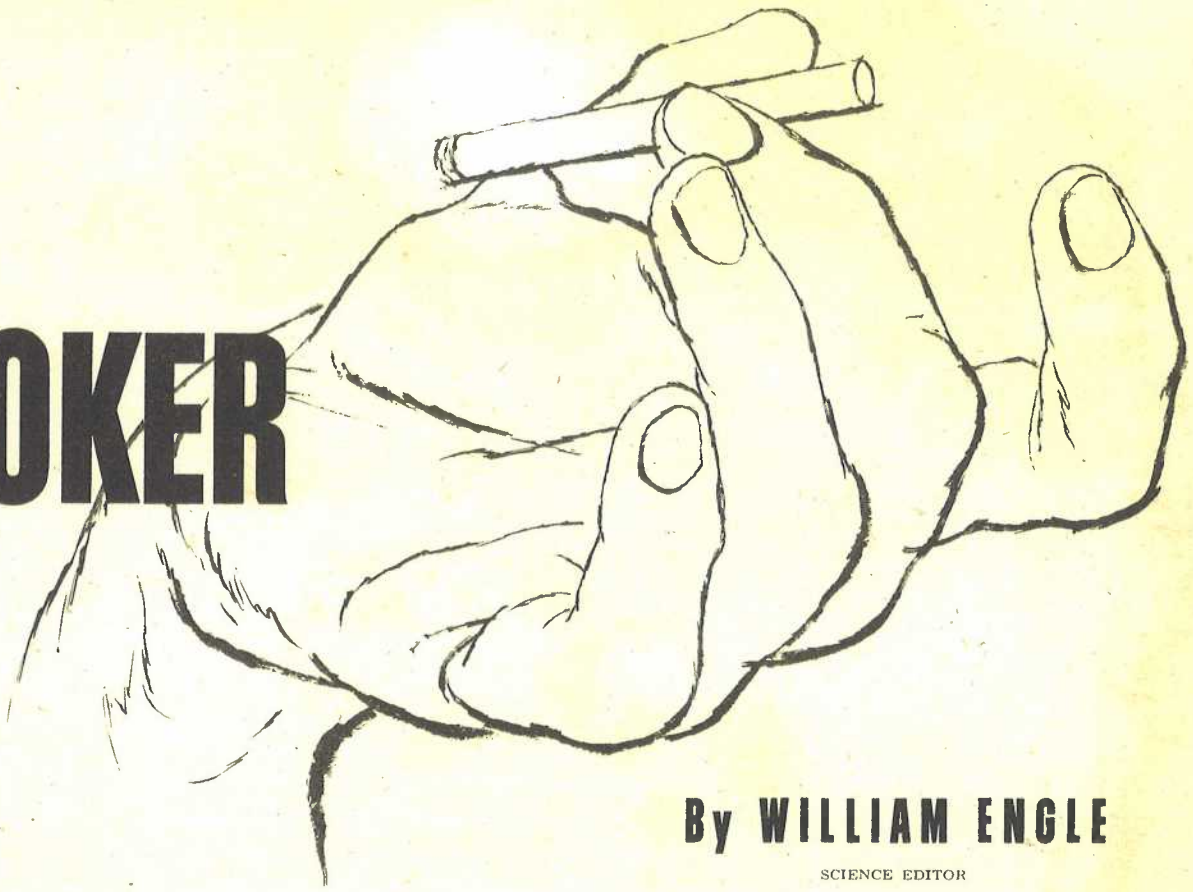
"I don't think a single agent is concerned in the cause of cancer at all," Dr. Greene says. "I think they are multiple in nature."

Others are equally forthright and some agree with Dr. Milton B. Rosenblatt, Associate Professor of Medicine at the New York Medical College. He has made these points:

Lung cancer couldn't be recognized by examining doctors 25 or more years ago. Today, X-ray techniques and new ways of studying cell formation and structure are aids in surer diagnosis. Doctors have been alerted to watch out for lung cancer. More hospitals have pathology departments for examining tissues. There are four times as many people of 65 or over as there were in the country at the turn of the century.

Dr. Elmer Hess, President of the American Medical Association, voiced similar conclusions this

SMOKER



By WILLIAM ENGLE

SCIENCE EDITOR

year. "Through scientific medical achievement," he says, "we have prolonged human life from an expected age of 47 (male) and 49 (female) at the turn of the century to 67 (male) and 73 (female) today. That means a larger proportion of our population is going to live in the cancer age, which is usually after 40."

In short, it is the view of some investigators that more people are reported suffering from lung cancer now than in the past because—for one reason—more people live on into middle age and older than used to do so—and for another—we are better equipped than formerly to detect the disease.

The Metropolitan Life Insurance Company says: "Approximately half of this (cancer) increase reflects merely the growth and aging of our population, and a considerable part of the remainder represents improved diagnosis and more complete case finding. Nevertheless, there does appear to be an appreciable real rise in the incidence of respiratory cancer, but data are not available to show how much of it can be reasonably attributed to the effect of specific factors."

The life insurance companies make it no harder or more costly for a smoker to get insurance than for a non-smoker to get it.

Those who blame tobacco for lung cancer, however, are not interested in this, and they point to another statistical study as one of the main pieces of evidence against tobacco.

This evidence concerns the lung cancer rate in a group of 188,078 men between the ages of 50 and 69, questioned by volunteer workers for the American Cancer Society, and observed during the last two-and-a-half years.

Statisticians E. Cuyler Hammond and Daniel Horn directed the study of this group. They recently reported that in the two-and-a-half years 8,105 of the 188,078 men had died.

Of these 8,105 deaths, 168 were proven to be from primary lung cancer; that is, cancer originating in the lungs. The statistics showed that two of these deaths were among 32,560 non-smokers; four were among 11,720 occasional smokers; four were among 14,477 cigar smokers; six were among 12,121 pipe smokers, and 152 came from the group of 107,978 cigarette smokers.

The heavier smokers, the figures indicated, were most likely to develop lung cancer, and those who had quit smoking were less likely to than those who had not. In this group, lung cancer death rates were high among cigarette smokers and low among non-smokers regardless of whether they lived in rural or city areas.

In the study of a much smaller group, Sloan-Kettering Institute scientists reported this year—as you probably remember—that heavy drinking apparently adds to the risk of cancer of the larynx in men who also are heavy smokers. These scientists questioned 550 male patients, 209 of whom had larynx cancer, 132 who had lung cancer (studied for comparison) and 209 matched controls. Only one of the men with larynx cancer was a non-smoker as compared to 22 in the control group.

If these simple figures in these groups resolved the question for everyone in the group, you could say with assurance that smoking and cancer are related. But other cancer authorities cite other figures of a different nature.

In the National Cancer Institute of the U. S. Public Health Service, Dr. W. C. Hueper, Chief of the Environmental Cancer Section, has records from which dissimilar conclusions can be drawn.

"I don't believe cigarette smoking is one of the major causes of cancer of the lung among the various causes which may be responsible," he says. "In England we have a lung cancer rate which is twice that of the United States, although the English smoke 30 per cent less cigarettes than Americans do.

"In Greater London we have a lung cancer rate which is two-and-a-half times that of the English people living in rural areas. We have very similar observations from the United States. For instance, in Cleveland we have a much higher lung cancer rate than we have in the agricultural areas of Ohio."

Other statistical studies bear out Dr. Hueper. One example is the eight-city survey conducted by the National Cancer Institute. A comparison was made of the 1937 and 1947 cancer figures for Atlanta, Birmingham, Chicago, Dallas, Denver, New Orleans, Pittsburgh and San Francisco.

The patterns were puzzling. The lung cancer rise, for example, in Dallas was about four times greater than in Chicago or Pittsburgh. Among women the extremes were even more strange, the Dallas increase being 1,180 per cent while the Pittsburgh increase was only 12 per cent. Birmingham males showed an increase nearly three times that in San Francisco.

"The irregular distribution of lung cancer in these large cities," says Dr. Hueper, "as well as in different countries, hardly corresponds to the distribution of cigarettes.

"The scattered picture is far more suggestive of the distribution in the air of such materials as industrial wastes, asphalts from roads, exhausts from machines and automobiles. The growth of industrial establishments and the use of their products in different sections have greatly lacked uniformity in time, type and extent."

In this case for the smoker, Dr. William F. Rienhoff, the noted lung-cancer specialist of Johns Hopkins Hospital in Baltimore, also plays a significant part. "I have reviewed more than 500 cases of lung cancer that were operated on and a large number that were inoperable, and I have found no relation whatever to smoking," he says.

"Actually the facts are these—cancer of the lung began to show an important increase in Southern and Central Europe long before cigarette smoking became exceedingly prevalent. Many other things besides cigarettes have become prevalent.

"We might as *(Continued on page 24)*

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well blame lung cancer on nylon or industry. Chimney or bus exhaust pipes emit more cancer-carrying substances than you will find in tobacco smoke . . . Only recently Baltimore doctors examined the records of a convent in Canada and found that nuns who do not smoke have a higher lung cancer rate than the average person."

People live longer now than they used to, he points out; diagnostic procedures are better; and the resulting increase in lung cancer detection is the chief cause for what he calls "mass hysteria."

On the side of the smoker, too, is the famous English physicist and radiologist, Prof. Sidney Russ. He challenges the evidence against cigarettes in an article in the *British Medical Journal*, and he mentions that Denmark and Switzerland have lung cancer death rates nearly identical with that of the United States—but the Danes and Swiss smoke only half as many cigarettes per capita as Americans smoke.

Since the study reported by statisticians Hammond and Horn dealt with figures, the view of another statistician seems to deserve a place, too, in the case for the smoker.

Dr. Herbert Arkin, Professor of Statistics and Supervisor, Business Statistics Division, City College of New York, co-author of *Statistical Methods*, sharply challenges the value of the Hammond and Horn study. Writing in *Current Medical Digest* after the first report was made last year by Hammond and Horn, he said:

"The statistical method is fraught with dangers of misinterpretation. It would appear that premature claims have been made, based on inconclusive or inadequate data with attendant publicity. Certainly more publicity has been accorded the more sensational charges against smoking with little attention to the data in the opposite direction.

"The common statistical fallacy of ascribing cause and effect relationship to an association by rationalization has again appeared."

One of the leading medical scientists at the Mayo Clinic in Rochester, Minnesota, Dr. Joseph Berkson, also disputes the statistical findings seeming to link smoking and cancer. Dr. Berkson is head of the Mayo Foundation's section of biometry and medical statistics. The reported statistical findings, he recently said, reveal an error arising from the use of "selected data."

A re-valuation of the statistics, he said, has convinced him that it is "unwarranted" to conclude from them that smoking causes cancer.

Cancer is such a tremendous mystery, so many vast studies of it are being made all over the world, that some cancer men hesitate to accept any cut-and-dried answer to any phase of the problem. Dr. John R. Heller, Jr., director of the National Cancer Institute, is one of these.

"We do not say that smoking is a cause of cancer," he says. "There are other factors, such as air pollution, that may be quite important in causing lung cancer. It is possible that hormonal imbalance may be still another factor. There may be others about which we know nothing. Only time will tell."

He hit upon a phrase, there, that long has been in the minds of men who are dedicating their lives to cancer research:

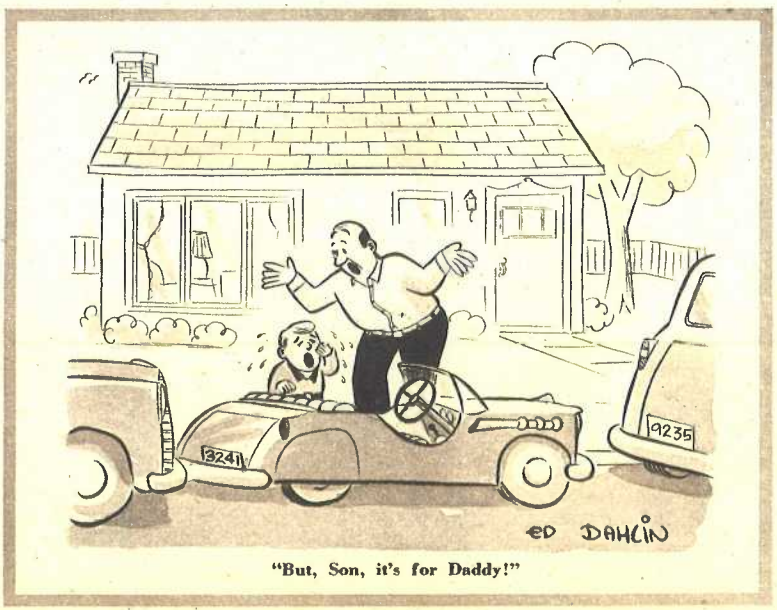
"Only time will tell."

Someday the whole mystery of the strange wild cells that multiply and proliferate — like evil flowers — will be clear. The dedicated men will make it clear, justifying the long years of hope and work and faith.

Meanwhile, the American Cancer Society, the National Cancer Institute, the Alfred P. Sloan Foundation, the Damon Runyon Memorial Cancer Fund and the Tobacco Industry Research Committee are devoting millions of dollars to further lung cancer research.

The dedicated men are hard at it—probing the mystery of all cancer—and they believe that some day they will have all the answers.

For the time being, if you are a smoker, you will have to make your own decision whether any scientific answer given thus far is satisfactory. ◄◄



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