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# Smoking And Lung Cancer

*by Alton Ochsner*

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Budget versus Arms

*Bruce Catton*

Europe's Dark Suspicions

*J. A. del Vayo*

Central African Crisis

*Basil Davidson*

EVERY  
WEEK  
SINCE  
1865

which may well result in immediate budgetary savings—and in nicer contracts for the industrial giants—but also in serious loss of time in getting into full war production if the need comes.

ANOTHER OBJECTION to the “new look” given to the defense program centers around the drive for economy. Government employees are being fired so that expenses can be cut. What is not realized is that most government workers never see an office in Washington: they are blue-collar workers, plying their trades for the armed services out in the field. A case in point is a \$60,000,000 air base in the Middle West whose 18,000 employees were until recently mainly engaged in overhauling jet engines. The number of jet planes in service is constantly rising—but 3,000 of those workers have been laid off, and more lay-offs are in prospect. The planes will not get along without engine overhaul; the work is simply being farmed out to private firms. That shows the pattern. The work being done by civilians who work for the armed services in air bases, navy yards, or anywhere else will still have to be done. If those

people are discharged, the work will have to be done on the outside. That will make it cost more, but government employment will be cut, and perhaps that is what really matters.

Somewhat similar is the drive now getting under way against the Bureau of Standards. When Secretary of Commerce Weeks made his ill-advised attempt to fire the bureau's director he was reminded that most of its work is high-powered research for the armed services. After he had pulled in his horns on the firing incident he wrote a letter to the Defense Department calling attention to the large number of research projects at the bureau and suggesting that perhaps the department would like to reexamine them with a view to reducing the number. The Defense Department replied that it would look into the matter at once. The research will go on, of course, but probably a lot of it will be done hereafter by private firms.

A third field in which the defense program begins to look a trifle odd is that of aluminum production. Output has been sharply increased under the defense program, but a further increase is

necessary: the metal must be stockpiled for emergency use, and the civilian economy is crying for larger allotments. Unfortunately, the expansion program is colliding with the Administration's hard-money policy and with its refusal to continue the construction of public-power plants. Two of the smaller, newer producers in the field report they are unable to expand: the hard-money policy has raised interest rates, and they can't get the money on any acceptable terms. That seems to mean that the government must rely on the established giants in the field, which might be all right if they too did not need cheap electric power. The decision to knock out Hell's Canyon Dam may have been greeted with enthusiasm by big business in general, but it emphatically has not made the aluminum producers happy.

So the prospects for more aluminum right now are dim. This may make it somewhat easier to understand why the Defense Department is saying that its “interim goal” for the air force will stand at 120 instead of 143 wings. But it makes one wonder where the aluminum is going to come from for defense stockpiling and civilian use.

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## LUNG CANCER

### The Case Against Smoking . . . by Alton Ochsner

*New Orleans*  
CASES of cancer of the lung are increasing more rapidly in men than cases of any other kind of cancer of the body. During the ten years from 1938 to 1948, deaths from cancer of the lung in the United States rose 144 per cent, from 6,732 to 16,450. Deaths from all types of cancer are increasing because cancer is primarily a disease of older people and with the greater average life expectancy more people are living to the age in which cancer is most

prevalent. However, in the same ten-year period deaths from all types of cancer rose only 31 per cent, from 149,214 in 1938 to 295,594 in 1948. The number of deaths from cancer of the lung per one hundred thousand of population in the United States was 1.1 in 1920 and 11.3 in 1948. In 1920 cancer of the lung represented 1.1 per cent of all cancers; in 1930, 2.2 per cent; and in 1948, 8.3 per cent. It is believed that in 1970 cancer of the lung will represent 18 per cent of all cancers or almost 1 in 5. It affects men primarily; 90 per cent of our cases at the clinic have been men.

The tremendous and disproportionate increase in the incidence of lung cancer

demands an explanation. One of the factors suspected of being responsible is the inhalation of noxious gases from exhaust fumes of automobiles and trucks, from gas works, and even from tarred roads. There is no evidence, however, of a higher incidence among people subjected to such inhalations. Doll and Hill found that cancer of the lung was no more frequent in people living near gas works than in others.

But there is a definite parallelism between the incidence of lung cancer and the size of cigarette sales in the United States. Although the population of the United States increased only 14.5 per cent from 1940 to 1950, cigarette consumption increased 107 per cent. The

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annual production of cigarettes per capita (including men, women, and children) increased from 46.3 in 1903 to 2,541 in 1948—the latter figure excludes those produced for foreign consumption.



MY COLLEAGUES and I are convinced that the products of cigarette smoking are responsible for lung cancers. It is well known that carcinogenic agents (cancer-producing substances) can cause cancer when applied to the surfaces of animal tissue and that the amount and duration of the application are related to the rapidity with which the cancer develops. The time relationship between cancer of the lung and cigarette smoking is approximately twenty years.

Cancer of the lung is rare in an individual who does not smoke. Wynder and Graham found that among 760 men with lung cancer only 1.4 per cent were non-smokers, as compared with 14.6 per cent among 780 controls without lung cancer. Doll and Hill found that among 1,357 men with lung cancer only 7 (0.5 per cent) were non-smokers, whereas in the control group 4.5 per cent were non-smokers; 25 per cent of the men with lung cancer had smoked twenty-five or more cigarettes a day, whereas in the control group only 13.4 per cent had smoked that many. It is frightening to speculate on the possible number of lung cancers that will develop as a result of the tremendous number of cigarettes smoked in the past two decades.

Doll and Hill found that the death rates from cancer of the lung increase with age and the amount smoked. "They pass from a negligible figure for male non-smokers aged twenty-five to forty-four to an order of 1 in 100 per year in men aged sixty-five to seventy who have smoked an average of twenty-five or more cigarettes a day for the preceding

ten years." Doll and Hill also state that "at about the age of forty-five the risk of developing the disease [bronchogenic carcinoma] increases in simple proportion with the amount smoked, and it is approximately fifty times as great among those who smoke twenty-five or more cigarettes a day as among non-smokers." Schrek, Baker, Ballard, Dolgoff say: "The incidence of cigarette smoking and the incidence of cancer of the respiratory tract appear to be both statistically and biologically significant. There is strong circumstantial evidence that cigarette smoking is an etiologic factor in cancer of the respiratory tract."

Unfortunately many physicians, probably because they themselves smoke, are unwilling to admit that there is a causal relationship between smoking and cancer of the lung, in spite of the overwhelming statistical evidence. One of the arguments advanced by these doubting Thomases is that it has not been possible to produce cancer of the lung in animals subjected to cigarette smoke. But Roffo was able to produce cancer of the skin in rabbits when the skin was painted with tar obtained from tobacco. And recently, Graham—as he related in a personal communication—collected a tar-like substance from the residuum of cigarette smoking by a robot and was able to produce cancer in animals by applying this substance to epithelial surfaces over a relatively long period of time; 80 per cent of the animals so treated developed cancer. Essenberg has been able to produce cancer of the lung in mice by keeping them for long periods in an atmosphere of cigarette smoke. A control group was kept under identical conditions except for the cigarette smoke. In the animals subjected to cigarette smoke 91.3 per cent de-

veloped tumors of the lung, and in the control group only 59 per cent.

Undoubtedly, as emphasized by Doll and Hill, smoking is not the only cause of cancer of the lung, but it is in our opinion the most important cause, and it is the one cause that is readily controlled. Investigations by Levin *et al.*, Watson, Breslow, Mills, and Porter substantiate this view.

ALTHOUGH cancer of the lung occurs primarily in men, it is increasing in women. There is considerable doubt in our minds whether the increase will be as rapid in women as in men, even though women today are smoking as much as men. Men are apparently much more susceptible to the disease than are women. Recent surveys by the United States Public Health Service show the incidence of lung cancer rising sharply in many different localities. In Birmingham, for instance, between 1938 and 1948 it rose 189.4 per cent in both men and women; in women the figure was 72.4 per cent and in men 247 per cent. During the same period no other sites of cancerous involvement even approached this tremendous increase. The site of involvement with the next highest increase was cancer of the intestine—122 per cent in men, 45.5 per cent in women, and 71.9 per cent in both sexes.

We are so convinced of the causal relationship between cigarette smoking and cancer of the lung that we believe every man past forty years of age who has smoked ten years or longer should have an X-ray of his chest at least every six months and preferably every three months. Then if and when he develops a lung cancer, it may be possible to obtain a cure by removal of the affected lung.

## Dangerous Tars

Washington, D. C.

Smoke from cigarettes but not from pipe tobacco or cigars yields tars which cause cancer, it was disclosed here [before a Congressional subcommittee]. "The chemicals which cause the cancer," testified Dr. Cornelius P. Rhoads, New York cancer authority, "are being extracted from the tar, and the identification is expected in the near future." When that has been done, he added, it may be possible to eliminate the "active ingredient" or devise methods "for neutralizing the cancer-producing effects."

A companion witness, Dr. Norman Topping, vice-president of the University of Pennsylvania, elaborated on the findings.—*Washington Post*.