

several of its combustion products were proven carcinogens.³² Roads were being paved at an accelerating pace: Gunther Lehmann of Dortmund pointed out in 1934 that German road tar production had increased from 3,000 tons in 1924 to 120,000 tons only five years later, a fortyfold increase. Dusts of all sorts were blamed, as people began to realize that the use of power tools in mining, metalwork, and other "dusty trades" was raising ever higher levels of irritating dust. Many of the other theories advanced in the 1920s and early 1930s—miscegenation, X-rays, etc.—could be lumped under the broader rubrics of industrialization or urbanization, making it hard to distinguish cause from effect.

In retrospect, it is surprising how long it took for tobacco to be implicated.³³ No one prior to the twentieth century seems to have imagined that smoking might cause lung cancer. One finds no such mention in articles dealing with the anatomy and pathology of the disease, nor in articles on the carcinogenic effects of tobacco. Smoking was widely recognized as a cause of cancer, but the focus was invariably restricted to malignancies of the lip, mouth, or tongue.³⁴ A French medical thesis of 1897 gives a splendid account of *cancers des fumeurs* afflicting the lips, tongue, jaw, pharynx, tonsils, and nasal passages, but does not even hint that the lungs might be harmed.³⁵ A German medical dissertation of 1898 documented a small cluster of lung cancers among Leipzig's tobacco workers, but even here the explanation given was that the cancers were being caused not by smoking but by the inhalation of tobacco dust.³⁶

There are several reasons one can offer to explain why it took so long for smoking to be implicated as a cause of lung malignancies. The rarity of the disease must have been a factor: cancers of this sort were no doubt often confused with TB or some other unspecified lung disorder, but from what we today know about causality (80 to 90 percent of all cases are due to smoking), lung cancers really must have been quite unusual. Cigarettes were not popular until the end of the nineteenth century, and it was only then that tobacco smoke was mild enough to be inhaled. Lung cancer prior to this time was simply not a disease that attracted a lot of medical attention.

The oversight must also have something to do with the prestige of germ theories at this time. Turn-of-the-century European scholars were busily identifying microbes as the causes of heretofore mysterious diseases, displacing not just hoary humoral theories (tracing ill-health back to imbalances of blood, phlegm, or bile) but also materialist-environmental theories stressing the unhealthy effects of foul air and "miasmas." One also has to reckon with the style of etiological thinking. Under the influence of Virchow and Koch and others, the cause of a disease (most often an infecting microbe) came to be looked for in close temporal and physical proximity to the disease itself. The idea that the smoke you inhale today might give you cancer twenty years later was not yet something physicians were prepared to think about; the idea of a latent period between exposure and disease was not widely appreciated until the twentieth century, when occupational cancers forced the appreciation. The net effect was that far more attention was given to the anatomy and pathology of cancer than to its possible environmental causes. That would change when the explosive growth of lung cancer made it difficult to deny an external causal agent—like smoking.

FRITZ LICKINT: THE DOCTOR "MOST HATED BY THE TOBACCO INDUSTRY"

The Chemnitz (and later Dresden) physician Fritz Lickint in 1929 was one of the earliest to publish statistical evidence joining lung cancer and cigarettes.³⁷ He was not the first to suggest a link—Isaac Adler and others had already done this³⁸—but his was the most thorough review up to that time, while also presenting new statistical information. His evidence was fairly simple, constituting what epidemiologists today call a "case-series" showing that lung cancer patients were particularly likely to be smokers. He also showed that in countries where women smoked as much as men, there was very little difference between male and female lung cancer rates. Lickint's article served as a springboard for