

paper by two scholars—Eberhard Schairer and Erich Schöniger—working at Jena's Institute for Tobacco Hazards Research. The papers are of historic interest, given that they provide the most sophisticated proofs up to that time that smoking was the major cause of lung cancer. The 1943 paper is also noteworthy insofar as it almost certainly would not have been written without the personal intervention of Hitler in the antitobacco effort. We begin with Müller.

Franz H. Müller is one of the more enigmatic figures in the history of medicine. His 1939 medical dissertation⁷³ presents the world's first controlled epidemiological study of the tobacco-lung cancer relationship, but the paper is little known outside a narrow circle of specialists. No one seems to have bothered to investigate his biography: all we know is that he was born on April 8, 1914, in Niederaula, near Cologne, as the seventh son of a railroad inspector, and this we know only from the short résumé attached to his dissertation at the University of Cologne. According to local archivists, his personnel records at the City Hospital of Cologne were destroyed by Allied bombing. The only other records we have are the captured German documents preserved at the Bundesarchiv in Berlin and at College Park, Maryland (in the National Archives), which indicate (as of 1939) that he was Catholic, single, "Arisch" (Aryan), and a member of both the Nazi party and the Nazi motor corps (NSKK).

We also know, though, that Müller's paper is an exquisite piece of scholarship. Published in 1939 in Germany's leading cancer research journal, the paper begins by noting the dramatic upsurge in lung cancers in the bodies autopsied at Cologne University's pathology institute. The point is made that though lung cancer was extremely rare in the nineteenth century, it had now become the second largest cause of cancer death, accounting for nearly a quarter of all cancer mortality in the Reich. (Stomach cancer still held first place, with about 59 percent). Müller mentions the usual list of causes—road dust and road tar, automobile exhaust, trauma, TB, influenza, X-rays, and industrial pollutants—but argues that "the significance of tobacco smoke has been pushed more and more into the foreground."⁷⁴ German tobacco use had grown by a

factor of five from 1907 to 1935, exposing lung tissues to unprecedented levels of carcinogenic tar. Roffo and Lickint had shown that smokers could inhale up to four kilograms of tar over a period of ten years—to which Müller added that the tar content of cigarettes had actually risen in recent years, a phenomenon which he blamed—following Wender and Ferrari—on the increasing use of tobacco stems in cigarette manufacture. He worried also about the economic burden of smoking, trotting out the widely publicized fact that 10 percent of the entire national income was going to cigarettes and alcohol.

Müller's most important contribution, however, was his statistical investigation, prompted by his observation that the lung cancer patients in his care were often heavy smokers and that men were far more likely than women to contract the disease (his own Cologne data showed a sex ratio of six to one; a Lickint review of twenty-five publications gave a figure of five to one).⁷⁵ His analysis was what we today would call a survey-based retrospective case-control study, meaning that he compared, through questionnaires and medical histories, the smoking behavior of lung cancer patients with that of a healthy "control group" of comparable age. The survey was sent to the relatives of the deceased (lung cancer kills rather quickly) and included the following questions:

1. Was the deceased, Herr _____ a smoker? If so, what was his daily consumption of cigars, cigarettes, or pipe tobacco? (Please be numerically precise in your answer!)
2. Did the deceased smoke at some point in his life and then stop? Until when did he smoke? If he did smoke, what was his daily consumption of cigars, cigarettes, or pipe tobacco. (Please be precise!)
3. Did the deceased ever cut down on his smoking? How high was his daily use of tobacco products, before and after he cut back? (Please be precise!)
4. Can you say whether the deceased was ever exposed to polluted air for any length of time, either at work or off the job? Did this unclean air contain smoke, soot, dust, tar, fumes, motor exhaust, coal dust or metallic dust, industrial chemicals, cigarette smoke, or similar substances?⁷⁶