

## 269–270

### ALLEGED DANGERS OF CIGARETTE-SMOKING

Your annotation on “Dangers of Cigarette-smoking”<sup>\*</sup> leads up to the demand that these hazards “must be brought home to the public by all the modern devices of publicity”. That is just what some of us with research interests are afraid of. In recent wars, for example, we have seen how unscrupulously the “modern devices of publicity” are liable to be used under the impulsion of fear; and surely the “yellow peril” of modern times is not the mild and soothing weed but the original creation of states of frantic alarm.

A common “device” is to point to a real cause for alarm, such as the increased incidence of lung cancer, and to ascribe it urgent terms to what is possibly an entirely imaginary cause. Another, also illustrated in your annotation, is to ignore the extent to which the claims in question have aroused rational scepticism. The phrase “in the presence of the painstaking investigations of statisticians that are seen to have closed every loophole of escape for tobacco as the villain of the piece”, seems to be pure political rhetoric, even to the curious practice of escaping through loopholes. I believe I have seen the sources of all the evidence cited. I do see a good deal of other statisticians. Many would still fell, as I did about five years ago, that a good *prima facie* case had been made for further investigation. None think that the matter is already settled. The further investigation seems, however, to have degenerated into the making of more confident exclamations, with the studied avoidance of the discussion of those alternative explanations of the facts which still await exclusion.

Is not the matter serious enough to require more serious treatment?

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In the *Journal* of July 20 Dr. Robert N. C. McCurdy writes: “Fisher’s criticism<sup>†</sup> . . . would not be so unfair if he had specified what alternative explanations of the facts still await exclusion”. I had hoped to be brief. A few days later the B.B.C. gave me the opportunity of putting forward examples of the two classes of alternative theories which any statistical association, observed without the predictions of a definite experiment, allows—namely, (1) that the supposed effect is really the cause, or in this case that incipient cancer, or a pre-cancerous condition with chronic inflammation, is a factor in inducing the smoking of cigarettes, or (2) that cigarette smoking and lung cancer, though not mutually causative, are both influenced by a common cause, in this case the individual genotype.

The latter unexcluded possibility was known to Dr. McCurdy but he brushes it aside with abundant irony. Is he really persuaded that this is the way to arrive at scientific

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<sup>\*</sup>*British Medical Journal*, June 20, p. 1518.

<sup>†</sup>*British Medical Journal*, July 6, p. 43.

truth? Dr. McCurdy points out correctly that difference in the genotypic composition of the smoking classes—non-smokers, cigarette smokers, pipe smokers, etc., would not explain the secular change in lung cancer incidence. I have never thought that it would be charged with this task. Is it axiomatic that the differences between smoking classes should have the same cause as the secular change in incidence? Is there the faintest evidence to support this view? Indeed, Dr. McCurdy's belief that cigarette smoking causes lung cancer would be more secure if he did not consider it with the *non-sequitur* that increase of smoking is the cause of increasing cancer of the lung. For at this point there appears one of those massive and recalcitrant facts which have been emerging through the smoke screen of propaganda. When the sexes are compared it is found that lung cancer has been increasing more rapidly in men relative to women. The absolute rate of increase is, of course, obscured by improved methods of diagnosis, and by the increased attention paid to this disease, but the relative proportionate changes in men and women should be free from these disturbances, and the change has gone decidedly against the men. But it is notorious, and conspicuous in the memory of most of us that over the last fifty years the increase of smoking among women has been great, and that among men (even if positive) certainly small. The theory that increased smoking is "the cause" of the change in apparent incidence of lung cancer is not even tenable in face of this contrast.

For the secular change, therefore. neither the smoking causation theory nor the theory of differential genotype will afford an explanation. For the contrast between cigarette smokers and non-smokers both are available; for the contrast between cigarette smokers and pipe smokers the first theory requires some special pleading, but this has never been lacking. The two circumstances (1) that heavy smokers show a greater effect than light smokers, and (2) that persons who have voluntarily abandoned smoking react like non-smokers or light smokers, are not independent experimental confirmation of the smoking theory. They are only reiteration of the main association to be explained. Any theory which explains this association may be expected to explain these facts also.

Differentiation of genotype is not in itself an unreasonable possibility. Indeed strains of mice if genotypically different almost invariably show differences in the frequency, age-incidence and type of the various kinds of cancer. In Man cancer of the stomach has been shown to be favoured by the gene for the blood group A. My claim, however, is not that the various alternative possibilities which have been excluded all command instant assent, or are going to be demonstrated. It is rather that excessive confidence that the solution has already been found is the main obstacle in the way of such more penetrating research as might eliminate some of them. I am sure it is useless to treat the question as though it were a matter of loyalty to a political ideology or of forensic disputation. Statistics has gained a place of modest usefulness in medical research. It can derive and retain this only by complete impartiality, which is not unattainable by rational minds. We should not be content to be "not so unfair", for without fairness the statistician is in danger of scientific errors through his moral fault. I do not relish the prospect of this science being now discredited by a catastrophic and complacent howler. For it will be as clear in retrospect, as it is now in logic, that the data so far do not warrant the conclusions based upon them.

*British Medical J.*, vol. II, p. 43, 6 July 1957 and vol. II, pp. 297–298, 3 August 1957.