from the critical question of whether it is morally defensible, there are essentially practical reasons.

To-day, when people have reached an unprecedented level of literacy and education, and have an almost unlimited access to a wide variety of sources of information about health and disease, this whole objection loses force. Whether we like it or not, patients are going to have their questions answered with varying degrees of accuracy by friends and relatives, by quacks of all kinds, by articles in newspapers and popular magazines, and by commercial advertisements.

It is therefore clearly in the interest both of the physician and of his patient that the latter should not leave his doctor with questions he would like to have asked but did not, or with answers that did not satisfy him. It seems an elementary insistence that the patient is entitled to know all his doctor can tell him and that his doctor is the best person to tell him.

Medical Education

The ultimate solution of the problem, as of many others affecting modern medicine, probably lies in the field of basic medical education. There is to-day a clearly discernible increase in appreciation of the fundamental need of medicine to be systematically moulded into a more human and social discipline and to widen its interest in diseases to include the people and communities that suffer from them.

Medical education may, after all, be designed to produce physicians who not only have the technical knowledge and skills of their craft, who not only see health and disease as a by-product of personal and social life, but who are at once humane and imaginative educators as well.

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SOME POPULAR BELIEFS CONCERNING THE CAUSES OF CANCER

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It is difficult to assess with any precision the present balance of medical opinion on the value of cancer education. A questionnaire circulated a few years ago by the British Empire Cancer Campaign drew replies from only one-quarter of the general practitioners to whom it was addressed, and of these slightly more than half expressed opposition to education of the public concerning cancer (Horder, 1953). More recently, however, it has been shown (Wakefield and Davison, 1958) that a carefully conducted local programme of cancer education can in practice gain the widespread approval of general practitioners. At the same time, the increasing volume of evidence tending to incriminate cigarette smoking as a major factor in the aetiology of cancer of the lung has stimulated the interest of many medical practitioners in the possibilities of education or propagandist activities directed towards a reduction in the incidence of what would appear to be an eminently preventable disease.

The planning of health education in this field, if its desirability be accepted, is likely to be the more effective if it takes account of the prevailing patterns of belief

and habit in the community. In this context, the findings of a recent inquiry, which throw some light on lay beliefs concerning the causes of cancer, with particular reference to the role of cigarette smoking, may perhaps be of interest.

The data presented here were obtained through interviews with a random sample of the adult population of the City of Edinburgh. The background of the inquiry, the sampling procedure, and the response rate have been described elsewhere (Cartwright, Martin, and Thomson, 1958). The inquiry was primarily concerned with popular beliefs concerning tuberculosis, but certain questions about cancer were included in the interview.

General Attitudes Concerning Cancer

Some indication of popular fears of cancer in comparison with other diseases is provided by replies to the opening questions of the interview, in which our subjects were asked what illness they thought was most dangerous for children under the age of 15, for adults under the age of 45, and for adults over that age. Only one person in a hundred mentioned cancer as the most dangerous disease for children, but a quarter and a third respectively thought it was the most dangerous illness for adults below and above the age of 45. In each of these last two groups cancer was the second most frequently mentioned disease; tuberculosis (29%) was specified slightly more frequently for younger, and heart disease (34%) slightly more frequently for older, adults.

There were, however, no indications, at any rate at the level of conscious awareness, of a widespread incidence of what is sometimes referred to as cancerphobia. Less than one-third of the people questioned said in reply to a specific inquiry that they were worried about their own health or the health of any member of their family, and of these the majority were concerned about some illness present at the time. Among those who expressed anxiety about an illness not actually present cancer was the disease most frequently mentioned, but even this was named only by one person in fifty.

When asked which of five selected causes of death was responsible for the greatest number of deaths, 35% of our subjects said heart disease, 32% street accidents, and 27% cancer. Only 5% cited lung tuberculosis and 1% poliomyelitis. Cancer was much more often specified by women (35%) than by men (18%). Asked to estimate whether death or recovery was the more probable outcome in each of the four diseases included in the previous list, the members of our sample were least optimistic about the prognosis for the cancer patient, with three-quarters thinking death the more likely outcome. One subject in five, however, thought that a person who had contracted cancer was more likely to recover than to die.

A somewhat higher proportion, nearly one-third, said they would rather not know if they had cancer, even though, in answer to a later question, only 9% thought the chances of recovery were not improved by early diagnosis. For lung tuberculosis people were apparently more convinced of the value of early diagnosis; only 2% thought it would not improve the chances of recovery, and only one in ten said they would rather not know if they had it.

Beliefs About the Causes of Cancer

In an attempt to discover the pattern of popular beliefs about the causes of cancer, we first asked a general question in which we did not suggest any possible cause. Replies have been classified into various groups in Table I.

The cause most frequently suggested was knocks, bumps, or bruises; then in descending order of frequency came smoking; air pollution, fumes or dirt; inheritance; and tiredness, worry, overstrain, or frustration. The popularity of the belief that trivial injuries may cause cancer provides an interesting example of the psychological process referred

TABLE I.—*Causes to Which Cancer is Attributed*

Knocks/bumps/bruises	25%
Smoking	22%
Air pollution/fumes/dirt	14%
Inheritance/from parents	8%
Tiredness/worry/overstrain/frustration	4%
Replies connected with food	1%
Infection	19%
Others	34%
No opinion	34%
Sample	554=100%

to elsewhere as "reduction to the familiar" (Cartwright *et al.*, 1958)—the tendency to relate the aetiology of major diseases to simple, everyday conditions; a parallel and even more widely held belief is that tuberculosis develops from neglected colds.

Only 1% of those questioned spontaneously mentioned infection as a "cause" of cancer, but when asked specifically about this another 12% said they thought it was possible to "catch cancer from other people." Rather similar questions were asked about the inheritance of cancer. This had already been mentioned spontaneously by 8%, and another 25% replied positively when asked about this specifically; one-third of these gave unqualified replies, and the remainder said that they thought a tendency to contract cancer could be inherited.

Members of the sample who had not previously mentioned smoking were asked whether they had heard that some doctors and scientists thought that people who smoked were more likely to get cancer than people who did not smoke; they were then asked their own opinion. The results are shown in Table II. Although most people had heard of the relationship, more than one-third of them thought that smokers were not more likely to contract cancer than non-smokers.

TABLE II.—*Beliefs of 554 Persons About Smoking as a Cause of Cancer*

Smoking mentioned spontaneously as a cause	22%
Has heard of possible relationship	75% } 78%
Has not heard of possible relationship	3%
Thought smokers more likely to contract cancer	30%
Thought smokers not more likely to contract cancer	36% } 78%
No opinion	12%

Variation in Beliefs with Age, Sex, and Social Class of the Individual

Appreciably more men than women mentioned air pollution, fumes, or dirt as a cause of cancer (22% against 8%), and slightly more men than women mentioned smoking spontaneously. However, when they were asked specifically about smoking the proportion of men who thought smokers were not more likely to get cancer than non-smokers was 41% compared with 32% for women. Rather more women than men mentioned knocks as a cause of cancer (28% compared with 22%).

When we consider variations with age we find that the proportion suggesting knocks as a cause of cancer increases with the age of the person, rising from 18% for those aged 21–34 to 33% for those aged 65 or more. In contrast the proportion mentioning air pollution declines with age. The proportion thinking smoking, inheritance, or infection a cause of cancer when they were asked about these factors specifically was highest for the people over 65—probably because this group is the most willing to accept suggestions of this sort uncritically.

Social class variations reveal surprisingly few differences. The proportion mentioning knocks is lowest for those in professional and intermediate occupations (17%) and highest for those in unskilled manual jobs, but no consistent variation can be observed when we consider smoking as a cause of cancer, and there is little variation in the proportion mentioning air pollution, fumes, or dirt.

Smoking Habits and their Relation to Beliefs on Smoking as a Cause of Cancer

The proportion spontaneously mentioning smoking as a cause of cancer did not vary significantly between smokers,

non-smokers, and people who had given up smoking; neither did the proportion who had heard of the relationship. However, when we asked people who had not mentioned smoking as a possible cause of cancer what they thought about the theory striking differences emerged.

Nearly half the people now smoking said they did not believe that smokers were more likely to get cancer than non-smokers. This was more than twice as high as the proportion of non-smokers who held this view. It might have been expected that the people who had given up smoking

TABLE III.—*Relationship Between Smoking Habits and Beliefs About Smoking as a Cause of Cancer*

	Smoke Now			Given up Smoking	Never Smoked
	20 a Day or More	Less than 20	All those Smoking Now*		
	%	%	%	%	%
Smoking mentioned spontaneously as a cause	24	23	23	18	22
Had heard of possible relationship	72	74	73	81	75
Had not heard of possible relationship	4	3	4	1	3
Thought smokers more likely to get cancer	17	25	22	38	40
Thought smokers not more likely to get cancer	51	45	47	32	21
Don't know	8	7	8	12	17
No. of individuals=100%	109	164	288	76	187

* Including 10 pipe smokers and 5 people for whom the quantity was not known.

were those who believed most firmly in the relationship, but in fact this group fell in between the smokers and non-smokers in this respect. The reasons of 76 persons for giving up smoking were then examined. These were: expense, 39%; health reasons, 37%; others, 20%; no answers, 4%. Expense and health were the reasons most frequently put forward for giving up smoking, but when the beliefs about smoking as a cause of cancer are examined for the small group of 28 people who gave up smoking for health reasons we find no significant differences between them and the other members of our sample.

The absence of any relationship becomes clearer when the health reasons in question are examined in detail. Only 2 of the 28 individuals concerned had given up smoking because of a fear of cancer; this may be compared with 14 who gave up smoking as a result of major or minor respiratory conditions, 3 because of gastric illnesses, and another 2 with cardiac conditions. It is evident that even among those who claim to have given up smoking for health reasons fear of cancer of the lung has played a very small part.

Conclusions

It is clear that smoking is now quite widely believed to be a cause of cancer. In an inquiry conducted in the Manchester area four years before our own (Paterson and Aitken-Swan, 1954), only 2% of those questioned spoke spontaneously of smoking when asked about the causes of cancer. By 1957 the corresponding percentage among the Edinburgh population had risen to 22, and when asked specifically another 30% agreed that smoking was a possible cause. It would seem that recent suggestions, in Parliament and elsewhere, that the Government should give widespread publicity to the association between lung cancer and cigarette smoking may be misconceived, since only three people in a hundred were not aware that such a relationship had been asserted. The problem is not so much one of knowledge as of conviction and action, and our findings demonstrate once again the fallacy of the Socratic assumption that underlies much health education.

Heavy smokers, though they were as likely as anyone else to know that an association between smoking and lung cancer had been postulated, were far more ready than non-smokers to deny the validity of the evidence. In short, their

expressed beliefs were largely a rationalization of their habits, while those who had never taken up smoking were correspondingly more prepared to attribute harmful effects to the cigarette. But if there is a gap between knowledge and belief there is also a gap between belief and action, for it is noteworthy that two-fifths even of the heavy smokers were prepared to accept the proposition that smokers ran a greater risk of contracting lung cancer. Among the motives of those who had given up smoking, fear of cancer played an insignificant part. To base one's beliefs on one's habits, rather than the reverse, is a characteristic not restricted to laymen. Pyke (1955) has shown that medical practitioners are no less irrational in their assessment of the evidence in question: 71% of non-smoking doctors were satisfied with the evidence linking cigarette smoking with carcinoma of the bronchus, but only 46% of the doctors who smoked cigarettes thought the evidence adequate.

The logic of the individual in our sample who said that if doctors believed in the association they would give up smoking, seems somewhat unjustified.

Public action directed towards the reduction of cigarette smoking may take one of two major forms. The first of these is the introduction of deterrents, of which the most obvious would be a further heavy increase in the excise duty on cigarette tobacco; this would probably have some effect, since the number of people who give up smoking on grounds of expense is already greater than the number who give it up for health reasons of any kind; but its precise effect would depend not only on the extent of the increase but also on future trends in income levels and in the relative attractiveness of alternative objects of expenditure. The other possible approach is educational. It is obvious that a mere exposition of facts is unlikely to be effective in persuading confirmed smokers to give up the habit, though it may dissuade some young people forming the habit. It seems to us that if educational activity is to be effective it must be based upon direct study of the habit of cigarette smoking—of the processes by which it takes root, the satisfaction which it yields, and the difficulty of giving it up. This is a subject on which we are aware of a number of hypotheses, but of little objective evidence.

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ATTITUDES OF THE GENERAL PUBLIC TO MENTAL ILLNESS

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Although it is very likely that the attitudes of members of the general public towards mental illnesses have an important bearing upon the recognition and treatment of these conditions, few systematic investigations of such attitudes have been carried out, and all of these in the United States of America or Canada (Ramsey and Seipp, 1948; Roper, 1950; Woodward, 1951; Star, 1952; Cumming, 1955; Redlich *et al.*, 1955). Recently an opportunity presented itself to make some similar observations in this country.

In January, 1957, the B.B.C. broadcast a series of five television programmes under the general title of the

"Hurt Mind" which dealt with various problems connected with the aetiology, nature, and treatment of mental illness. Each of the broadcasts in the series was seen by approximately 15% of the adult population in the United Kingdom, equivalent to about 5½ million people. An attempt was made to measure some of the change in attitudes of the viewing public which could be attributed to seeing the programmes. The results have been reviewed by Dr. W. A. Belson, of the B.B.C. Audience Research Department, who found that a great majority of viewers drew a distinction between mental illness and insanity; many were unwilling to accept the ex-patient in certain occupational and other roles, and there was a general feeling that mental illness was something to keep quiet about. Little change was brought about in viewers' opinions in these respects. However, the series "increased somewhat viewers' knowledge on the subject of mental illness, especially in respect of methods of treatment. There was a moderate but broadly based increase in viewers' confidence in the ability of medical men to cure mental illness. . . . There was a small but well-spread increase in the viewers' willingness to associate with the ex-patient. . . ." (Belson, 1957).

When the "Hurt Mind" series was in preparation a preliminary survey of the "target audience" for these programmes was made. Groups of viewers, drawn from the Greater London area, were invited to Broadcasting House and there asked to fill in a written questionnaire, to ascertain their ideas about mental illness and its treatment, and their attitudes towards the mentally ill. One hundred and eighty people were involved, but this number was reduced to 167 in order to match the viewing public of Greater London in terms of a social level and age. This material was kindly made available to us by the B.B.C., who also permitted us to carry out a content-analysis of 1,267 letters written to the B.B.C. by viewers in response to the "Hurt Mind" programmes.

I. Spontaneous Opinions About Mental Illness

At the onset of the preliminary inquiry the 167 volunteers were asked to write as fully as possible what they understood by the expression, "A person who is mentally ill." The following content-analysis is based upon the answers to this question.

Major Diagnostic Categories.—Seventy-two persons seemed to be describing a psychiatric condition only, and 24 a neurosis or personality disorder only, while 23 seemed to have both in mind when thinking of mental illness. Of those whose answers were classifiable in this way, 80% mentioned psychotic traits or syndromes in their answers, and 40% mentioned neuroses. Only four answers seemed to describe mental deficiency.

Topics most frequently mentioned.—Each answer was then broken down into a series of separate statements. The most popular single item was an expression of general good will such as "needs much help, understanding, and kindness." Forty-five individuals (27%) replied in this way. Other fairly popular responses (mentioned by more than 20 people) were: "Due to worry, mental strain," etc.; "Sometimes violent"; "Needs to be supervised in an institution"; "Behaves or reacts abnormally"; "Pessimistic, depressed," etc. There were 665 separate items, of which 572 could broadly be classified under the headings Descriptive, Aetiological, and Therapeutic.

Descriptive Items.—The 301 descriptive items could be further sorted into five "syndromes" which accounted for 260 of them. The largest "syndrome," accounting for