EXAMINING THE INDIVIDUAL IN RELATION TO HIS ENVIRONMENT

*The Ernst P. Boas Memorial Lecture**

H. BERIC WRIGHT

Director, Institute of Directors Medical Centre
London, England

ONE of the main aims of an industrial occupational health service should be to make a meaningful contribution to the over-all health of the enterprise of which it is an integral part and, through this, to the health of the community as a whole. In England at the present time there is a real crisis in our affairs, not only in our medical affairs but also in our economic life. If we are to rethink usefully our role as industrial doctors we must relate ourselves as relevantly as possible to the national situation—and this is one of the things that I shall attempt to do in this paper.

This crisis, in my view, stems from a basic psychosocial malaise in our community: a malaise that has its roots in a failure of communication and cooperation between industry and commerce—by this I mean the employers—and the community as a whole. Because we seem to be two nations, "the we and the they," we seem unable to work together for the good of the whole.

It is easy on the one hand to blame the government and the politicians of whatever party for the difficulties which beset a free enterprise economy and, on the other hand, to blame the workers and the unions for low productivity, restrictive practices, and a fast rising rate of absence because of sickness. But in this easy blaming of the other side, we forget that in fact we are all in it together and that we are all part of a highly integrated and complex community—a community in which we have equal shares and as much to gain—and lose—as the next man.

Recently one of your journalistic luminaries strongly accused us in Britain of being decadent. We British may currently be inefficient and wasteful and thus appear decadent to some—but in fact what we are

*Presented at a combined meeting of the Section on Occupational Medicine with the New York State Society of Industrial Medicine, held at The New York Academy of Medicine, October 26, 1966. By special arrangement this paper is also published in the *Journal of Occupational Medicine*.

suffering from is a crisis in leadership and a lack of motivation both to work effectively and to participate effectively in organizing our affairs. There is a great psychosocial illness in our midst that is sapping our strength. This malaise is mainly manifested by a failure of adequate motivation and a lack of guiding purpose in the life of the average worker. This to my mind stems from an imbalance between the individual and his environment. It is about some of the medical manifestations of this imbalance that I want to talk on this occasion.

In thinking and talking about these problems amongst ourselves, a number of us came to certain conclusions and decided on certain lines of possible action—and felt rather pleased with our conclusions. But when I did some homework on your occupational medical journals for another address I had to give, I found that you had been or were in process of going through all this and had in fact come up with some of the answers. Here I should like to pay tribute to your willingness to discuss and publish ideas about reconstruction and reorganization. Our specialty in England is less well organized, probably little less expert and less competent in its way but we are more reluctant to come to terms with the fundamental need for change. Carey McCord once said to me how much he envied the way in which the English professional journals filled themselves with lively correspondence about all sorts of things. In return we envy you the forum and the willingness to ventilate the problems involved in altering one's priorities and giving up one's cherished beliefs.

The writing is on the wall. In England we lose about 300 million days a year in certified sickness: an *average* of two weeks per man and three weeks per woman. Less than 1 per cent of this absence is for accidents or industrial occupational disease. No specialty can exist, or justify its existence, if it merely perches on the very tip of its iceberg. It must grapple with the main problems that face it, and in the right priorities.

It is against this general background of psychosocial malaise and the urgent need for new priorities in medicine as a whole that I want to talk about examining the individual in relation to his environment. I am afraid that I can illustrate this only in terms of the periodic medical examination of executives but I think one can generalize from this and use the lessons derived from it to guide us to new targets of priority.

First, however, we must define certain vital terms that are essential

to this discussion. These terms, which we use every day, are the *individual*, the *environment*, and *health*.

By the individual, I mean the genetic, physical, and behavioral attributes that determine his persona, as perceived both by him and by those with whom he comes into daily contact. Because sensory deprivation causes death and because all living things need some degree of challenge from the environment, we can assess each other only by the effects of the interrelation between the individual and his environment. These effects are shown through both the psyche and the soma; they concern the whole man, rather than just his heart, limbs, or liver. Any intelligent approach to the medical problems of the individual must thus also be psychosomatic and behavioral, rather than just physical. Progress in science and technology has given us great facility in altering or contriving our physical environment; as these changes increase our comfort and seem to make living easier, we adjust easily to them. But in fact rapid changes in the physical environment are producing strains in the community at the psychosocial interpersonal, and intercommunity levels, to which no proper adjustment has yet been made. We are currently finding it difficult to live with each other in an integrated and responsible way. From this inability to live with each other at work, at home and in the community comes a high proportion of our disease. Clearly the psychosocial has now become more important than the physical, and I think that *social climate* is perhaps a better word than environment.

But far more important than the separate attributes of the individual and the environment is the result of their interreaction, which determines the health of the individual or the community. I do not need to convince you that health is more—indeed much more—than the mere absence of disease. It is a positive entity or state, about which we need to know much more; consequently it is at present very difficult to define health effectively.

Over the last few years, in talking to my patients and in lecturing to company executives and doctors, I have come to express this in terms of an equation; not a static, algebraic, or physical equation but a dynamic and constantly altering biological equation between the individual and his environment. This means *this* man in *this* situation—both defined along the lines we have just discussed. Both are, of course, immensely complex and represent final common pathways of interreaction

between personality, social attitudes, and local traditions and demands. Just as individuals vary infinitely, so do companies, factories, homes, and villages.

I believe that it is both convenient and helpful to define health as a *balanced personality-environment equation.* One can then say that ill health, either mental or physical, arises from an imbalance of this equation. A famous English surgeon once said he had never seen a happy man die of cancer. Professor G. L. Engel's "giving up, given up" syndrome also fits this concept well. Perhaps this is taking psychosomatic medicine too far but I think that one can make a useful generalization and say that a happy, well-adjusted person in a situation that he enjoys and that is sufficiently but not too challenging, is seldom ill. I use the word *situation* advisedly because, as industrial physicians, we must not lose sight of the fact that a person inevitably functions as a totality compounded of work, home, and leisure.

Such a concept of health is absolutely critical to us as doctors for it determines our approach to what we rather glibly and traditionally call disease. In our day-to-day work, this concept seems to me to have two major implications:

First, it is fundamentally more important to discover *why* a man is ill—*why* his personality environment equation has gone out of balance—than it is to know *what* is wrong with him. Clearly this oversimplification may be dangerous as we are traditionally expected by our customers to relieve symptoms. It is easy to relieve dyspepsia with an alkali but far more difficult to cure an ulcer. Modern drugs have made symptomatic "cure" easy and have tended to lead us away from looking for deeper causes. This was brought home to me vividly when I recently examined a man who had had his stomach removed—at, I may say, a much respected teaching hospital—when his real problem was impotence.

Second, in assessing or trying to prevent disease, it is essential to look at the individual in relation to his environment. The diseases we get are related to the lives we lead. In the United States many know and practice this—but in my country, at least, this message has not yet been received, or even begun to be decoded by the profession as a whole. We are still bringing up tomorrow's doctors on yesterday's diet—and mostly it is still a prewar diet.

About four years ago we thought that the climate was right in England to start the first specialized health clinic for executives. Please

do not think that in saying this I am claiming that we were the first to give executives health examinations. This is far from true; many of the larger firms and a few of the eminent physicians in Harley Street had been giving such examinations for years, but nobody had set out to provide a specialized, reasonably streamlined, and adequately equipped facility just for this activity.

As you were pioneers in this field, it was natural that I should seek permission from my employers to come over and see what you were doing. My superiors generously financed a seven-week coast-to-coast visit; and you, with your traditional generosity and hospitality, opened your doors to my enquiries and tolerated my not always laudatory comments.

Three things struck me forcibly about your activities in this field: here I am commenting more on what I saw in the specialized clinics than on what went on within firms:

First, there was a tendency to do more specialized investigations than seemed clinically warranted. For instance, one center did routine barium meals—not with screening by a radiologist, but just taking routine films after consumption of barium. I was proudly told the number of small and presumably symptomless ulcers that were found. Similarly a great deal of expensive and doubtfully necessary biochemical work was being done.

Second, there was a lack of real doctor-patient contact. I don't believe you can take an environmental history by a questionnaire and I suspect that the very detailed physical examination is the least important part of the procedure. Machines may be replacing the stethoscope and the patella hammer, but what worried me most was to find that in more than one place the final report on the man was written by a doctor who had never seen him.

Third, and perhaps more important, there was an almost total lack of communication between the examining doctor and the work situation. Even with some industrial organizations, there was relatively little feedback from and into the environmental situation. If there is any validity at all in what I have said about the personality environment equation, any problem that involves the work situation can be dealt with only by reference to it. To deny this is to lose what is one of the major benefits of the entire procedure.

To some extent, this reflects the relation between the firm, its employees, and the examining doctor. But if we are to do our jobs

properly as physicians, we must be able to have some influence on the climate within the organization for which the individual works.

In planning our center we decided that the relation between the doctor and the patient must predominate and be based on a full environmental and psychosocial history and assessment. This takes time, and time is of course expensive for both doctor and patient. As our market would stand only what is by your standards a modest fee, this long interview that takes at least an hour and a half—and often longer in an older, more complicated or reticent patient—might have to be at the expense of other investigations.

Here I might add that we do not expect our doctors to see more than two new patients in a half-day session, and we expect the patient to be available for two and one-half to three hours.

Thus, we had to reduce clinical investigations to a minimum and to base the ones we could do on the maximum potential yield. Because it is the main problem, our major emphasis is on cardiovascular disease.

Apart from the physical examination, which includes a digital rectal examination and a proctoscopy where indicated, there is a simple urine test for albumen, sugar, and blood. Hemoglobin and sedimentation rate tests, and also a serum cholesterol test, are done routinely. The examining doctor may ask for a blood, urea, sugar, or uric acid examination. Our pathologist has just acquired an autoanalyzer and we hope soon to use it regularly and also to give a provocative dose of glucose.

Chest x ray—posteroanterior and lateral, and a straight x ray of the abdomen and pelvis are carried out. Interestingly, we find this latter the biggest single yielder of miscellaneous clinical findings. Good-quality films show bones and joints, soft tissue shadows, stones, arterial calcification, and a host of other things that are not revealed by the taking of a history or by application of the human hand. Films also give a useful baseline measurement for future comparison.

The chest x ray is taken primarily to ascertain size of the heart rather than in the pious expectation of finding lung cancer. To facilitate this, we have recently installed an ECG triggering device that takes the films in diastole. This gives a degree of standardization and a sharper outline.

We then do a test of lung function with a Vitalograph, measure skinfold thickness, and do an electrocardiogram. Exercise ECG's are done on those over 50 and on anyone else in whom they are indicated.

We did tonometry for about nine months but were unimpressed with the results.

The examining doctor then summarizes his initial findings and briefs the patient. Several days later, when all the laboratory results are available, and also the radiologist's and cardiologist's reports, the doctor writes to the patient and also to his personal physician and gives, in some detail, the results and his recommendations for dealing with them.

In addition, we are trying to do some research in this field. It is not easy to build reasonably good research into what is by definition a cash and carry consumer service, but we are succeeding. We now have on our staff a full-time research fellow supported by the British Heart Foundation.

We have now done over 5,000 examinations and are running at the rate of 3,000 per year. We have a team of 12 part-time doctors who work not more than four half-days a week. We strive for continuity of doctor-patient and doctor-firm relations and are currently running schemes for 145 companies, ranging from the largest to the smallest; indeed, executives come to us from countries all over the world, including the United States.

We have tried to create a friendly, nonclinical atmosphere. No doctor wears a white coat and only the radiographer and cardiographers wear uniforms. This and the general permissive atmosphere is, I think, important. Our greatest satisfaction stems, thanks to the willing cooperation of the Institute of Directors, from the creation of a center to which the patients thoroughly enjoy coming and in which the staff likes to work.

The process of welding the doctors into a team with reasonable identity of view and uniform standards has been fascinating. The greatest difficulty was to make up for the deficiencies of their education in the use of the English language. As a profession, we do find it hard to communicate not only with our patients but also with one another, and writing good letters and reports becomes a laborious chore.

In considering our results and findings, particularly the follow-up figures, let me remind you of two things: first, that we have been in existence for less than three years; second, that we are a "consumer service" drawing people from all over the country. Sixty per cent of our people come through firms, with whom continuity is much easier to achieve.

TABLE I—AGE DISTRIBUTION AND WEIGHT BY AGE

Age	*Under 40*		*40 to 49*		*50 to 59*		*60 or over*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Number	465	100	722	100	647	100	166	100	2,000	100
10% or more underweight	50	11	72	10	66	10	20	12	208	10.5
Average weight	286	61	454	63	404	63	81	49	1,225	61
Between 10% and 20% overweight	92	20	133	18	117	18	36	22	378	19
More than 20% overweight	37	8	63	9	60	9	29	17	189	9.5

I am indebted to my research fellow, Dr. Guido Pincherle, for the detailed analysis of the figures presented in the tables. These are based on the first 2,000 patients we saw. A running check on subsequent patients showed only minor variations in the number of findings, thus the figures presented can be taken as being broadly representative of our experience. Our patients came to us either as individual members of the Institute of Directors (40 per cent) or as part of an executive group from a company. To simplify presentation the two groups have been amalgamated.

Table I shows the age distribution and body weight by age. Figures from the Metropolitan Life Insurance Company were used as the standard. Weight, because it seems to be a main determinant of mortality, is an important index, and it is also one that is well understood by the patient who thus has a good incentive to control it. The table shows that about 25 per cent of the group were less than 40 years old and a further third between 40 and 49. This is important, for early diagnosis of minimal and asymptomatic signs may well prove to be the key to prevention; indeed all through these figures, there is an emphasis on what is found in the younger men. Over-all, one third of the group were 10 or more per cent overweight, and so were a significant 8 and 9 per cent of the younger ones.

Table II shows the findings for blood pressure, and here again a significant proportion of the "youngsters" had a raised diastolic pressure. Physicians argue about the significance of a randomly raised pressure reading but two points are, I think, relevant. First, if the pressure goes up under the conditions of the interview, it is likely also

TABLE II—BLOOD PRESSURE BY AGE

Age	*Under 40*		*40 to 49*		*50 to 59*		*60 or over*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Number	465	100	722	100	647	100	166	100	2,000	100
Normal B.P. (systolic 150 or less *and* diastolic 90 or less)	390	84	541	75	379	59	69	42	1,379	69
Diastolic 90 or less	416	89	586	81	451	70	104	62	1,557	78
Diastolic 91-100	37	8	81	11	120	19	41	25	279	14
Diastolic over 100	12	3	55	8	76	11	21	13	168	8

TABLE III—BLOOD CHOLESTEROL BY AGE

Age	*Under 40*		*40 to 49*		*50 to 59*		*60 or over*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Numbers	465	100	722	100	647	100	166	100	2,000	100
Cholesterol 270 or less	387	83	544	75	458	71	116	70	1,505	75
Cholesterol 270-300	41	9	99	14	92	14	36	21	268	14
Cholesterol 300 or more	37	8	79	11	97	15	14	9	227	11

to go up under the tensions and problems of life. Second, even if no immediate therapeutic steps are taken, these men ought to be closely watched, especially if they are under 50.

Cholesterol has recently been shown to be a major determinant of susceptibility to coronary disease and, as methods of reducing it are becoming available either by diet or by means of a new drug, clofibrate (Atromid S, I.C.I.), which is generally available in Britain, the measurement of cholesterol becomes a useful index. Table III shows our findings in this connection in relation to age. We take a level of 270 mg. per cent as being significantly elevated, and the table shows that a quarter of the whole group and 17 per cent of the under 40 and 25 per cent of those under 50 had raised cholesterol levels.

It is also useful to be able to relate raised cholesterol to other factors. Table IV shows this in relation to weight and blood pressure. Although a higher proportion of the obese have high cholesterol readings, a significant 16 per cent of the lean and possibly tense, similarly show elevation. Again, an appreciable proportion of those with a raised blood pressure also have a high cholesterol level.

TABLE IV—WEIGHT BY CHOLESTEROL AND BY BLOOD PRESSURE

Weight	*10% or more underweight*		*Average weight*		*Between 10% and 20% overweight*		*More than 20% overweight*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Number	208	100	1,225	100	378	100	189	100	2,000	100
Cholesterol over 270	34	16	306	25	106	28	49	26	495	25
Raised blood pressure (systolic over 150, diastolic over 90 or both)	50	24	337	28	147	39	86	46	621	31
Diastolic pressure over 100	10	5	70	6	48	13	36	19	164	8

TABLE V—CIGARETTE SMOKING BY AGE

Age	*Under 40*		*40 to 49*		*50 to 59*		*60 or over*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Numbers	465	100	722	100	647	100	166	100	2,000	100
Never smoked	188	40	225	31	200	31	53	32	666	33
Given up	54	12	148	21	139	22	46	28	387	19
1 to 19 per day	105	23	167	23	124	19	40	24	436	22
Over 20 per day	118	25	182	25	184	28	27	16	511	26

As there is a growing volume of evidence from the Framingham, Mass., survey and from other surveys to show that these adverse factors are additive in terms of coronary risk, it is well worthwhile to try to isolate and deal with them clinically. Interestingly, too, we have some figures that show that 30 per cent of heavy smokers (20 or more cigarettes a day) have raised cholesterol levels, as against 19 per cent of the "never smoked" group. This could be one of the reasons why smokers carry an increased coronary risk.

Cigarette smoking presents one of the main challenges to health education and preventive medicine. Table V shows the smoking habits of our group. Here it is seen that half of them are now no longer smokers. I suspect that this is a higher proportion of abstainers than in a comparable group in the United States. It is also significant that half the smokers (a quarter of the total) are heavy smokers and that

the incidence is higher in the younger men. Wisdom comes with either age or coughing. Interestingly, 18 per cent of the smokers and only 10 per cent of the nonsmokers showed a significant reduction in vital capacity. To be fair, it should also be added that we found much less clinical chronic bronchitis than would have been present in a group of persons from social classes III to V.* This presumably bears out the suggestion that other economic and environmental factors play a part in our "English disease."

We also found a gradient of hemoglobin levels between smokers and nonsmokers; the former had slightly higher (3 per cent) levels than nonsmokers. We suspect that this is due to a compensation for the formation of carboxyhemoglobin. This finding was significant at a high level of probability.

Space precludes individual presentation of our more detailed clinical findings but, briefly, 35 per cent had abnormal x rays, 22 per cent abnormal cardiograms, and in 21 per cent there were significant new clinical findings that would benefit from treatment. These latter covered the whole range of textbook medicine from esoteric but sinister tumors to the common hemorrhoids. We found a raised rate of blood sedimentation in the absence of acute infection, and considered it symptomatic of a disease of poor prognosis. We also found that the straight x-ray film of the abromen produced a rich yield of clinically unsuspected disease and we strongly recommend its routine use as a valuable screening procedure.

All this can be roughly but usefully summarized by saying that we found something new and previously unsuspected in about a third of the persons seen, and that the yield was as high in the young as it was in the old.

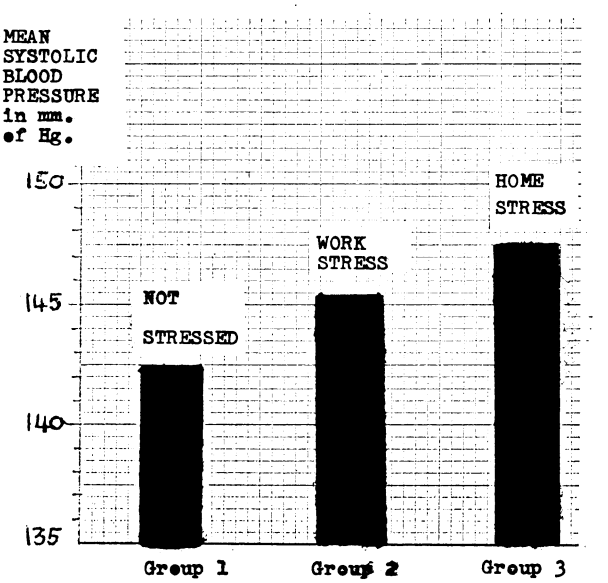
Stress—a general sign of imbalance of the personality/environment equation—is notoriously difficult to assess accurately, particularly when the patients are seen by a number of doctors. But we have tried not to see stress in every case, and we have made some evaluation of the problem; the results, perhaps too good to be true, are shown in charts 1, 2, and 3. It is interesting and encouraging, however, to see how stress does relate to other behavioral "undesirables."

We do not seem to have the same problem as you do in the United

*The Registrar General in Great Britain has graded people into five social classes: 1) professional and managerial; 2) minor managerial; 3) white-collar workers and skilled laborers; 4) semiskilled laborers, and 5) unskilled.

CHART 1—EFFECT OF STRESS ON SYSTOLIC BLOOD PRESSURE IN 2,000 MALE EXECUTIVES

For difference between groups 1 and 2 $t = 2.47$, $P < 0.02$
For difference between groups 1 and 3 $t = 2.36$, $P < 0.02$

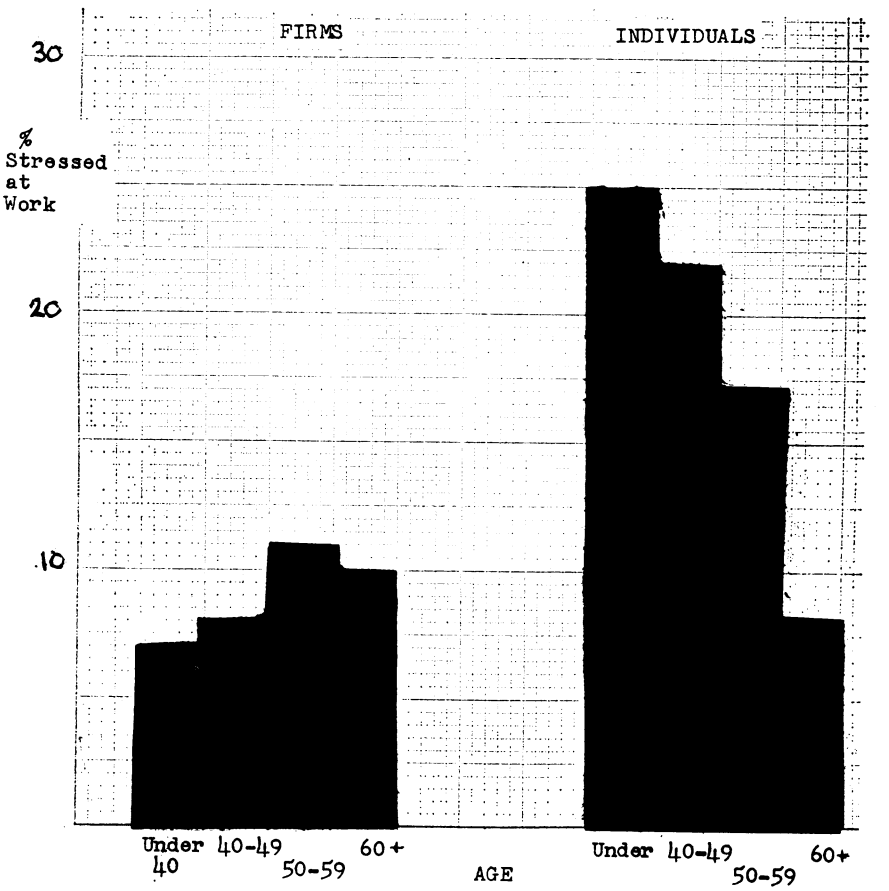


States in the case of alcoholism, but accurate figures are hard to get. We detect few alcoholics and do not have as many as 10 a year referred to us, but we do warn a higher number to reduce their consumption. Six per cent of our group were regarded as heavy drinkers—they took more than six drinks a day.

Four things stand out from this experience, and I am sorry that there is not time to split clinical hairs and discuss individual diseases in more detail:

First, the provision of a forum to which a busy and often a harrassed and bemused man can come and discuss his environmental problems will be of the greatest value to him. Also, given the right terms of reference and the right degrees of mutual confidence, a great deal can be done to influence the climate within the organization and within the man's home. This is difficult or almost impossible to quantify but the feedback we get from executives whom we call company chairmen—presidents to you—is most encouraging, and I am sure that they would not come back if they felt it a waste of time.

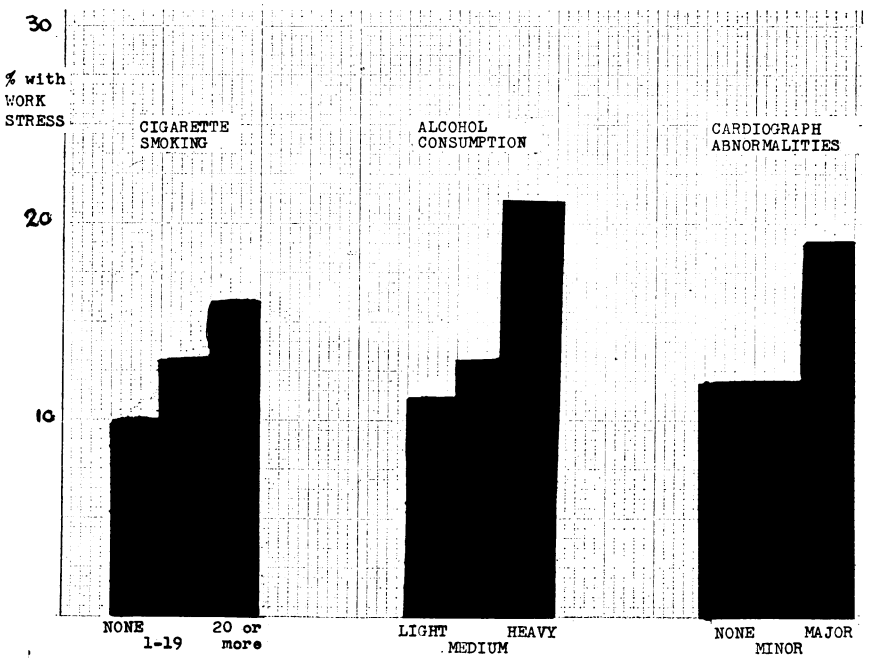
CHART 2—WORK STRESS IN 2,000 MALE EXECUTIVES



Second, the intrinsic value of the screening procedures. It has been estimated that there is "a hidden iceberg" of disease in the community. Not only will screening reveal cases, it may also, by so doing, reduce the queues in our doctors' surgeries. What I think most significant in this respect is the number of findings in the younger people. Many of these are going to be felled by a coronary while in their prime. They must be identified and labeled so that we can try to deal with their stresses, treat their hypertensions, and reduce their cholesterol levels. They don't know that they are in danger, and this would seem to be the only way to help them.

Third, perhaps the most important point, is the value of reassurance.

CHART 3—FACTORS RELATED TO STRESS IN 2,000 MALE EXECUTIVES



This, again, one cannot quantify. Provided one does not present oneself up as a peddler of longevity, I think it is fair to tell a man who has been through all these tests and examinations that, insofar as you can see, he is standing up well to a demanding life. And I think he and his company are entitled to be pleased with this news.

Fourth, we collected a team of doctors with little previous experience in this work and not much experience of industry. Some were quite skeptical at the outset and were perhaps primarily tempted by the money, the leisurely method of working, and the pleasant conditions. But their interest grew, and when they began to get their patients back a year or more later, their enthusiasm knew no bounds. They found for the first time that they got as much satisfaction from the gratitude of and the improvement in their healthy patients as they had derived previously from treating acute disease.

So much, then, for what we first found. Did we do any good or were we merely amusing ourselves? As I have already said, much of what we are trying to do is hard to quantify. It takes 10 years to

demonstrate trends in cardiovascular disease and we have not yet been going three, so it is really too soon to tell. But when you invited me to talk to you, I did initiate a preliminary follow-up of all patients—and this, of course, is the wrong word for these people—who had been seen at least a year before Easter 1966. Let me remind you here that we are not dealing with a closed group from one company but with individuals and firms from all over the country.

A total of 1,498 patients were retrieved. Of these, 929 (44 per cent) had been back for a second examination while 769 (47 per cent) replied to a follow-up questionnaire. In the questionnaire, they were specifically asked what steps had been taken to remedy the problems or conditions that had originally been pointed out to them and, if so, whether they had either benefited or been treated successfully. They were also given an opportunity to comment on the over-all value of the procedure.

Sixteen (1 per cent) made hostile or unfavorable responses, usually because they misunderstood what was said, or because they found that we were not able to forecast all their medical woes. We received no replies from 136 (8 per cent) but as the questionnaire was sent out over the holiday period, a few replies are still trickling in. There were also nine deaths, two of which were from coronary thrombosis. Combining the two main groups, we got follow-up information from 1,498 patients; 13 of these (less than 1 per cent) had suffered a nonfatal coronary thrombosis; 106 (7 per cent) had a significant deterioration in their health.

The results of this follow-up can be summarized as follows, and it is emphasized that the period involved is a minimum of one year but often it was longer.

Weight. One hundred and forty-eight (10 per cent) of the men were underweight when first seen, 30 per cent managed to gain, and 7 per cent lost weight; 965 (64 per cent) were within the normal range (Metropolitan Life standards); 24 per cent gained and 19 per cent of them lost weight; 267 (18 per cent) were 10 to 19 per cent overweight; 11 per cent of these gained, and 48 per cent lost weight; 118 (8 per cent) were seriously overweight; 10 per cent of these gained, and 58 per cent lost weight as instructed.

Smoking. Of the 1,498 men, 712 (about half) were cigarette smokers. Nine per cent of them stopped, 22 per cent reduced their smoking significantly or changed to a pipe or cigars, 67 per cent stayed the

same, and 20 per cent increased. Interestingly, only 28 per cent of the 222 who reduced or stopped smoking gained weight, and 22 per cent lost weight over the same period. This is an encouraging result, and one that is better than the average antismoking clinic can claim.

Clinical. Incipient or current clinical disease was found in 664 (44 per cent) of the group. A total of 820 separate or individual diagnoses were made. Of these, 32 per cent were cardiovascular, 36 per cent major, and 32 per cent minor illness. In the cardiovascular group, 44 per cent remained the same, 52 per cent improved, and 3 per cent deteriorated. In the major illness group, 57 per cent remained the same and 3 per cent deteriorated. The rest (40 per cent) were improved by treatment. Patients with raised cholesterol levels: of 77 whose levels were originally over 300 mg. per cent, 35 per cent remained the same, 60 per cent improved, and 5 per cent got worse; 44 per cent of the 98 hypertensives remained the same, 51 per cent improved, and 5 per cent deteriorated.

In terms of clinical treatment, we have a great disadvantage, as indeed you have too, in not being ethically able to initiate treatment. All we can do is to make a recommendation to the patient's personal physician. Not all physicians agree with us about the use of clofibrate (Atromid S, I.C.I.) for raised cholesterol levels or about the indications for hypotensive therapy.

But on the whole and with regard to these limitations, the results of treatment can be regarded as encouraging, particularly as in so many cases the maintenance of the condition found can be called a success.

As I emphasized at the outset, our main interest lies in helping to balance the personality-environment equation—a feat that is almost impossible to assess really objectively or honestly. But we have made an attempt to measure the extent to which our over-all advice was taken.

Apart from the medical factors already listed, 1,342 separate items of behavioral advice were given to 1,015 (63 per cent) of these men; 750 (56 per cent) took or acted on this advice. No one really knows how often patients in fact "do what they are told," and I suspect that this is a fair average for what usually pertains in most consultations between a doctor and a patient, at any rate in England, where doctors are largely free. Of those who took this advice, 64 per cent regarded it as having been of benefit: an honest if not particularly encouraging answer.

TABLE VI—DAYS OF CERTIFIED INCAPACITY IN THE PERIODS SHOWN, ANALYZED BY CAUSE
(IN MILLIONS OF DAYS)

	Males						*Females*					
	Total days recorded for sickness and injury benefit	*Sickness benefit*			*Injury benefit*		*Sickness benefit*			*Injury benefit*		*Total days recorded for sickness and injury benefit*
		*Psycho-neuroses and psychoses**	*Accidents**	*Other causes*	*Accidents*	*Pre-scribed diseases*	*Psycho-neuroses and psychoses**	*Acci-dents**	*Other causes*	*Acci-dents*	*Pre-scribed diseases*	
1953/54	203.88	13.20	12.66	160.90	15.92	1.20	8.94	3.29	81.65	2.11	0.42	96.41
1954/55	202.84	14.40	12.46	159.65	15.26	1.07	7.37	3.28	79.61	2.08	0.34	92.68
1955/56	204.48	15.18	12.98	159.53	15.79	1.00	9.94	3.38	74.27	2.34	0.29	90.22
1956/57	195.66	15.56	12.76	151.23	15.22	0.89	9.96	3.23	69.68	2.25	0.32	85.44
1957/58	218.14	15.77	13.26	173.66	14.67	0.78	9.90	3.25	76.54	2.01	0.23	91.93
1958/59	216.07	16.47	14.38	167.91	16.46	0.85	10.15	3.23	70.35	2.24	0.26	86.23
1959/60	213.37	17.00	15.73	162.25	17.50	0.89	10.31	3.50	66.14	2.31	0.30	82.56
1960/61	216.67	16.34	15.66	167.88	16.03	0.76	9.92	3.39	65.76	2.33	0.28	81.68
1961/62**	217.47	16.00	16.00	168.00	16.79	0.68	10.00	4.00	66.00	2.36	0.30	82.66
1962/63	230.01	16.77	17.19	178.83	16.62	0.60	9.77	3.72	62.58	2.35	0.27	78.69
1963/64†	230.73	17.66	18.80	175.29	18.36	0.62	10.14	3.64	61.42	2.52	0.28	78.00

*Groups of C 19 and C 50 in the *International Statistical Classification of Diseases, Injuries and Causes of Death* issued by the World Health Organization in 1957.

**The sickness benefit figures are estimates.

†Provisional figures.

Source: Ministry of Social Security, United Kingdom.

TABLE VII—SICKNESS BENEFIT
*Age Standardized Inception Rates**

	Men	*Women*
1953/54	32.30	34.85
1954/55	34.44	37.96
1955/56	35.23	38.11
1956/57	32.38	36.04
1957/58	45.40	50.82
1958/59	39.38	42.40
1959/60	36.48	40.18
1960/61	40.06	44.00
1961/62	Not available	
1962/63**	40.69	43.68

*Estimated number of spells of incapacity per 100 persons at risk that would have been recorded had the age distribution of the population at risk remained as in 1951.
**Figures for 1962/63 are based on age at end of period; those for earlier years are based on age at about the middle of the period covered.

Source: Ministry of Social Security, United Kingdom.

These rather bald figures are inconclusive and perhaps confusing, but I think that you will agree with me that one of the greatest satisfactions in this type of work is to be able successfully to improve an individual's attitude to his work or to a chronic domestic discontent.

I need not remind you of the factors that are now believed to contribute to coronary thrombosis. You know better than I do the various figures relating the incidence of this condition to these factors, both separately and in conjunction. I think it is valid to emphasize to the individual that most of these factors are behavioral and thus a reflection of the individual's personality-environment equation, and that the remedy lies in his own hands. It is only his understanding and motivation that can deal with them, even if this involves the intelligent consumption of drugs.

This leads me to a word on motivation as a reflection of individual and community attitudes to work and sickness. With the development of medical and other welfare benefits in England and in Europe, there is now a growing realization that although death rates are either tending to decrease or remain the same, so-called "sickness" absence is rising alarmingly.

Table VI shows the figures for England for the last 11 years. And these are certainly an underestimate, for they refer only to absences of

TABLE VIII—TIME OFF WORK BY AGE

Age	20 to 39		40 to 59		60 to 69		Total	
	No.	%	No.	%	No.	%	No.	%
7 days or less	324	92	1,529	90	492	85	2,395	89
8 to 14 days	17	40	84	5	33	6	134	5
15 to 31 days	6	2	46	3	26	4	78	3
Over 31 days	6	2	39	2	30	5	75	3
Total	353	100	1,748	100	581	100	2,682	100

three or more days (those that require a National Health Service certificate on which to draw benefit). It is worth emphasizing that less than 1 per cent of this absence is attributed to designated industrial disease. Table VII shows exactly the same trend in terms of spells of sickness, i.e., the number of *events* rather than the days lost.

We have recently, for different and nonmedical reasons, sent two other questionnaires to members of our institute. From these we obtained some information about the absence of company directors because of sickness. These are shown in Table VIII, which I think you will agree show a striking and significant difference from the over-all national experience I have just detailed. Relatively few executives take an annual holiday of more than three weeks (less than many European workers get under union agreements); presumably they can be away from work whenever they wish, but they carry on in spite of the various disabilities we have outlined. They would appear to be far more highly motivated than the average worker; this in spite of the fact that the British business executive has recently been shown to be the world's least well-rewarded entrepreneur.

When an individual decides to "go sick" and to seek medical advice, he is, subconsciously perhaps, opting out of his role of worker and wage-earner into a role of an invalid aided by grants and supported by a welfare state: a seemingly respectable and socially acceptable role that brings him a great deal of sympathy. This type of behavior was recently described by our leading industrial journalist as a "week off to tile the bathroom." The fact that the average citizen is both prepared to let his work team down by reporting himself sick and to tolerate this behavior in others is, to my mind, a manifestation of a major social malaise; it represents a crisis in motivation and responsibility.

It is also a situation gloomily reflected in our present economic state. Reducing this load of absenteeism by as little as one fifth would not only save money but go a long way toward solving our crisis in productivity. This situation, which is in fact worse in France and Germany than it is with us, represents a major breakdown in interpersonal understanding between the employers and the employed, and between both of them and the whole community of which they are an inescapable part.

This is, I think, the main challenge that faces us as a community and as doctors within this community. Because of our skills, training, and special interests, we are uniquely qualified to deal with this problem. We can do this, I submit, only by looking at the "sick" individual in relation to his environment and to concentrate on why he is ill rather than on what is physically wrong with him. We must also concentrate on early or presymptomatic diagnosis. In so doing, we shall have to abandon our predilection for industrial toxicology and physical contamination and emphasize the underlying causes of illness. If one may coin a rather horrid phrase, we must become psychosocial hygienists or ombudsmen.

ACKNOWLEDGMENT

I should like to record my great appreciation of the help and encouragement I have received from Dr. Leon Warshaw, president of the New York State Society of Industrial Medicine, not only in revising this paper but in introducing me, and indeed many others, to all that is best in occupational medicine in the United States.

Without the help and enthusiasm of my colleagues at our Medical Centre who saw the patients, and of Dr. Pincherle, research fellow of the British Heart Foundation who worked out the figures, this paper could not have been presented. To all of them I am very grateful.