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EMPLOYMENT AND HEART DISEASE

PROCEEDINGS OF THE
FIRST WESTERN CONFERENCE
MARCH 18 AND 19, 1955

PRESENTED BY THE
CALIFORNIA HEART
ASSOCIATION AND
ITS AFFILIATES
IN COOPERATION WITH
THE INSTITUTE OF
INDUSTRIAL RELATIONS
UNIVERSITY OF CALIFORNIA

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University of California, Berkeley**

Berkeley, 1955

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CONFERENCE PLANNING COMMITTEE

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note: positions and affiliations listed are those held by
members of the planning committee at the time it
functioned in 1955.

INTRODUCTION

The immense improvement in working conditions in America in the past 20 years has brought with it unique problems.

We have achieved a degree of employment security unmatched in our previous history. In addition to substantial social security coverage, in many areas significant numbers of workers of all classes are additionally covered by group insurance and retirement plans.

Yet this regularization and formalizing of the employment relation has operated, unfortunately, to create large classes of people who are marginal workers in good times as well as in bad.

Actuarial considerations, completely irrelevant to the ability of a worker to do a job which may be going begging, are often heavily weighted in the mind of the man who is doing the hiring: his pension plan or insurance contract will not permit the initial employment of men over 45 (or 40 or 35, or in rarer cases, 30) or people with a long list of health conditions¹ which may not be disabling.

The problem of the older worker has been admirably explored in a number of conferences. The problem posed by those with spectacular physical handicaps has claimed an immense amount of popular attention. This conference, for the first time in this area, focuses the spotlight on people with diseases of the heart and circulatory system (a technical classification which comprises, for the most part, high blood pressure and hardening of the arteries.)

There are at least ten million people with heart or circulatory disease of varying degrees of seriousness in the United States, and over 50% of all deaths each year result from these diseases. Somewhere in the neighborhood of 4,000,000 of these people are in the labor force, with about 350,000 of these workers in California.

Estimates of the yearly number of man-days lost through heart diseases run as high as 170 million, with a probable wage-loss of more than 2 billion dollars. (No estimate of the cost to industry, such as the loss of productivity and the cost of training replacements has been made that we are aware of.) California experience in 1949-50 (covered employment and State disability insurance plan only) showed 27,160 heart disease

disability claims with 1,810,200 days of benefits paid.² Roughly applying these figures to the total labor force at that time (without weighting for the generally higher age of workers in uncovered employment) we arrive at a total of 45,000 workers temporarily disabled by some form of heart disease, with some 3,000,000 man-days lost.³ Heart and circulatory diseases were the largest single cause of disability,⁴ and the working days lost per claim was disastrously high--67 days on average.

Data from the State Department of Social Welfare indicate that "cardiacs" comprise about 19% of the 6,000-family caseload receiving assistance under the Aid to Dependent Children program because of incapacitated fathers.⁵ No data are available on the number under the general relief programs in the counties. The State Bureau of Vocational Rehabilitation estimates that 32% of disabled who will ultimately be eligible for old age and survivor insurance will be cardiac cases.⁶

.....

These facts on the seriousness of the heart disease problem are put forward only to show it in its true light, as a problem intimately involving industry, labor and government. For heart disease is not well-known as an industrial problem: most people think of it as primarily a disease of old age and "heart attacks" as always certainly--and usually quickly--fatal. On the contrary, as we have seen, about four cases out of ten are in the active labor force--for heart diseases affect all groups from infancy to extreme old age (see charts in resource material.) And not only are those who suffer from the various heart diseases part of the industrial population before they have the "heart attack" which is the acute phase of the disease, but they remain so afterward. The majority of those who have had even serious heart attacks survive them. About eight out of ten who survive can go back to work, often at the same job they left. Typical is the experience of the Consolidated Edison Company of New York, which studied 896 employees whose heart conditions were serious enough to cause absence from work or change of assignment in 1952.⁷ The group averaged 45 years of age and was regarded at peak productivity by the company.

Total		896
Died	36	66
Retired	<u>30</u>	
Returned to work		830

Of 66 members of this group who had suffered an acute coronary thrombosis--what people usually think of as "a heart attack"--only 15 (22%) had died, while 46 (69%) had returned to work.

.....

The problem, then, is large--it is a true industrial problem, primarily a problem of giving people a chance to get back to work, and not of caring for invalids. (Incidentally, when "heart cases" do get back on the job they are, like other "handicapped" workers, a trifle more productive at similar jobs than unhandicapped workers, according to the United States Department of Labor (Hammond Study.)

While recovery from a heart attack can be expected, and ability to perform adequately on the job is also a normal prospect, it must not be thought that heart disease is "no worse than a bad cold." "Heart capacity"--the heart's working power, its ability to deliver more than normal horsepower over a period of time without symptoms--is often lowered. The Edison Company's experience showed also that it was thought best to place about 600 of the 830 returnees for some length of time at duties which were in some manner limited. However, the group was regarded as in all respects still a productive part of the company's labor force--they were not on "made" work, but were restricted merely as to heavy lifting, excessive stair climbing or walking, driving, and any emergency work. Indeed, the doctor reported confidently that, "We at Consolidated Edison have shown that the cardiac can work. The keys are an adequate medical service in industry, coupled with selective placement. They are worth using.....the problem of the cardiac in industry is too big and too real to be sidestepped or ignored. In terms of human happiness, of productivity, and dollars and cents, the stakes are high enough to warrant careful consideration."

¹For instance, a 1953 Alameda County survey (see resource materials in this workbook) which covered 14 plants of various sizes, showed 12 of them with pre-employment physical examinations required. Seven of the 12 required also periodical physicals after employment.

²Abstracts of State Department of Employment data furnished by Bureau of Chronic Diseases, State Department of Public Health.

³The last month (May 1953) study by the State Department of Employment, annualized, indicates disability claims for a year under both private and State plans of 45,000, payments to claimants of \$19,000,000, and days lost of 3,000,000--all figures excluding uncovered employees, who were a smaller number in 1953 than in 1949-50.

⁴In contrast, "heart trouble" is a much smaller problem under the Workmen's Compensation Act than any one of a number of other causes of lost time. In 1954, only one in 330 lost-time work injuries was assigned to "cardiovascular strain or disease." While one in six of 1954 fatalities was reported as involving such strain or disease, the number (121 heart deaths) was so small, in proportion to covered employment, as to be inconsequential.

⁵"Medical Study of Incapacitated Fathers Receiving Aid to Needy Children" - Donald S. Freedman, M.D., Sacramento, March, 1954.

⁶Comments from a point in time study by California State Department of Education, Bureau of Vocational Rehabilitation, December 1, 1954.

⁷"Heart in Industry" conference proceedings, New York Heart Association, Inc., 1954. Speech of Dr. S. C. Franco, Associate Medical Director, Consolidated Edison Company of New York: "The Cardiac Can Work"

OPENING GENERAL SESSION

William H. Thomas, M.D.

Chairman, Cardiac in Industry Committee,
California Heart Association

Arthur M. Ross, Ph.D.

Director, Institute of Industrial Relations,
University of California, Berkeley

Arthur R. Twiss, M.D.

President, California Heart Association

Welcome by WILLIAM H. THOMAS, M.D., Chairman, Cardiac in-
Industry Committee,
California Heart Association

It is a pleasure to welcome you to our first statewide conference on employment and heart disease. Your attendance attests to the fact that you agree with us that there is a problem to the employment of persons with heart disease. I doubt that any of us realize the magnitude of the problem at the present time, nor the staggering potential of the problem for the future. As you all know, at least one person in 20 actually has heart disease, and over half of us in this room will die of cardiac or circulatory disease. But more important than our mode of exit from this life is the frequency of premature disability and death which heart disease produces.

To seek a solution to the economic problems of the heart patient and his family we have invited many individuals who come from divergent fields but who have the common interest of helping the person with heart disease. Now we are often asked, how would each of these groups benefit from the solution of these problems? Of course the individual worker with heart disease would benefit by being fitted into a job which makes him an economic asset to himself and his employer, and an asset to his community and his family. The employer would benefit by retaining the services of a trained and loyal employee. He would also benefit from decreased taxation as his share of welfare payments are decreased. But at the same time he must be protected from loss by increased insurance and disability costs. The unions would benefit from proper placement of their members but must face new problems of seniority which this will create.

In planning this conference we sought the help and guidance of the Institute of Industrial Relations of the University of California, and we have been extremely pleased with our association with the Institute and feel that its staff has provided a great deal of the experience and know-how in planning this conference.

Remarks by ARTHUR M. ROSS, Director, Institute of Industrial
Relations, University of California

I don't purport to know anything about the subject of heart disease, but I do wish to emphasize the importance which the University attaches to this conference. From the standpoint of the labor force, which is a subject that interests us, and of efficient utilization of our labor resources, the subject of your conference is an all important one. It adds

to the importance that we are now in a situation where we have a great need for expanding production and expanding employment and that our actual labor force potential, for the next few years to come, is abnormally low.

The number of young people who will enter the labor force, as a result of reaching working age during the next few years, is low because of the low birth rate 15 to 20 years ago. At the same time we have never needed so much to increase steadily our production. And we have never so badly required the full participation in our economic activities of all those who are able to work.

In another sense, your conference seems extremely important to us because of the significance of integration into economic society on the part of our active and potential producers. In all types of economic society there is no substitute, in terms of personal adjustment, for recognition that one is a useful and valuable member of the labor force.

The type of conference which has been arranged by the California Heart Association and which we have been privileged to give our assistance to is ideally suited to the problems you have before you. This is a conference which will not only feature addresses on some of the major problems, but also there will be at the center of the conference a series of workshops. Since the problem of employment of persons with heart disease is in the experimental and developmental stage, it seems to me that there is everything to be said for this kind of workshop, where experience can be traded, where facts and opinions can be examined, and where there is no assumption that all the answers are already at hand.

When we consider the problem of employment and heart disease, good intentions will not suffice. There are real, knotty, thorny problems that have to be faced, analyzed, and overcome-- problems of the same type as are faced with respect to the employment of persons with other types of handicaps. What types of employment are suited? What types of employment are not suited? What special provisions must be made to accommodate persons with heart disease as useful members of our economic society? What adjustments have to be made in our concept of practices of workmen's compensation, unemployment compensation, and other types of special legislation? Because of the importance of this conference we at the University are pleased to make available our facilities.

Remarks by ARTHUR R. TWISS, M.D., President, California
Heart Association

As spokesman for the California Heart Association, I certainly take great pleasure in welcoming you to this first statewide conference on heart disease and employment. It has long been recognized that barriers to the employment of the cardiac in industry really do exist. The California Heart Association has been studying this problem for many years, as you will notice from the Lockheed and other reports that will be given to you at the conference today. This interest in the worker with heart disease is not limited to our own state organization, but it is a basic policy of the American Heart Association.

The various Heart Associations, national, state, and at the county level, have another interest that is very close to our medical hearth, and that is research. You may not know, but most of the causes of heart disease have taken quite a beating by the medical profession. We have practically eliminated thyrotoxic heart disease, and syphilitic heart disease is now a rare disease. We think we have the correct approach to the prevention and therapy of rheumatic fever heart disease, and through our latest operative techniques we have greatly improved our attack on congenital heart disease. In fact, we have even learned perhaps to prevent some congenital heart disease by keeping the pregnant mother away from cases of German measles for the first three months, or perhaps attenuating the attack of German measles with gamma globulin. Cardiovascular research must concentrate on the two large remaining causes of heart disease--high blood pressure and coronary arteriosclerosis.

We know, as Dr. Thomas mentioned, that over half of the people die of heart disease. In major life insurance company statistics, two-thirds of the patients died from heart, blood vessel and renal disease. That's a big problem. It puts the problem of heart disease into the number one bracket in this country. And I would like to urge that you support your various Heart Associations, not only on the industrial front, but also on the broad economic front of cardiovascular research.

a panel discussion

BARRIERS TO THE EMPLOYMENT OF THE CARDIAC

Chairman: *Lester Breslow, M.D.*
Chief, Bureau of Chronic Diseases, California
State Department of Health

Discussants: *Ralph Adriansen*
Area Occupational Analyst, California State
Department of Employment

Daniel C. Atwater
Personnel Manager, Marchant Calculators
Incorporated, Emeryville

Harold A. Hatch
President, Argonaut Insurance Company,
San Francisco

Arthur R. Hellender
Director, CIO Community Services of Northern
California

James H. Thompson, M.D.
Secretary, California Society of Internal
Medicine

PANEL

BARRIERS TO THE EMPLOYMENT OF THE CARDIAC

Introduction by LESTER BRESLOW, M.D., Chief, Bureau of Chronic Diseases, California State Department of Public Health

The title of this first panel indicates that the conference has already taken a stand on the issue--namely, that there are barriers to employment. Our job this morning is not to find out whether there are barriers to employment, but rather to specify what they are.

In the area of relationship between medicine and society very few other questions occasion such sharply divergent views as this question of the cardiac and employment. One can get the most vociferous expressions of opinion on this question in medical circles, labor circles, employment circles, insurance circles, and in governmental circles. As is oftentimes true where one encounters such sharply divergent views (and held unfortunately too frequently from quite narrow points of view) there is more heat than light in the attitude. We are quite free in expressing our attitudes in our own circles where they are not challenged by presentation to groups that have opposing points of view. We are particularly free in putting out these views when they are not being challenged by any facts. The purpose of the California Heart Association in preparing this conference is to bring all of these differing viewpoints, with strong representation of each, into a general conference both here on the platform during the several sessions and in the individual discussion groups. We hope for a full exchange of opinion about the problems of barriers to employment.

In addition, the California Heart Association, as indicated by Dr. Thomas and Dr. Twiss, during the past few years has undertaken several studies to get at the facts of the matter. It's amazing how strong opinions have developed in the absence of very much factual information. The California Heart Association has undertaken several studies, reports of which will be given during the session here today and tomorrow. So, two things are sought in this conference; first, an exchange of viewpoints; and second, a presentation of what facts we have about the problem in California.

We're particularly fortunate in this panel in having able

spokesmen from the fields of employment placement, management, insurance, labor, and medicine. This panel is also fortunate in having the responsibility merely of stating the problem. We can throw out 30 or 40, or any number of barriers to employment and ask the next platoons, this afternoon and tomorrow, to take over and provide the answers. We will have utter freedom in stating the problem. We have no responsibility--at least this morning--for trying to answer it. But how we state the problem, how we formulate the questions, really is very important when we try to answer them. We all share the responsibility, really, to do it.

Remarks by RALPH ADRIANSEN, Area Occupational Analyst, California State Department of Employment

There is no data available on the extent of the problem of the employment of the cardiac, or the true nature of the obstacles. What I am giving you is certainly nothing more than opinion. I don't think that we have any statistics to report as such. However, the experience throughout seems to be fairly similar and I think we can group them into four categories.

Our problem initially is complicated by the fact that we don't deal with an individual who simply has a cardiac disability. Frequently a man will come in and apply for work--he is perhaps a member of a minority group, perhaps a negro; he is over 50; he has had to change his occupation from perhaps a heavy occupation to something light and the possibilities of getting him employed are not related to cardiac disability alone as a particular problem. A more pressing problem is his age and other social barriers. That's the first problem. The general opinion among our group is that most of the applicants with heart disease who come to our offices are older men--men over 45, usually with industrial type of experience. This may not be at all typical of the general situation of course, but it seems to be true of our offices. So we say, the first obstacles are these complicating factors: Over-aged workers, people with no skills, people who have not only a cardiac disability, but they have other disabilities which render them much greater problems.

The second obstacle is, what we call, employer resistance to hiring handicapped people in the first place. It is a very touchy situation to try to sell the employer on handicapped workers because he gives us the story that the insurance companies first of all won't permit him to do so. That breaks

down sometimes later on, and he admits that the practices are such that it would be a great hazard. Referees will rule against him when an injury, or rather an industrial commission case comes up, and so on. Since that's going to be discussed later, we can dismiss that one.

The third obstacle is the doctor's somewhat confusing job prescription for many of his patients. Many doctors seem to think in restricted terms; that is, when they describe light work they have a tendency to run to elevator operator jobs and watchman jobs. The problem in Santa Rosa, we found, was that there were only seven elevators in town and before long we were going to run out of elevator operator jobs. The problem there, of course, is getting the physician to state realistically the capacities of the individual--what he really can do. In specific terms: Can he walk without restriction? Can he climb stairs? Can he lift--if so, how much, how frequently? And a little more realistic approach to the capacities of the individual. Because when we are confronted with a job opening we have to somehow match that capacity and the demands of the job --both the physical demands where those are factors and the working environment. Frequently a job is perfect in every respect except that the man will have to walk up a flight of stairs and can't do so. It's environment, rather than the job situation here.

I think the other barrier lies within the applicant himself. Some of these applicants seem to be terrifically frightened of any activity that is above a minimum level. We get a report from a doctor that he can do certain types of work, or that he could even return to fairly modified aspects of his old work, but the individual is a little frightened in inviting any further disaster. So he is inclined to want to take it awfully easy. In fact, he is not particularly anxious to work--he isn't well motivated. I don't know where this motivation should come from, but in a competitive labor market, of course, we can't do much of a job of motivating.

I think the final obstacle to the employment of the cardiac--of the applicant with a cardiac disability, or any handicapped applicant--is the labor market situation. If I have been given the correct information at the present time we are experiencing a fairly stable economy. However, the labor force is expanding, which means that the few jobs that are occurring are heavily competed for. The older worker, the handicapped worker, the younger worker without experience, are having more and more difficulty in obtaining employment

in the first place. It's the reality with which we are dealing.

Remarks by DANIEL C. ATWATER, Personnel Manager, Marchant Calculators Incorporated, Emeryville

Before I begin talking about barriers to employment of the cardiac, I should say that most of my experience has resulted from employment of a variety of other types of handicapped persons, rather than from employment of the cardiac as such. Probably the problems involved are similar for all types of handicapped. During the war, and in the period just following the war, our positive policy of employing the handicapped resulted in our receiving a presidential award and the American Legion Certificate of Merit for our efforts in this direction. Our only concern in the employment of these people was whether or not the particular individual would be able to do one of the jobs we had available.

This policy of ours did result in some problems, and I'd like to describe a few of them. When it was known that we were hiring handicapped, we had handicapped persons referred to us from all quarters - from churches, schools, a variety of private agencies, and all of the government agencies. In this connection, I have a little bone to pick with rehabilitation centers and some of the other agencies who refer handicapped persons for jobs. I don't think they are too realistic in their approach. The agencies are so sure that they have analyzed a person and that that person is now capable of doing the job, that is in our plant--and yet with few exceptions, none from the agencies has come out to the plant to analyze the job that we have available. Of all the agencies that refer applicants to us only the Veterans Administration representatives ever came out to the plant and thoroughly went over each and every one of our jobs. Most of these agencies act as though they have got a monkey on their backs and they want to get it off on ours. That's O.K., but I'd like to cite one example of what this can mean in practice.

One morning a chap came through the gate who was decidedly handicapped. He had no legs at all--both off at the hips. He was coming in on one of those little platforms with casters with padded parts on his hands to push himself along. And he came out because he'd been sent out and understood that we were hiring handicapped workers and must surely have a place for

him. I personally investigated, in the hope that we would be able to hire him, but we couldn't possibly put this handicapped person amongst machinery. We couldn't put him in the assembly. Someone would have to carry work to and from him. How would he get down from his bench? How would he do anything? Now, he had his hopes high when he came, and when we had to tell him frankly why we couldn't hire him--and I did that very sincerely--he was quite a disappointed man. It is not pleasant to see a grown man with tears rolling down his cheeks. It wasn't pleasant for the employer. I am sure that there were those who felt that we turned him down for tough reasons. We had to.

I wouldn't want to confine my criticism to placement bureaus and rehabilitation centers. There are many other problem areas in connection with hiring handicapped persons. We find a great many of our handicapped being overly dependent. Either this attitude was acquired during their ailment or perhaps since youth; but they have acquired a mental outlook that the world must wait on them and they are quite given to exaggerating all their little aches and pains, drafts and other plant working conditions; a mental outlook that requires considerable counseling and first aid work by management and there are many disabilities that require a great many rest periods and some which lead to absenteeism, which, of course results in lost time and work.

I don't want to sound as though every handicapped employee has been a disappointment, they have not, and we have tried to adjust ourselves to cope with their problems. Sometimes this has not been possible. We had a double amputee who felt the world was to blame for his condition and he was going to get back at the world. His whole mental outlook was such that he was taking on everybody and as a result we finally had to part company; not because he was disabled, but because he would not adjust himself as a member of a work force.

In employing a person, one of the greatest factors we look for is compatibility; we have a very close-knit work force. If a person cannot get along with his fellowworkers, he will only be a hazard and a risk. It is possible that his disability will finally cause him to feel that he cannot do a certain task. Instantly the chislers take advantage of that--not the handicapped, but the well, able-bodied person who is looking for a reason to shirk. These cite the handicapped and say "If he won't do it I won't do it" and demand the same privileges as they think you have given to a favored one.

Another area of difficulty consists of union agreements. Most of our contracts today include provisions for hospital insurance, leaves of absence and of course, seniority clauses. I think that we would probably have an area of agreement, labor and employer, that seniority is one of the most vested rights of the union and one that cannot be overlooked. Many of our handicapped were hired during the war. Right after the war, when it came time to lay-off, because they had the least amount of seniority they had to go. We cannot, neither labor nor management, agree to super-seniority for any one individual--last person on must be the first one off, and where you have seniority by departments, as we have, it presents even greater difficulty. If the handicapped becomes incapable of work in one department we can't possibly transfer him over to another department, unless there is an up grade involved or some other acceptable opening.

Doctors aren't, I think, too realistic in their approach. I don't think there is a doctor today who has made any effort to go into a modern industrial plant to find out what kind of work is available, and what the restrictions are. For instance, the doctor in his report back to us, said that this man can now go back to work providing it is light work, that there are no irritants in the air and that there are no aggravating noises. Well now, if this doctor ever made a tour of our plant I think he'd find that the air that we breathe inside the plant is cleaner than what you breathe outside. But if you are in an Industrial area such as Emeryville, there are a lot of irritants in the air. Noise? We think we have a fairly quiet plant, but I don't know what an aggravating noise is. Light work? All of our work is light from our point of view. How light is light, and how high is up? We were in a terrible position and finally solved it by putting him on a lengthy leave of absence, after which we hope that the doctor will say he can go back to his work--which was very light in the first place.

Remarks by HAROLD A. HATCH, President, Argonaut Insurance
Company, San Francisco

Heart disease is of course one of, if not the most, prevalent causes of death. Acceptance of the philosophy that death or disability from heart disease is caused by circumstances of the employment, and therefore compensable under the Workmen's Compensation Act, is a matter of grave concern to all workmen's compensation insurance carriers.

The company which writes workmen's compensation insurance in California, or elsewhere, must view its business from an actuarial standpoint. This simply means that the reserves which it sets up to cover losses must be scientifically estimated, and a sufficient premium charge must be made to set up such reserves, together with the inevitable cost of doing business.

The insurance company is, in effect, the administrator of a trust fund placed in its hands by the employers which it serves. It is not concerned primarily with the philosophy which underlies workmen's compensation and the rehabilitation of employees with an impaired ability to perform work or earn a living. Its principal concern is to administer the distribution of benefits to such persons as may, under current statutory interpretations by the Commission and courts, be entitled to benefits. So long as premium receipts are adequate in relation to losses, the carrier does not concern itself with whether or not cardiacs are among those entitled to benefits.

Legislative changes in the Compensation Act which call for increased benefits can be measured actuarially and applied effective as of the date the new law becomes effective, but such an accomplishment is impossible where the change in the level of benefits is accomplished by increased liberality in the judicial interpretation of existing law. Ordinarily, changes in benefits by interpretations of existing law are not particularly consequential, but when they affect an issue as widespread as heart disease, the increase in cost of benefits may be tremendous before a commensurate rate adjustment can be developed. This situation places the entire structure of workmen's compensation insurance in jeopardy.

In the sense that the workmen's compensation insurer must stand in the shoes, figuratively speaking, of those whom it insures, a different situation prevails. The level of his workmen's compensation premiums may determine the extent of the employer's profits, and may in fact be an

important factor in whether he is able to remain in business at all. Employers must necessarily concern themselves with all problems of cost in their businesses, and so far as employee costs are concerned, workmen's compensation premiums and wages are two of the most vital.

Generally speaking, the workmen's compensation system is favorably regarded by the average employer. Over the years it has come to be recognized as an appropriate means of taking care of work injuries--at least to the extent that the system is fairly and reasonably administered.

Frankly, however, one of the areas in which employers generally may be said to have misgivings is in respect to the handling of industrial cardiac claims. It is difficult for the average employer to appreciate the fact that the workmen's compensation law is so framed as to make it possible for the Commission and the courts to place upon industry the burden of providing workmen's compensation benefits to hundreds of workmen (or their dependents) for heart disabilities of extremely doubtful relationship to their respective occupations.

The courts have said that an employee is entitled to compensation whenever his condition is aggravated by the employment, even though a normal man would not have been adversely affected by the same circumstances. The same is true even where it is shown that the cardiac would eventually have died of his disease, regardless of the employment, if the Commission finds that the employment merely hastened death or disability. The question of whether the employment precipitated the collapse of a diseased heart prior to the time when the normal progress of the disease would have brought on such a collapse is one of fact. These are the general principles laid down by the court in the 1946 Calabresi case of Liberty Mutual Insurance Company v. I.A.C., 73 C.A. 2d 555, 11 Cal. Comp. Cases 66.

In the same case the court said, "Whether the strain is a 'usual' or an 'unusual' one is only one of the facts involved. If there was a strain, even though the strain was a strain usual to that type of employment, the injury or death is compensable if there is competent substantial evidence to show the causal connection between that strain and the collapse." Such evidence is provided, of course, when any doctor, who has a correct history, testifies or makes a

written report connecting causally the heart disability with the employee's occupation. The aggravation need be only one of the factors involved, and a minor one at that. The opinion of a single doctor will suffice for compensability, though there be a dozen of the contrary view.

Since the employer can readily be assessed (through his insurance carrier, of course) with the entire cost of a cardiac case, no matter how doubtful the connection with the work, or how slight the role of industry in relation to other factors, there can be no possible incentive for him to employ those with pre-existing heart disease. Claims are regularly being filed by such individuals as chain store supervisors and insurance solicitors on the theory that the heart attacks which they have suffered were, to some extent, influenced by the normal activities of their work. However, the Commission has awarded benefits for heart disabilities in such situations as:

- (1) 12 Cal. Comp. Cases 113 - where the operator of a Coca Cola bottling machine collapsed at home one night after performing his usual duties at work.
- (2) 12 Cal. Comp. Cases 114 - where a bakery wagon driver collapsed one morning before commencing work, after performing his usual duties the preceding day.
- (3) 12 Cal. Comp. Cases 116 - where an electrician collapsed while on his way home after work, following a week of light work which, in turn, followed a week's vacation.
- (4) 14 Cal. Comp. Cases 192 - where a bus driver's heart disability was charged to his work, without showing of other than his ordinary and regular duties as an aggravating factor.
- (5) 13 Cal. Comp. Cases 72 - where a jewelry store manager became enraged at one of his subordinates and attacked him, collapsing with a heart attack as a result of the ensuing altercation.
- (6) 6 Cal. Comp. Cases 313 - where a Roos Bros. clothing salesman collapsed with a coronary attack while carrying a suit box weighing 25 pounds a short distance.

Many other cases could be cited, but these will suffice to illustrate what can befall the kindly employer who employs a cardiac in his business.

I believe it can be safely assumed that the enlightened people attending this conference will be in practically unanimous agreement that heart disease is not caused by the ordinary activities of ordinary employments, and yet the Industrial Accident Commission, with the support of the Appellate Courts of California, is pursuing the theory of the "straw that broke the camel's back" to the point that compensation benefits are being consistently awarded in cases of heart failure even where there is no extraordinary effort or exposure demonstrated.

As compensation insurers, we do not necessarily object to such a liberal interpretation so long as the rates computed are sufficient to provide for this added burden, but as citizens who must pay these bills through the price of the products sold, we raise our voices in protest against the application of the liberal benefits of the Compensation Act to a health condition so remotely related to employment.

Remarks by ARTHUR R. HELLENDER, Director, CIO Community Services of Northern California

From my experience of negotiating, handling grievances, and also from the experience that I am now getting in community services, I think one of our biggest barriers on the employment of the cardiac is the doctors themselves. The cardiac--the man in the plant who has a heart attack--has heart trouble and goes in to see his family doctor. He is examined by his family doctor and probably told to take it easy for a short while, and of course the problems over and above are mounting up. Then he goes in and says, "Doc, I'd like to go to work - I'm tired of hanging around - my wife's tired of having me around - and I think I could go back to work." Well, it's possible that he has rested enough and recuperated to the extent that he could go back into the plant. So the doctor gives him a slip to take back to the plant saying that he's good for light work or light duties. The company doctor looks at it, checks him over, and says, "No, you're not ready to come back to work." Now who does this individual believe--his own family doctor, or the company doctor? They're both in the same profession.

Now somewhere along the line I feel the doctors themselves

should get together to iron this out. Whether or not they hide behind the screen of ethics, I don't know, but over a period of years the company doctor has become a person that has horns. Right from management down into the plant, most of the people are leery of going in to see the company doctor, particularly a cardiac case, because of the thought that they will either be laid off or be shelved. You might be in line for promotion--but that promotion never comes about because they feel you can't cut the buck. You have some problem, or coronary trouble, so they don't feel you're worthwhile any longer--they'll ultimately get rid of you.

Which leads me to ask this question (and we're talking about handicapped people): The companies and the unions sponsor, believe in and work for the "Hire the Handicapped." The slugs that come out on the envelopes say "This is Hire the Handicapped Week - hire the handicapped." And yet when you come back to the problem of hiring the handicapped (which a cardiac is) how come the companies turn around and say, "While we're advertising for it, we believe in it, but yet we're not hiring"?

The doctor said to please mention something about seniority and the contracts we negotiate and taking care of the handicapped. When we negotiate an industrial type contract, we negotiate for you, whether you're the janitor or an office employee. We don't take into consideration whether you're the woman or the building service man or the tool and die maker, you're covered in the contract - your wage schedules are set out - your seniority applies--the same for all people under the contract. Under that contract, a person who is handicapped because of a cardiac condition in one department--a more skilled department--has plant seniority. There is the possibility of moving him into a lighter job or light duty in another department.

It is not always true that this means bumping. You might have hired the man without legs who pushed himself in on a little dolly. He might have been hired in a certain department, and you might have a man with 25 years service who has a cardiac condition and can work in that particular department. You'd have to lay off the man without legs that has pushed himself in.

On the insurance end age, along with the cardiac condition, is another factor today. It seems that age levels are getting down lower and lower. At 35 years of age you're an

old man. That is an additional barrier that we're having.

I think the doctors should immediately step into the rehabilitation process of the worker that is affected with a cardiac condition. I don't think it is the idea that you're progressing because you come in once every two weeks to get checked, and then once a month--such as that. I think the doctors should start talking to the individual about what the potentialities are for him going back on the job, and what to look for to rehabilitate himself. He should know what the other agencies are that the individual worker can go to. Unfortunately for the cardiac, or any of the disabled cases, a lot of the voluntary or private agencies might take over for a very short while, or they might say "hands off" because they might feel if it is a long-term case they themselves can't afford to work with it.

I think the doctors could work with the patient--show him the avenues to a new outlook. An example, we had a case here not too long ago where a man in the plant with 25 years service became a cardiac case. He was off. He had some family to take care of. He had a new car that he had bought. He had some property. He had tools at home that he would like to work with. He didn't know where to turn--he didn't know what to do. Because one of the voluntary agencies stepped in and worked with him over and above his doctor, he didn't lose his car. He was one of the fortunate ones. He had an additional piece of property that he could sell, and he'd realize enough from this property to get him by. Unfortunately, he lived in a zone where they wouldn't allow him to gain any income with the tools he had in his basement. After going through the rehabilitation center, the Heart Association sent a letter about his going back to work in this plant. It said he was capable of working on some form of light duty. But the company doctor said, "No, we can't take you back." Which leads me to believe this: that this is a good conference.

I think the followup on this sort of conference should be this: That the doctors--the medical profession themselves--should get together and find out that there really isn't any difference between a company doctor and one in private practice. I think that top management should come in and sit down. I feel that our labor people that are negotiating these contracts should sit down--all of us--with the rehabilitation people. Bring out Joe Doakes, the XYZ case. This is the type of condition that he had - this is what doctors did to bring him along - this is what's happened to him in the plant - this

is what he is doing to be gainfully employed.

The rules and regulations that are set up by the company show that the president of the company doesn't know the needs of an employee with a cardiac condition. I am sure he didn't write those rules. Somewhere along the line they came through from the medical profession to, shall we say, protect the company. If we are willing to sit down and talk about it here, we should be willing to do it actually down on the level of the plant.

It is great that the Heart Association is taking this step but, as pointed out by the employers representative here, health agencies should coordinate. We've reached this stage now where we're going to have an association or a group for every joint and part of the body. We should unify these groups so you participate together--have a unified approach. Then it isn't the Heart Association that's coming to the company today, and Arthritis and Rheumatism tomorrow coming to the union. Then it isn't because the president's wife sits on one of these associations that the president tells the personnel manager, "Let's be a little more lenient to this type of people that come in, because my wife is sitting on the board and I want to make a good impression for her." This may sound humorous, but it's true. Through this unified action, we can follow through and bring in all groups of the community and all groups for the handicapped.

Remarks by JAMES H. THOMPSON, M.D., Secretary of the
California Society of
Internal Medicine

The barriers to the employment of a cardiac are many. My associates here on the panel have approached the subject from their various fields, and I suppose that I should confine my remarks to the medical barriers. However, I would like to dispose of the medical barriers in a few broad statements and then go into some detail by citing specific case examples from my own practice.

The only actual cardiac barrier to employment is reduction in cardiac reserve. In other words, when the ability of the heart to supply oxygenated blood to the body muscles is reduced below the actual work requirement of a job, a definite impenetrable barrier is raised. When the cardiac reserve is decreased to this extent the patient must obviously seek employment

which requires less physical exertion. For simplicity and for practical purposes insufficient cardiac reserve is manifest by two factors; namely, congestive heart failure and coronary insufficiency, or a combination of both. Congestive heart failure, of course, may be caused by valvular heart disease, disease of the heart muscle, or high blood pressure. Coronary insufficiency on the other hand is practically always due to narrowing of the coronary arteries by arteriosclerosis which reduces the blood supply to the heart muscle and consequently limits the ability of the heart muscle to work. Therefore when a cardiologist evaluates a patient for a given job he must primarily determine the efficiency of the heart muscle, and from this he can fairly accurately determine a man's work potential.

However, persons whose physical ability is reduced by cardiac disease are usually in the older age group and consequently their work potential may also be reduced by several other concomitant degenerative conditions. Diseases which are frequently associated with heart disease in the older age group are the complications of progressive arteriosclerosis. Such conditions include intermittent claudication or peripheral vascular insufficiency, cerebral artery insufficiency which may lead to weakness, confusion, incoordination, dizziness, and actual stroke, and finally degenerative pulmonary diseases such as pulmonary emphysema. Pulmonary diseases of this type reduce the ability of the lungs to oxygenate the blood, and consequently require the heart to pump more blood at a lower oxygen tension which, in turn, increases the work load of an already tired heart. Therefore, the patient's total work potential may be indicated by his cardiac reserve minus his other underlying partially disabling diseases.

Cardiology cannot be compared to the exacting sciences of physics and chemistry, but in comparison to some of the other branches of medicine it is relatively scientific. We can measure blood pressure, cardiac output, metabolism, oxygen and carbon dioxide tensions of the blood, venous pressure, and other physical measurements which, when combined with clinical observations, allow us to give a fairly accurate appraisal of a patient's work potential. When this work potential is arrived at, the individual can be directed toward jobs which are within his physical scope.

Such jobs, however, are difficult for the cardiac to acquire in spite of the fact that he is physically able and

is usually anxious and willing to cooperate. In spite of the fact that the patient may be sufficiently experienced to carry out a job, certain barriers are placed in his path which prevent his obtaining the position.

An example of one such "road block" is Civil Service rating. Usually the cardiac patient falls into the older age group and is consequently in a high Civil Service bracket. A specific example of this type of problem arose in one of my patients with coronary artery disease who was foreman of a State Road Maintenance Division situated high in the Sierra Nevada Mountains. He was physically able to carry out the work of a foreman if he could be transferred to a sea level area. However, the hierarchies in the various sea level areas would not accept a man with his seniority, for it was their practice to fill such positions with men "working up" in their particular division. The patient was not able to carry out the labor required of a general laborer on a maintenance gang even at sea level. Consequently he was denied work, in spite of the fact that vacancies existed, because of Civil Service protocol. This is a simple example of the security of Civil Service working in reverse. I am not attempting to discredit Civil Service or trying to steal Mr. Adriansen's thunder, but I am trying to point out the practical barriers that we physicians see placed before our patients.

A more subtle barrier is that of insurability. I now have a patient--age 61 years, and a great football player in his college days--who was employed by one of our large steel companies on a job which required a good deal of physical exertion. I was called to his home one evening after supper because of a severe constricting pain in his chest. A diagnosis of acute coronary occlusion was made, and the patient hospitalized. His clinical course was exceedingly mild. The pain disappeared within three hours. He never developed severe shortness of breath. There was never any suggestion of congestive heart failure. Nor are there any symptoms at the present time of coronary insufficiency or angina pectoris.

This man's coronary occlusion is now completely healed. We know that his cardiac reserve is not as great as it was prior to the attack, but it is certainly sufficient to carry out light work. He could hold a position that might require a person to walk 10 to 15 blocks per day in addition to climbing two to four flights of stairs, and occasionally lifting objects weighing up to 25 pounds. However, he is permanently and completely disqualified from re-employment by that company

because of his illness and in view of the statistical probability of his having future attacks. His barrier to re-employment is obviously social and not medical. His company, under the present circumstances, is justified in its position--a position in which it finds itself placed by union pressure and enterprising social legislation.

My third and last example will be a cardiac patient who was not subjected to these barriers of employment. This man is 65 years of age, and went to work for a large manufacturing company in the Bay Area in 1940. He was known to have high blood pressure and was carrying out a job which required moderately severe physical exertion. He handled his job well and was considered a good worker. In 1944 he suffered a heart attack while on vacation. After a prolonged period of rest he returned to work for the same company and they, unlike the steel company in the previous case, re-employed the man in the shipping department. This was a job requiring less physical exertion, and was well within his physical ability. After about three more years, with obviously progressing arterial hypertension, he developed a second coronary occlusion. This occurred at home while off duty, and again the patient was confined to bed for several weeks and was away from work for a period of several months. On return his employers re-hired him in a less demanding job. However, as the years progressed the patient's cardiac condition gradually deteriorated so that he developed congestive heart failure in the natural course of his disease--a condition which would have occurred even had he remained home to rest. His employer, still being helpful to this old employee, provided him with a completely sedentary job which he was able to tolerate for another year or more. Subsequently he became unable to expend the necessary physical effort to go to and from the factory and was retired.

This sounds like an ideal arrangement between employer and cardiac patient, but the patient then got into the hands of an attorney who believed that this man's work was the cause of his heart disease in spite of the fact that the man's congestive heart failure became progressively worse even while at home in retirement. He was subsequently encouraged to file a claim with the Industrial Accident Commission for the exacerbation of his heart disease.

Today's panel is confined to the barriers to employment. Tomorrow's panel will tell us how to remove these barriers, so we will have to leave the cases "hanging fire" until then. However, we should all think about them carefully and try to

come up with a practical solution to these problems.

In conclusion I would like to say that medicine can treat and evaluate heart cases with great skill. However, the greatest barrier to employment of the cardiac at the present time is a social and financial one--produced by well-meaning social legislation and union organizers.

luncheon address

INTERPERSONAL RELATIONS AND WORK TENSIONS

Patrick L. Sullivan, Ph.D.

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Address by PATRICK L. SULLIVAN, Ph.D., Chief Clinical Psychologist, Veterans Administration
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INTERPERSONAL RELATIONS AND WORK TENSIONS

My talk this afternoon will be concerned with three areas. The first of these, and the one on which most of the stress will be put, is that of interpersonal relations. The second has to do with people in work situations, and the third is concerned with some of the ways that people have of handling life stresses--such as the development of psychosomatic symptoms. It is under the third heading that comments about the heart will be included. In discussing the last two of these three areas, I shall be primarily attempting to apply to them the interpersonal frame of references.

I might say first--about the term interpersonal relations--that it has a special use in addition to the obvious one of referring to things going on between people. This special use is, as the name of a theory of personality which has as its centering point, interpersonal relations. The definition of personality given by Harry Stack Sullivan expresses this emphasis well; it goes as follows: "Personality is the relatively enduring pattern of recurrent interpersonal situations which characterize a human life."

To understand the implications of this approach to people's functioning and perhaps also to grasp its uniqueness, we must first note its stress on the contemporaneous situation--the here-and-now. It calls for attention to those things occurring in the present which contribute to the determination of what people do and what sort of personalities they will be seen to have as a result of what they do. Attention to situational factors implies, in turn, that an adequate grasp of the psychological workings of an individual must necessarily include the influences on him by the persons constituting his interpersonal environment. If one of these persons be ourselves, it follows that our own behavior, reflecting as it does our values, convictions, biases, conceptions of ourselves, prejudices, and interpersonal techniques, must be appraised for the effect on the other. Unlike some other orientations, the interpersonal view does not permit us to regard the other's behavior simply as the end result--the unfolding of formative influences which wrought their effect in the long-gone past. Neither does it permit us to regard the other as sufficiently understood when we are

able to type him as the carrier of this or that kind of biological predisposition, this or that kind of reservoir of habit tendencies, which are present as the consequence of this or that set of life experiences--traumatic or otherwise. Adhering to more or less exclusively biological or historical frameworks allows us complacently to disregard our contributions to what emerges as the other person's personality, and may be looked upon, in one sense, as an encouragement toward ignoring responsibility for that contribution. Not, of course, that there are not other people and events affecting what people do in our presence, for there certainly are. Stress is laid on looking at one's own influence on interpersonal situations because, like charity, it best begins at home.

Moving toward thinking which recognizes that people behave differently in the presence of different others--you may think to yourself--is only to recognize something which everybody has known quite well all along. We all know, for example, that some individuals listen particularly well to us and thus make us feel more articulate and intelligent than usual--that some women somehow succeed in making us feel more manly than others (which may or may not provide a key to the question of marital choice), etc. However belatedly, psychology does seem to be coming to include this seemingly simple truth. Recent studies have shown that such diverse behaviors as the solving of logic and arithmetic problems, the kinds of responses given to projective tests, and even the maze behavior of rats are subject to the influence of the investigator. Whether he was relaxed and non-pressuring or whether he was attentive and given to fondling as versus being brusque and businesslike, had an effect on the performance of the subjects--in the case of the rats, of course. Such findings require considerable re-thinking about the psychology of humans--and rats.

In order to make more concrete the interpersonal point of view, let us look at some of the things which might be transpiring between us right now. If I were to pay more attention to you instead of to the words I have put on these pages, I might see a variety of facial expressions and bodily poses. I might infer from some of them careful attention and understanding--from others encouragement or commiseration. From still other cues I might infer extreme skepticism and doubt, or boredom, or gastric comfort or discomfort, etc. Or a titter might occur at some point which I had not planned. Or a murmur of conversation might arise. Or a food handler drop a tray of dishes.

In making any of the various inferences suggested, or in perceiving any of the stimuli cited, I might be susceptible to being influenced in one or another direction of self-appraisal and consequent behavior. My efforts to play the role of your luncheon speaker according to a conception of myself which pleases me might be altered. I might become dry throated and cough to the detriment of effective communication, or I might become myself gastronomically distressed, or I might be encouraged to greater fluency than would be otherwise the case. There is the further possibility that--in part because of the formalized nature of the present situation--my behavior would not be noticeably influenced by what occurs.

But take the situation that has been a favorite subject of some of our cartoonists--namely, the employee asking his boss for a raise. Frequently he is first depicted being inflated or harangued by his wife--about which we might say that she was engineering him into a self-conception designed to maximize his effectiveness when confronting the boss. The devastating deflation of that self-concept by the boss is customarily the content of the final cartoon. The point of these examples, again, is that how we see ourselves, and what we expect and need to see mirrored in the behavior of others, constitute a very great part of what we do and why.

Having, hopefully, conveyed to you this main point, let me go back a bit. Previously, in speaking of the historical aspects of personality, what was said was primarily an argument against ignoring the present, rather than one for ignoring the past. For the present viewpoint does not insist on discarding historical material so much as it does on an adequate weighting of both past and present. Man is, after all, a time-binding animal, and a great deal can be understood about his present and future functioning from what we can understand of his past. This cannot, however, be looked upon as a dead past, so to speak, and, more importantly, any hypotheses we derive from it would be checked against the present interpersonal functioning of the program--which would be regarded as the final yardstick for the accuracy of the hypotheses. The kind of information comprising the history, furthermore, would be of that sort which would permit the maximum understanding of the ways that he had of handling interpersonal situations. The development of the individual would be viewed from the aspect of one growing and becoming acculturated in a human environment.

For it is through interactions with others from birth on

that there is evolved what has been variously referred to as the self concept, the self system, ego identity, or role--which I shall here use as synonyms for each other--and the plurals of each of these--for each of us is equipped with a supply of these which he uses under different circumstances. Individuals learn from their fellows--particularly from the parents, teachers, spouses, and other important people they are in contact with during all phases of life. They learn conceptions of who and what they are or should be, and these conceptions vary as regards the person's awareness of them. If the person's life progresses reasonably well, he will be able to shift his identity of himself flexibly as circumstances warrant it and will be able to approve of himself and his acts. If major difficulties occur somewhere along the path, he may not be so flexible, appropriate, and self-approving. He may be more likely to distort what he sees others' intentions and attitudes to be, as though they and he were still locked in some approval-disapproval struggle more appropriate to some past period or relationship.

Why he is or should be a certain kind of person--or should appear to be that kind of person--leads us to the consideration of the consequences of not so being or appearing. Grossly speaking, these consequences may be described as sets of expected rewards or punishments--such as being cared for if one is, say, submissive toward one's boss, or, conversely, having to regard one's self as a sissy or sucker or apple-polisher if one is submissive or even humanly cordial to the boss.

To cite other examples of the self-concept in operation, many of us put great amounts of energy into being able to regard ourselves as persons who are liberal or ruggedly individualistic, hypermasculine or open-minded, considerate, mechanically inclined, a good man to have at a party, etc., to touch on but a few of the many ways we have of modeling our behavior so as to achieve comfort in living.

On the other side of it, there might be cited the youth who has to be tough--always unbending toward law and society--whose identity of himself is dominated by an anti-social subculture. We might say that these self-concepts serve as something of a clearing house for potential responses and patterns of response. We permit only those inclinations and motives to be acted upon which are compatible with the perpetuation and enhancement of the view of the self. Much of what we see in the way of disruptions of communication--behavior which defeats the achievement of what seems to us to be desirable

goals in life, and various other anomalies--may be regarded as the compulsive adherence to self-identities. An outstanding example of this is the paranoid personality whose suspiciousness and withdrawal imply that he expects others to be hostile, exploitative, and destructive of him.

As a final postulate in this all-too-brief description of the interpersonal frame of reference, we may take note of the reactions of impending or actual departures from the acceptable range of the preferred ways of behaving. There is, of course, some latitude to what we can permit ourselves to view as acts for which we are responsible, and the latitude permissible undoubtedly varies within and between persons. When, however, the limits of latitude are in danger of being exceeded or have otherwise been threatened, the person experiences marked discomfort or anxiety. Quelling anxiety, once it is aroused, is possible by a number of ways--among them the development of psychosomatic symptoms. Looking back to the example of the man asking the boss for a raise, when he perceived that defeat was inevitable he might then try to eliminate anxiety by denying to himself that he ever conceived the boss as a lion, and might revert to his earlier role of, say, the submissive, conscientious employee. Final relief, we might further imagine, would necessitate that the boss behave toward him as though equilibrium of roles had been restored between them.

Before going further into a discussion of attempts to maintain personal and interpersonal integration, I would like to say some things about interpersonal relations on the job.

It is certainly true that we as a society are becoming increasingly aware of the great importance of the human ingredient in our productive machinery. Without going into detail about the historical developments which have brought about and necessitated this greater awareness, let us recognize that workers have become considerably more interdependent as technology and specialization have advanced. Relatively few people these days are self-sufficiently productive but work with others. The need to keep people working harmoniously and productively with each other has brought us face to face with what some experts cite as the single most crucial and difficult problem confronting this country's present and future economic stability.

Industrial psychologists and personnel administrators working on this problem have in some instances achieved results

which have been nothing short of dramatic. I have in mind such things as the significant increases in efficiency resulting from introducing methods of worker participation in the determination of standards and quotas, and also the improvements in morale stemming from enlightened supervision and human relations generally. The core ideas responsible for these industrial "cures" seem to have been: first, greater attention to worker motivation and, second, the application to the worker as an individual and as a member of a group--some of the thinking about interpersonal relations previously outlined.

The area of motivation--that is, needs and desires which impel people to action--is a vast topic in itself. It is worthwhile to touch on it if only to observe that some very important motives are operative in the work situation. And further, whether these motives are acted on or not depends on their compatibility with the person's current self-conception and the circumstances he is in. The most important category of motives is the need for security. Then, that having been satisfied or at least not in great danger, what I shall refer to is the need for self-realization--hoping that you will not press too strongly for a precise definition of what is meant.

Self-realization would include such things as prestige, achievement of ambitions, the feeling of making a valued contribution, and something like creativity. These two categories of motives may, again, be used to characterize what people are looking for in their work situations. Not that the satisfaction of them is restricted to the scene of employment. They are certainly discernible in other areas of living but do seem to appear more frequently in most obvious form when the person is on the job.

One reason for this is that work has particularly important meaning to people in comparison to other areas of living. How well one succeeds on the job is to a great extent the measure of the man as a provider - a skilled person - a father and husband, perhaps - a citizen - and, in our work-oriented culture, even as a man per se. He has a lot at stake in his job, and the things that go on there may be expected to have important reverberations throughout his life. Another reason is that the things that go on at work almost always have to do with people. Some of the work relationships are in many ways the only ones a man has which are comparable, though not necessarily identical, with those which existed when he was a child. For most men the boss and

the fellow worker represent the main associations of their type--that is filial and fraternal, respectively--continued into adult life. In each of these kinds of interrelatedness, what kinds of attitudes we perceive the other to have toward us has profound effects on our overall comfort. Whether we are permitted, so to speak, to strive upward on the ladder by our fellow workers - whether or not the supervisor approves of us - whether the tangible rewards of increased pay, status and responsibility are given us - whether we see the boss as one who is humanely interested in us as versus exploiting our productive capacities--all these things have bearing on the degree of inter- and intra-personal comfort, or conversely, tension that will be experienced. Thus, knowing where one stands, being informed about company and unit policies and plans, having access to channels of communication with those whose thinking and attitudes affect our lives and livelihoods, have come to be recognized as the sensitive spots in industrial relations. When workers are cut off from this knowledge, or when they become the targets of treatment which frustrates their satisfactory role-and-need-fulfillment, tensions develop within them and between them and others.

Having noted the peculiarities of the job situation and the intensity of feeling and reaction that may occur there, it appears that neither the sort of tensions that develop in it, nor the sorts of resolution of the tensions which are used, differ in kind from those we might anticipate in non-job interpersonal relations. For example, the response of a man whose authority has been flouted by a subordinate might be expected to behave as he would toward an unruly son. The worker who did the flouting might also be found acting much the same way toward other authorities. By seeing a person in terms of his consistent efforts to play out discernible self-concepts, we have a conceptual framework which permits us to bridge the interpersonal situations and to gain greater understanding of him.

Turning to the final theme, what does the interpersonal point of view have to say about the ways of attempting to resolve conflict and stress? This is essentially a return to the theme of handling anxiety previously discussed. These ways are many and varied, ranging from the brief upsurges of anger which occur in all our lives, to the development of psychoses. They include the whole range of psychological defense reactions. They also include the development of such things as ulcers, many headaches, and essential hypertension and neurocirculatory asthenia which, along with severe

anxiety states, constitute the bulk of the psychiatric categories in which the heart is involved. In addition there is a variety of personality reorganizations following on the occurrence of actual physical disability from traumas or diseases. Why one rather than another organ or organ system is singled out for victimization in psychosomatic cases is a large question and one for which the studies of constitutional predisposition supply part of the answer.

Most frequently in the appearance of a major physical disability what occurs is an alteration of the person's view of himself. He comes to a point where he incorporates the symptom into a changed set of behaviors which give the impression that he has shifted his self identity. To be sure, underlying such role changes there might be definable emotions or motives--such as fear, dependence, hostility, and so forth. An understanding of his status is not, I believe, gained by focusing on these underlying feelings and needs. Attempts have been made to relate specific conflicts, such as repressed hostility or unsated dependence, to give psychosomatic symptoms--hypertension and ulcer, respectively, for the two examples cited. Such efforts have largely been fruitless, and some of the investigators who originated such ventures recently have come to discount their earlier work.

Instead, trying to see how his self-conceptions dictate how these underlying feelings will be expressed so as to achieve the feeling of continuity and mastery in his interpersonal relations, is suggested by the interpersonal approach. There might be imagined, for example, for a particular individual, a long-standing need for dependency which he could permit himself to satisfy. As a result, his history might show that he had gone far out of his way to appear overly self-sufficient and that he had encouraged others to be reliant on him. Such strength and givingness would, for him, constitute evidence against the idea that he wanted to be on the receiving end of things. At some point the tensions arising from juggling this delicate structure might have led to the appearance of a physical symptom; or, a similar symptom might have come into existence for more or less clearly physical reasons. In the former case, we would see the symptom as having arisen as a consequence of stress in perpetuating an acceptable self-concept. In both cases, it would be expected that possessing the symptom would lead to the emergence of a different role or self-conception. Thus, we see those who come to view themselves as invalids are then able to prostrate themselves without having to feel anxious--

for, after all, it is not their psychological selves but their bodies which are responsible. To cite another example, there are those who respond by becoming what has been termed help-rejecting-complainers--persons who organize their lives around their symptoms, who are kept constantly busy seeking help from others, but who somehow can never use the help that is offered but only find fault with it.

In view of the great changes that can occur, it does not seem sufficient only to pay attention to the factors leading up to the time of the symptom's appearance. What transpires subsequently is at least as important and may offer more practical and valuable information for evolving a treatment plan.

That the kind of functioning which occurs following the acquisition of a symptom is tied in with interpersonal relations is suggested by studies conducted in this area not long ago. The data indicated that the social acceptability of varying degrees of incapacitation is related to people's attitudes toward the symptom leading to the incapacitation. People's attitudes, in turn, are in part determined by the conspicuousness of the symptom. According to these findings, a person with a missing limb or loss of eyesight would have an easier time of maintaining psychological integration than would one with an equally disabling but less obvious affliction. To repeat and to put my thesis in its boldest form, the understanding and treatment of a person--be he a cardiac case or any other person we come into contact with--requires that we see him as a totally functioning organism, existing in a community of humans and behaving according to conceptions of himself which promise to accrue to him maximum comfort and freedom from anxiety.

In conclusion, permit me to make an observation about the character of what has been said. Few answers or specific formulations have been given. Instead, the emphasis has been put on offering for your consideration some conceptual tools--some focalizing points for your own observation and application. This emphasis was followed because of the conviction that all too frequently there has been a tendency to generalize people and situations from findings which did not adequately represent those persons or situations. What seems to me to be more fruitful is a greater alertness to what to look for in problematic situations and a method for organizing adequately what is seen. Perhaps too great emphasis has been put on the uniqueness of individuals and situations. This, however, is preferable to the Procrustean practice of fitting people into inadequate or even inaccurate preconceptions.

a panel discussion
INDUSTRIAL COMPENSATION ASPECTS OF HEART DISEASE

Chairman: *Douglas A. Campbell*
Referee, State Industrial Accident Commission

Discussants: *Rodney R. Beard, M.D.*
Professor of Preventive Medicine, Stanford
University School of Medicine; Chairman,
Special Committee of the Heart Association
Conducting a Study of Cardiacs in Industry

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PANEL

INDUSTRIAL COMPENSATION ASPECTS OF HEART DISEASE

Introduction by DOUGLAS A. CAMPBELL, Referee, State Industrial
Accident Commission
Los Angeles

It is inevitable that in any program such as seeking placement of the industrial handicapped worker you're going to bump into the Workmen's Compensation Act. We can visualize a program of workmen's compensation as being a stool with three legs--one leg representing the interest in the state of labor, one leg that of the responsibility of management or industry, and the third leg that of society generally. It is inevitable that where there is one group which must pay, and another which is to receive, the agency which is in the position of having to judge whether A shall pay B is going to be criticized.

The philosophy, the situation, and the scope of the Workmen's Compensation Act, like any other philosophy, must be incorporated in words. We realize how dangerous, how slippery, how cutting words may be; how they can have different meanings to different persons in different situations. So this philosophy of workmen's compensation has come through the stress and strain of a legislative session when they incorporate words which are supposed to give life and meaning to compensation. Then it has to be applied by human individuals. Look how long we have been trying to apply the ten rules that Moses laid down--we still don't work them very well.

Remarks by RODNEY R. BEARD, M.D., Professor of Preventive
Medicine, Stanford University
School of Medicine, Chairman of
the Special Committee of the
Heart Association Conducting a
Study of Cardiacs in Industry

The Cardiac in Industry Committee of the California Heart Association initiated in 1951 a study of the problem of the causation or aggravation of heart disease by occupational factors. This field seemed particularly pressing for study because important decisions in the employment of persons with heart disease, and in arranging insurance for them, were being based upon relatively little factual knowledge. A number of physicians--indeed including some on the committee, and I shall confess here myself one of them--

believed that many workmen's compensation claims for heart disease were being made, and that many claimants were being awarded large amounts on tenuous grounds. They felt that an industrial physician could not conscientiously recommend the hiring of a person known to have heart disease because of the excessive compensation risks involved. The committee recognized the claims files of the California Industrial Accident Commission as a valuable source of information, and accordingly asked the Commission for access to its records. The Commission graciously granted this request to the committee, making the records available for our study.

Now when we set out on this we wanted the answers to five questions:

1. Is the medical evidence in the records adequate to reach a decision as to the relationship between work-connected injury and the heart disease process?
2. Are Industrial Accident Commission decisions in heart disease cases consistent with expert medical opinion?
3. In reaching decisions on heart disease cases, what criteria have been used by the Industrial Accident Commission, and what criteria can be recommended to the Commission for future use?
4. What is the degree of unanimity of medical opinion with respect to the relationship between alleged injury and heart disease?
5. What relationship, if any, exists between the nature of employment and the causation or aggravation of heart disease?

In this preliminary report we can give you partial answers to some of these questions. Two physicians went to work on the records and abstracted from them the pertinent medical information. So this is based on abstracts of the records--not the whole legal document. It should be noted that the record does not always contain the entire body of evidence available for Industrial Accident Commission decisions--in particular, oral testimony. The Commission takes a complete stenographic record of the hearings, but it is only rarely that this stenographic record is transcribed. In most of the files there are only the notes which the referee made on that oral testimony--not a transcript of the testimony. Many cases are settled by compromise. And the

medical evidence is often not as extensive as in cases which are settled by decisions of the Commission. Then there are a good many cases put on the calendar which are subsequently dropped--reasons not apparent--the record is very brief. Uncontested cases may show little in them other than a sentence such as, "Dropped dead of a heart attack while fighting the fire." Such cases obviously didn't offer very much for us to study. However, there was in the entire four-year period a total of 583 heart disease claims. You may take this as an indication of the number of claims being made.

These 583 claims were all reviewed by our two physicians, and certain information was taken off each of the records. In some of the records--the greater number of them--more detailed studies were made of the abstracts. We rejected 185 of the 583 because of inadequate information for detailed study, but all 583 were studied for certain factors which I will discuss later. The 398 abstracts were studied in greater detail and were reviewed by a panel of physicians.

I would now like to comment briefly on the statistical tables which you will find at the end of my report.

Table 1 indicates the occupations, the total number of claims, the claims which were reviewed and the claims which were not reviewed. You will see that more than half were craftsmen, operators, and laborers. About a fifth were policemen and firemen. All other occupations comprised about one-fourth of the total. Now in any consideration of occupational or compensation aspects of heart disease in California, it is necessary to take into account the effect of statutes which apply to policemen and firemen, and which apply to policemen and firemen, and which in effect establish the presumption that any case of heart disease occurring in these occupations arises out of and in the course of employment unless there be evidence to the contrary. The law says this much more fully and with some minor reservations, but this is the sense of what is in the statutes. In view of this presumptive work connection for heart disease cases among policemen and firemen, special tabulations were made concerning them.

In Table 1a, you will see an indication of the rate at which heart claims were filed by different occupational groups. It ranges from 103 per 100,000 per year for firemen, 87 for policemen, down to 0.5 per 100,000 per year for farmers. One can divide the occupations into three main

groups in this regard. One group consists of those who are completely covered by workmen's compensation and for whom work connection is presumed--policemen and firemen. The second group consists of those largely covered by workmen's compensation and for whom work connection, in the case of heart disease claims, must be proved--industrial workers generally. And the third group includes those for whom workmen's compensation coverage is only partial--farm workers, professionals, and self-employed. The rates for the first group range from 87 to 103, the second from 5 to 10, and for the third group the rates are mostly less than 3 per 100,000.

Tables 2 and 2a indicate age distribution, showing a broad spread, but with a considerable number in the age group of 45 to 54 years. In this table it is of some interest to point out that the cases which we reviewed did not differ materially from the total group with respect to age.

Going on to Table 3, we have the distribution into occupations grouped according to severity. The grouping of occupations is based on a judgment as to the physical severity--the severity of physical activity usually involved in such occupation. This evaluation was made independently by an occupational analyst who had no particular knowledge of the scope of the study and no knowledge about the outcome of any of the claims. He was simply given the case record abstract with a description of the man's work, and from his knowledge of what different people do he rated them by severity. Clearly there is room for error in this because we know particularly from this morning's discussion that job titles don't always tell you what the job is. However, I think this is fairly accurate when the effort is only to break down into "strenuous," "moderate," "mild," and "not classified," when a good proportion of them are "not classified." I will leave it to you to interpret "severity" in relation to the classification of "Reviewed" and "Not Reviewed," and then go on to Table 4 where one has an indication of the award which was made in relation to exertion.

Now one must continue to bear in mind that a selection has been made and we can, referring to Table 4, consider the awards made which may fall into three groups. First, Decision IAOE means that a hearing was held and that the condition was ruled by the Commission as IAOE (Injury Arising out of Employment.) The second group, Compromise and Release, means that the insurance company and the claimant agreed upon a settlement which the Commission approved. The Commission, in these cases, might

have awarded a smaller amount to the applicant, or even nothing at all. Indeed, some records indicated that the referee--had it been left to his judgment--would have awarded a smaller amount than was actually compromised on. The third group, Denied or Dropped, means either that a hearing has been held and the claim was denied, or that a claim was filed but the claimant did not appear to press the claim. Those are thrown together because of the small numbers involved.

I shall skip over Tables 5 and 5a as needing no particular discussion.

Table 6 will give you an indication of the amounts of payments which were made in those cases where the records showed how much was paid. There are some in which we didn't have the information.

Table 7 gets into another phase of our study. Now the 398 cases which were reviewed were sent for study to a panel of physicians including board-certified cardiologists, board-certified internists, and another group of physicians with experience in heart disease--such as the members of the California Society of Internal Medicine. Each abstract was reviewed independently by five physicians selected at random from among those interested and willing to cooperate. This doesn't mean five of all the doctors in California. It means, in the first place, they were internists, that many of them were board-certified, and that they were willing to do this and said so in advance. This means that the cases are selected and the physicians are selected.

It must be remembered that the abstract does not contain the whole body of information known to the Industrial Accident Commission. Oral testimony, with its many nuances of expression, was not transcribed in most cases. Hospital records and other documents which the Commission had before it were not retained or copied in the files in many instances. Also, it should be pointed out that the Labor Code itself requires the Commission to give a liberal interpretation of the law for the purpose of extending compensation benefits for the protection of persons injured in the course of their employment. This is sometimes referred to as the principle of giving the benefit of the doubt in favor of the employee and this particular aspect of the law is not presumed to be part of the equipment of doctors.

Table 7 indicates what kind of physicians participated in terms of specialization and how they made their judgment as to work connection. It is of some interest that the board-certified physicians were somewhat less likely to judge the disease work-connected than were physicians who were not board-certified. It also became apparent in many instances that the reviewer found the information insufficient to judge whether or not heart disease was present. This was the case with three or more reviewers on 79 out of the 398 cases, which indicates the need for more information in the abstract, and suggests that there is needed more information before the Commission.

Table 8 gives the agreement among the reviewers--the reliability among them.

Table 9 brings out an interesting point. We did a dirty trick. We picked out a hundred cases which were selected cases from among the 398. They were selected on the basis of having good medical information--enough to make a judgment on. We picked out a hundred doctors who had previously looked at these cases and sent the cases back to them without telling them they had seen the cases before. And here is the result of what they said the second time around. A few of them recognized that they were being tested as to reliability--most of them apparently did not. It indicated that in a good many instances the doctor didn't say the same thing both times; so that when comparing doctors among doctors with each other, and comparing doctors' judgments with their previous judgments, one gets considerable variation, as well as an indication of substantial discrepancy between the judgments of the Commission and the expert physicians who reviewed the abstracts.

Now, inasmuch as awards favorable to the claimant must, in nearly every case, be supported by medical evidence, it appears that education of physicians as to the part they play in these claims is needed. It may also be pointed out that the allegation that every heart claim gets an award has not been substantiated by this study.

Tables follow.

Cardiacs in Industry
TABLE 1
Number of Claims by Occupation Group &
By Selected Individual Occupations

Occupation	Total	Reviewed	Not Reviewed
Total	583	398	185
Professionals	33	21	12
Farmers and Farm Managers	2	2	0
Managers, Officials & Proprietors	26	18	8
Clerks	14	9	5
Salesmen	18	12	6
Craftsmen including:	149	116	33
Carpenters	32	27	5
Foremen	15	10	5
Auto Mechanics	14	11	3
Other Mechanics	13	10	3
All other craftsmen	75	58	17
Operatives including:	84	57	27
Truck & Tractor Drivers	18	11	7
All other operatives	66	46	20
Service Workers including:	140	98	42
Firemen	46	35	11
Guards	12	9	3
Policemen	59	41	18
All other serv. workers	23	13	10
Farm Laborers	9	4	5
Other Laborers	77	49	28
Not Stated	31	12	19

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Cardiacs in Industry
TABLE 1A
Number of Heart Claims per Year
per 100,000 Workers ^{1/}
By Occupation Group and By
Selected Individual Occupations

OCCUPATION	Claim Rate per 100,000
Total	5.3
Professionals	3.1
Farmers and Farm Managers	0.5
Managers, Officials & Proprietors	1.8
Clerks	1.9
Salesmen	2.0
Craftsmen including	6.5
Carpenters	10.2
Foremen	8.2
Auto Mechanics	7.2
Other Mechanics	5.1
All Other Craftsmen	5.5
Operatives including	4.7
Truck & Tractor Drivers	5.3
All other Operatives	4.5
Service Workers including	17.6
Firemen	103.1
Guards	21.5
Policemen	87.1
All Other Service Workers	3.7
Farm Laborers	1.6
Other Laborers	9.0
Not Stated	-

^{1/} From U.S. Census Counts by Occupation

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Cardiacs in Industry

TABLE 2

Age Distribution

Number of Cases, By Reviewed and Not Reviewed

	Total	A G E G R O U P					Not Stated
		Under 35	35-44	45-54	55-64	65 & Over	
Total	583	26	102	228	168	44	15
Reviewed	398	16	67	165	119	30	1
Not Reviewed	185	10	35	63	49	14	14

TABLE 2a

Age Distribution

Per cent of Cases, by Reviewed and Not Reviewed

	Total	A G E G R O U P					Not Stated
		Under 35	35-44	45-54	55-64	65 & Over	
Total	100.0%	4.5	17.5	39.1	28.8	7.5	2.6
Reviewed	100.0%	4.0	16.8	41.5	29.9	7.5	0.3
Not Reviewed	100.0%	5.4	18.9	34.1	26.5	7.5	7.6

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Cardiacs in Industry
TABLE 3a

Severity of Occupation
Number of Cases - Reviewed and Not Reviewed

	Total	Severity			
		Strenuous	Moderate	Mild	Not Classified
Total	583	98	360	89	36
Reviewed	398	58	264	61	15
Not Reviewed	185	40	96	28	21

TABLE 3b

Severity of Occupation
Per cent of Cases - Reviewed and Not Reviewed
For Those Classified for Severity

	Total	Severity		
		Strenuous	Moderate	Mild
Total	100.0%	17.9%	65.8	16.3%
Reviewed	100.0	15.1	69.0	15.9
Not Reviewed	100.0	21.4	58.5	17.1

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Cardiacs in Industry
TABLE 4
Causative Episode by Award
Number of Cases - Reviewed Only

	Total	A W A R D		
		Recd. Payment Decision	Recd. No Payment Compromise	Recd. No Payment Denied
		IAOE	and Release	or Dropped
Total	398	127	169	102
Unusual Ex- ertion	81	30	40	11
Physical Trauma	41	12	19	10
Neither Exer- tion nor Trauma	250	76	97	77
Not Classified	26	9	13	4

TABLE 4a
Causative Episode by Award
Per cent of Cases - Reviewed Only

	Total	A W A R D		
		Recd. Payment Decision	Recd. No Payment Compromise	Recd. No Payment Denied
		IAOE	and Release	or Dropped
Total	100.0	31.9	42.5	25.6
Unusual Ex- ertion	100.0	37.0	49.4	13.6
Physical Trauma	100.0	29.3	46.3	24.4
Neither Exer- tion or Trauma	100.0	30.4	38.8	30.8
Not Classified	100.0	34.6	50.0	15.4

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Cardiacs in Industry
 TABLE 5
 Policemen and Firemen
 by Award
 Number of Cases - Reviewed Only

A W A R D				
	Total	Received Payment		Received no Payment
		Decision IAOE	Compromise & Release	Denied or Dropped
Firemen	35	22	8	5
Policemen	41	23	3	15

TABLE 5a
 Policemen and Firemen
 by Award
 Per cent of Cases - Reviewed Only

A W A R D				
	Total	Received Payment		Received no Payment
		Decision IAOE	Compromise & Release	Denied or Dropped
Firemen	100.0	62.8	22.9	14.3
Policemen	100.0	56.1	7.3	36.6

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Cardiacs in Industry
Table 6
Amount of Payments
Number of Cases - Reviewed Only

AMOUNT OF PAYMENT								
	Weekly pay- ments only	Less than \$2000	\$2000 to 3999	\$4000 to 5999	\$6000 to 7999	Over \$8000	Not known to have recd. payment	
All Cases	398	36	76	57	39	39	1	151

Lump sum payments averaged \$3,350. Weekly payments averaged \$33. Nine persons received both a lump sum payment and weekly payments.

Table 6a
Amount of Payments
Per Cent of Cases - Reviewed Only

AMOUNT OF PAYMENT								
	Weekly pay- ments only	Less than \$2000	\$2000 to 3999	\$4000 to 5999	\$6000 to 7999	Over \$8000	Not known to have recd. payment	
All Cases	100%	9.0%	19.0	14.3	9.8	9.8	.3	37.8

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Cardiacs in Industry
TABLE 7
Qualifications of Reviewers by Their
Judgment of the Work-Connection of the Heart Claim
Number of Reviews

	Total	Cardiologist	Internist	Not Certified
Total	1990	240	860	890
Positive	786	94	298	394
Undecided	408	44	171	193
Negative	796	102	391	303

TABLE 7a
Per Cent of Reviews

	Total	Cardiologist	Internist	Not Certified
Total	100.0	100.0	100.0	100.0
Positive	39.5	39.2	34.6	44.2
Undecided	20.5	18.3	19.9	21.7
Negative	40.0	42.5	45.4	34.0

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Cardiacs in Industry
TABLE 8

Amount of Agreement Among Reviewers
For Cases where 3 or more Reviewers
Say Information is Sufficient

Number of Reviewers Agreeing	Number of Cases
Out of 5 Reviewers	
5	47
4 only	99
3 only	125
No majority (only 2 agree)	48
	<hr/> 319

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Cardiacs in Industry
TABLE 9

Amount of Agreement of Reviewers
With Themselves as to Work Causation or Aggravation
(For 101 cases sent to the same Reviewer twice)

		Reviewer's First Judgment		
ALL CASES	Total	Positive	Indefinite	Negative
Reviewer's <u>2nd</u> Judgment				
Total	101	46	16	39
Positive	42	34	2	6
Indefinite	13	4	6	3
Negative	46	8	8	30

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Cardiacs in Industry
TABLE 10

Association of Reviewer's Group Judgments with
Industrial Accident Commission Awards

All Reviewed Cases with Sufficient Information
Number of Cases

	MAJORITY JUDGMENT			
	Positive	No Decision	Negative	Total
Industrial Accident Commission Award				
Money Awarded	127	28	88	243
Money Not Awarded	18	8	50	76
Total	145	36	138	319

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Remarks by MEYER FRIEDMAN, M.D., Director, Brunn Institute of Cardiology, San Francisco

The other day I looked up what the United States Government and a couple of our national foundations are doing about, and how they are spending their money to find out the cause of, coronary artery disease. And I found that roughly of the three organizations that spend well over ten million dollars, 84% of all research money is being spent on this disease to find out if there is any correlation between fat, or lipid metabolism, and the thickening of the arteries. Since the arteries are thickened with fat, you can perhaps see the reason for the overwhelming predominance of research in abnormal fat metabolism and its possible relationship to coronary disease. No more than 3% of the money is being delegated to the possible role of psychological factors in this disease. However, I should like to point out that we ourselves sent out an informal questionnaire in which we asked executives what they considered the main cause of heart disease among their confreres, and roughly 70% responded "tension." If our government and our various national foundations are spending about 84% on research on fat, and the executives that we so far questioned believe the disease due to emotional tension, one of the groups must be terribly in error.

What I would like to bring out, as Dr. Page, President-elect of the American Heart Association, has said, we have no rich storehouse from which to draw concerning the cause of this disease. I don't think (if we really went into educating our physicians) that we would end up with anything more than an overwhelming humility on their part--that given a live patient, without an autopsy so that the heart was before them or under the microscope, they could speak not with an opinion, but only with a humble guess. Now, I am afraid that neither I nor most of the physicians wish to say we are guessing, particularly when summoned as experts in legal affrays, and particularly when the other side is trying to pin us down and we give our opinions in the same aura of certainty as if they were facts. Actually, for example, if a patient has a heart attack--and let us say that it's a myocardial infarction--we are not certain whether that patient had a clot immediately preceding that attack to occlude the lumen. We aren't even sure that there is any marked thickening of those vessels, because 10% of the Army soldiers between, I think 20 and 40, that were studied by Dr. Yater, had no obvious narrowing of the arteries at the time of death when their hearts were examined afterwards. Likewise, Dr. Blumgart (who I think all of us physicians will agree is one

of our authorities in heart disease) states that an intimal hemorrhage--that is, a hemorrhage within the wall of the artery itself--could cause, let us say, an occlusion of that artery, not immediately, but any time between zero and 72 hours and perhaps longer. So that a man could have, let us say, some kind of an accident to a coronary vessel by hemorrhage within the wall on Saturday, and not have his attack, so called, or pain and shortness of breath, until Monday--something that is very difficult for even a physician to agree to at this time. Now this, you would say, is a very unimportant cause of heart attacks, but of the 800 soldiers that were autopsied because they died of this disease, 10% of them were found to have either a fresh or old hemorrhage within the wall of the vessel. So given a patient who has had a heart attack, he has a 10% chance of having had a hemorrhage in the wall of his vessel--and no physician could tell, without a very meticulously performed autopsy, whether this had occurred.

Now whether you wish to penalize a patient on a 90% frequency, I don't know. It would depend on the philosophy of the physician. But if we educate our physicians more and more into this disease I think we'd end, as I have said, with a humbler physician, but I'm not sure that he'd be any better informed when asked to view a single patient. The statistics on this disease are notoriously unreliable. For example, there are two references in New York in that booklet you have by Masters and Boas which have been sharply criticized by Dr. Paul White of Boston, and also Dr. Paul Wood, because they were obtained from one segment of the population--one race--a race that is notoriously liable to have this disease at any economic status and in any occupation.

I think, for example, one of the best studies we have is that of Dr. Levine and Dr. Gertler, who studied a hundred of these people. They found that 94 of the 97 men of their series were workmen or executives or professionals who were not unskilled. In other words, there were only three people who were unskilled who had heart attacks under the age of 40. So that if you wish to take their figures and their statistics you would say that this is a disease which pretty much attacks the educated or the skilled of our society.

There is one group in America that does not have this disease very much regardless of their education or skill--and that is our women. Of the Boston series only 3 were women--that is,

3 out of a hundred. And it is interesting to point out that Dr. Heberden (I think in the 18th century, when he first reported the symptoms of this disease) was only able to get 3 women out of 100. Why women don't get this disease, of course, is a mystery to physicians today. It presents a very challenging program, and of course right now we are inclined to believe--and I speak for the majority--that perhaps a woman is protected, first, by her hormonal balance, and second, by what she eats. That is the majority opinion, I believe.

Now besides humility I think the physician should carry to the Industrial Accident Commission hearing an open-mindedness. He should be aware at all times of the research developments in this field. I don't think, for example, it's good for a physician to say that physical work hasn't anything to do with this disease when the American Heart Association is putting out cartoons strongly advising middle-aged men not to overdo physical exertion at any time--and particularly after meals. There is some sort of discrepancy about this.

In summing up, then, what we do know about this disease, I should say that probably an artery takes many years to thicken, but once it's thickened it can at any time be subject to some kind of accident--whether it is a clot on the inside of the vessel or actually in the wall of the vessel. Now, whether trauma can accelerate the clotting of blood within a blood vessel, I don't think we really know. But I think we're reasonably certain, however, that a hemorrhage can occur within the wall because of preceding trauma. Far more important, perhaps, is the fact that maybe 50% of the men in this room over 40 have some thickening of their vessels. The heart muscle needs oxygen and cannot incur an oxygen debt--so the physiologists tell us--as our leg muscles do. Now it is quite conceivable that if we do have a physical exertion and demand a certain amount of blood which our thickened arteries can't deliver because the muscles of our heart cannot incur an oxygen debt, it might die and give us the typical signs of what we call a heart attack or myocardial infarction. Certainly this accident is not rare in elderly people who undergo an operation and have a lowered blood pressure. Even though they haven't had a clot in the blood vessel, or any particular increased acceleration of their gradual sclerosing process, they nevertheless could have a typical infarction and die. So the type of activity of a man who has a thickened artery should be brought to the attention, I think, of the legal litigants in a particular case. Whether, of course, that in

itself at the time was the cause of the man's illness, I don't think anyone can be absolutely positive. My own personal philosophy is that whenever there is a doubt I think the individual should get the benefit of that doubt. Perhaps a more punitive or more opinionated doctor would say that the carrier should get the advantage of the statistical frequencies. This divergency belongs in the realm of philosophy.

Remarks by LEON LEWIS, M.D., Lecturer in Medicine, Stanford University School of Medicine

Doctor Beard's statistical presentation clearly indicates that there is frequently wide disagreement in diagnosis among physicians who deal with heart disease--particularly disease of the coronary arteries. Doctor Friedman has also given us clear indication that we are not yet dealing with clinical entities which can be differentiated with precision.

I should like to proceed with a consideration of difficulties which are faced, not only by the medical profession and the legal profession in dealing with this complex subject, but also by the workman himself who is disabled by heart disease, and by the community which--in a very real sense--suffers in proportion to the worker's disablement.

I should like to have you consider the situation faced by a worker, usually a man between 45 and 55 years of age, who, despite the fact that he has had no prior hint of illness, and even though he might recently have passed a physical examination at work, suddenly finds himself disabled as a result of coronary artery disease. This type of sudden heart disorder differs from many other illnesses because it usually occurs without warning and without opportunity to mobilize family and other resources to meet the multiple needs of the patient and his dependents. The situation resembles that of severe accidental injury and may be catastrophic so far as a family is concerned.

At present in this community the patient with coronary artery disease can usually obtain good medical care. Fortunately, increasing interest in prepaid hospitalization insurance, and the broadened provisions of unemployment compensation disability insurance, make it possible for the ill workman to receive at least a brief period of hospital care without serious financial drain. From the economic standpoint, however, the resources available for prolonged medical care, and more particularly for indemnification, are both uncertain and generally inadequate.

There are two types of insurance resources which may apply to the illness in question. The first type, and the lesser in terms of value to the patient, is Unemployment Disability Compensation which provides weekly indemnification for a period of 26 weeks and a very few days of partial hospitalization insurance, but no other contributions whatsoever to medical care costs. If the worker, either through his union, his employee group, or individually, happens to have prepaid medical care and hospitalization insurance he is indeed fortunate.

The other type of insurance which may conceivably apply to the workman suffering from sudden disabling heart disease is Workmen's Compensation Insurance. If the worker is eligible this insurance provides not only a slightly greater indemnification lasting throughout the period of temporary total disability, but also payment for all medical costs--for physician, consultants, laboratory work, x-ray and hospitalization--and indemnification for possible permanent disability, as well as payment of death benefits to dependents in case of a fatal outcome of his illness.

The differential between the 26 weeks disability insurance benefits (which are equal in time of indemnification to those established in the first European disability insurance acts under Chancellor Bismark) and the intermediate financial benefits of the Workmen's Compensation Act with its added full payment for medical care, is obviously so great as to lead any intelligent worker to seek coverage under the latter type of insurance.

It is not surprising, therefore, to find that during the past two or three decades there has been an interesting change in orientation in the field of industrial insurance, with tremendous growth of a tendency of workers to seek coverage under the broad umbrella of Workmen's Compensation insurance. Twenty years ago it was the exceptional workman, with the exceptionally shrewd lawyer, who was able to achieve success before the Industrial Accident Commission in proving that his cardiac condition was due to his work. During 20 years there has been a variable but somewhat consistent increase in the proportion of applicants who are successful in establishing claims of industrial causation of heart disease.

In view of the obvious advantages to the individual who can succeed in establishing occupational causation for heart disease, the question of the ability of medical experts to differentiate accurately those instances of heart disease which

are truly traumatic or occupational in origin from those which are not, becomes a major issue in terms of equity and social welfare.

Doctor Beard has already indicated that there is a high degree of disagreement between physicians reviewing the same evidence, and that there is also inconsistency in the rulings of the Industrial Accident Commission. This should not be surprising since the mechanism of development of coronary artery disease varies from case to case, and etiological factors cannot be thoroughly understood even when the coronary arteries are available for laboratory study. It can be said, therefore, that reliable determination of industrial causation is usually impossible.

In practice, neither the lesser insurance of Unemployment Disability Compensation nor the greater insurance of Workmen's Compensation--with its expanded benefits and its financial reward to widows and dependents of the deceased workers--actually meets the needs of the disabled cardiac in a satisfactory manner. Even in those circumstances in which industrial causation is established by legal process, there is usually a long period of uncertainty on the part of the worker during which economic duress is complicated by the psychological difficulties of investigation and litigation. Fortunately, the informed worker can collect unemployment disability insurance benefits through the mechanism of a lien against the workmen's compensation carrier until the issue of responsibility is resolved. However, the stress of uncertainty, the harassment of investigation and repeated medical examinations, as well as the pressures of financial obligations, cannot but handicap the recovery of the disabled worker.

If it were actually possible by such means as those proposed by Mr. Campbell, or those presumably spelled out by the Utah Commission which tried specifically to delineate heart conditions due to work--if such were possible, and wide agreement among physicians could be achieved, decisions as to compensability could be relatively promptly achieved and thus the stress of uncertainty would be relieved. Under such circumstances the legitimately industrially disabled would qualify for the benefits which have already been outlined. Let us assume, however, that out of ten workers who experience myocardial infarction, three suffer attacks directly as a result of their employment and seven develop their disease independently of their work. Under such circumstances the three favored

individuals would have a greater degree of economic support, more thorough and better paid medical care, and in the event of death their widows would be provided with several thousand dollars in insurance benefits. The other seven, on the other hand, would receive only short-lived financial and hospital benefits. Dependent widows and families would receive nothing in case of death.

This type of differentiation may be perfectly equitable in the legal sense. Under the assumption proposed, the medical practice involved would be scientific. However, from the social point of view it is hard to understand in what way the seven less favored individuals and their families differ from the three who happen to have disease develop in the bread winner under circumstances which are considered to be related to occupation.

It seems to me to be necessary, in connection with the problem under discussion, to look at the worker as a social and economic resource. In the event of his disability he ceases to be a resource, and if his recovery is handicapped or delayed he becomes a distinct social and economic liability. It makes little difference in these terms whether his disability is related to his occupation or not. Somehow, in terms of social salvage, he has to receive financial aid, medical care, and rehabilitation--not only for his own sake, but for the community as well.

To date the emphasis in consideration of social insurance for workers has rested on the question of who foots the bill. The employer, it is argued, should reasonably be saddled with the costs of disability resulting from conditions of work imposed by him. This is an accepted principle. On the other hand, disability which is not due to employment is considered to be the responsibility of the individual himself. Society enters the picture only through recently enacted disability insurance and prepaid medical insurance. The charitable assistance of religious orders, lodges, and other social organizations as well as welfare agencies, has long been recognized to be inadequate.

In view of the general dissatisfaction with solutions to the problem at hand, I should like to inquire whether or not there are grounds for a different approach to meeting the needs of the disabled worker. The cardiac disabled is used as an example because he permits a dramatic presentation of need and well illustrates the difficulties which are encountered.

(Before presenting a heterodox suggestion, it is necessary to reiterate that one of the basic assumptions upon which the discussion of differential insurance benefits was carried on, has very little basis in fact. With all of the criteria so far provided in the Utah Plan, or in any other statement to date, it is rarely possible to make a definite differentiation in any given case between heart attacks which are due to work stress and those which are not. In some instances the evidence may be strong, but error is still possible. In addition to rejecting the assumption of medical ability to differentiate, it is necessary to emphasize again that we must look at the problem as one involving human beings who are, for a time, disabled for work, and who must receive some type of financial and medical assistance.) The objectives, therefore, should be to provide effective medical care and financial assistance in an effort to meet physical needs, and to maintain the psychological integrity of the individual involved. These measures must not only provide essential care, but should spare the worker the unnecessary stress, maintain the family as a sound social and economic unit, and bring every force to bear which can bring about speedy recovery, rehabilitation, and re-employment of the disabled individual. These goals, in my opinion, cannot be achieved by even the soundest application of differential diagnosis or fine legal discrimination. In fact, they are virtually ignored in current procedure!

If we are willing to accept the ideas proposed--namely, that the goal is not merely decision as to who should bear the brunt of economic loss due to illness, but rather to achieve maximum salvage and minimal loss of resource in terms of human production and human happiness--then we must look to some new solution to the problem under consideration.

There is, of course, no easily achieved panacea. In relation to such predominantly "medical" diseases as coronary arteriosclerosis, and many others (arthritis, diabetes, multiple sclerosis, etc.) it seems to me that the whole attempt to differentiate causation in terms of employment should be abandoned. It should be granted a priori that most disabilities due to coronary artery disease are non-industrial in origin. It should also be recognized that all disability among workers is socially disadvantageous and economically harmful. Insurance provisions to provide care and indemnification for workers suffering from the common diseases of mankind, including coronary artery disease, should be based upon social need rather than theoretical distinctions of etiology. To be specific, the only type of answer which can

be satisfactorily acceptable to everyone concerned (except those who have a vested interest in litigation and dispute) is extension of the principle of disability insurance to provide adequate financial assistance during the period of disability, broadening of prepaid hospitalization and medical insurance, and rapid development of the techniques and facilities for rehabilitation. It is freely admitted that this type of broad program will require a degree of skill in application greater than that now possessed by any of the professions involved in the care or support of injured and sick people. The dangers of encouraging dependency are real, yet these would greatly be minimized by a system of insurance which became operative at once upon the development of disability without being contingent upon fine medical or legal distinctions. Most human beings, when fairly treated, have a great drive toward recovery and return to employment. Loss of motivation usually occurs among those subjected to uncertainty and threat. These are the unfortunate who resort to the psychological defenses which prove so destructive in terms of rehabilitation.

If the ideas proposed are considered to be too advanced and too far reaching, it should be pointed out that we have arrived at those measures of social insurance which we now enjoy only after years of protesting against their dangers as threats to individual liberty or our way of life. It seems well past the time when obvious means of conserving human resources in the United States should not be defeated on the grounds of stale, emotional, eighteenth century objections. Insofar as the cardiac, or "medically", disabled worker is concerned, there will be no solution to his problem until it is wholly removed from the litigious atmosphere of the Workmen's Compensation court and freed from the other processes in current insurance practice which are more concerned with abstract legalisms than with the welfare of the citizen involved. This alone will not suffice, but within the structure of our highly technological civilization, with its unique wealth in goods and skills, there must reside the ability to structure plans which will be equitable, adequate and contributory to the highest degree of conservation of our basic human resources.

Remarks by THE HONORABLE IRVING S. ROSENBLATT, JR., Attorney
San Francisco

I have listened with a great deal of interest to Dr. Lewis' statements, and although I have often found myself on the opposite side of cases from Dr. Lewis in our presentations before the Industrial Accident Commission, and although I will not agree with certain of the statistics, I think that there is a great deal to be considered in a novel and new approach which may be worked out through legislation to this problem. However, as I understand it, my duty here today is to tell you what the law is on this matter. Ah, that I could do so! But I will attempt to place before you what the law was as we understood it up until May of 1954, and the unresolved problems which have arisen between May of 1954 and the present.

First of all, in looking for agreement at least on one issue I see that there is one matter in which there is probably general agreement, although Dr. Friedman would indicate that even in this there may be some disagreement. But even as a claimant's attorney, I am ready to come forward and say that in the majority of coronary occlusions, in the vast majority, probably up to 90%, they are cases in which there was pre-existing disease. And with this agreement our main problem here is to find out the relationship of industrial compensation to an injury which lights up a pre-existing disease. The law is quite clear that if the industrial injury--and the industrial injury may be no more than strain--aggravates, precipitates, hastens, lights up, a pre-existing disease, then that injury is compensable. I quote from probably the leading decision dealing with this matter which is the Liberty Mutual Decision (the Calabrese case) 73 CalApp.2d, in which Mr. Justice Peters of the First District Court said: "It is now too well settled in this state to require extended citation of authority that the employee is entitled to compensation for disability proximately caused by industrial injury regardless of whether the employee's condition at the time of injury was average or subnormal. Thus an aggravation of an existing infirmity where such aggravation is proximately caused by the employment is compensable even though a normal man would not have been adversely affected. Industry takes the man as it finds him. A person suffering from a pre-existing disease who is disabled by an injury proximately arising out of employment is entitled to compensation even though a normal man would not have been adversely affected by the event. This rule applies even though it is shown

that the employee would have ultimately died from such disease, and if the evidence shows and the Commission finds that the injury hastened or produced the death."

Now that is the general statement of the law. But there is an exception to it. The legislature in its wisdom realized that if we placed all the burden upon the employer without any proration whatsoever that the employer would be loath to employ a handicapped worker because if that handicapped worker then suffered an industrial injury the total of his permanent disability would be much greater than that of the normal worker, the worker without physical handicap, and the employer or his insurance carrier would be charged with a much greater financial responsibility. So the legislature enacted a rule of apportionment by which the rated permanent disability was to be apportioned between the disability which pre-existed the industrial injury and the employer would not be charged for that, and the permanent disability which arose out of the industrial injury. It was passed for the purpose of encouraging the employment of the handicapped worker. But as it was passed for the encouragement of the handicapped worker the Supreme Court of the State of California in the Colonial Insurance decision (the Pedrosa case) in 1946 in effect said: "This apportionment rule shall only apply if the man was in fact disadvantaged by the pre-existing disability in the labor market prior to the industrial injury. If he was not at a disadvantage in the labor market, even though he had a pre-existing disease (if it was not known to him and not known to his employer) then the apportionment rule shall not apply in that case and the employer shall be responsible for the full extent of the injury."

The State of California then went a step further and said, "We have a number of cases in which we are going to apportion the injury because the man had a pre-existing disability; we are apportioning it so the employer only pays for a portion of the resultant permanent disability after the industrial injury." But now what is going to happen to the man? His pre-existing disability may have been substantial but he was still in the labor market. However, after his second disability which arose out of the industrial injury the combination of the two was so great that the man was effectively removed from the working market. So the State of California said, "We will step in and take up the slack." So in cases of pre-existing disability where there was a disability manifest before the industrial injury, and after the industrial injury the various disabilities together total

70% or more the State of California takes up the slack,-- that which is not taken care of by the employer, that which is apportioned away from the employer, the State of California takes care of through the Subsequent Injuries Fund. And those two pieces of legislation, the apportionment statute and the Subsequent Injuries Fund, were set up for the very purpose which concerns us at the conference today-- the encouragement of the employment of the handicapped workers.

However, to make those laws applicable to the purpose for which they were written it is important to bear in mind that they were enacted to help those workers who otherwise would have been at a disadvantage in the labor market and therefore it was at all times understood, at least prior to May, 1954, that those laws did not apply to the worker who might have had a pre-existing disease but who was not handicapped on the labor market because neither he nor his employer originally knew anything about it. Now those are the general rules. And one would think that with those general rules before us everything from there on would be simple. But it isn't so. The relationship of the Industrial Accident Commission to heart disease cases may be analogized to the description of the Soviet Union by Winston Churchill: "A riddle wrapped in a mystery inside an enigma."

Here we have the very interesting situation. (Mr. Campbell, I may appear before you from time to time so I want to make clear that I don't level my attack at the Industrial Accident Commission alone; the figures that were given by Dr. Beard show that the medical profession, too, may have a part in the creation of the enigma.) Well here is the situation. As you know, there are two schools of thought on the question of strain. I assume that Dr. Friedman may tend toward one school, I know damned well Dr. Lewis tends toward the other school. You go before two referees with identical cases. Let's say it's the case of a truck driver loading and unloading a heavy truck and within two hours after the unloading of that truck he suffers a coronary occlusion (well within the 72 hour period.) I go before referee A, referee A follows Boas. He believes that if you have a history of a sequence of strain followed by occlusion that the probabilities are that the strain had something to do with the occlusion. The strain was industrial, therefore the probabilities are that there was the relationship that is required to get industrial compensation. And so referee A is a good referee -

he decides in favor of my man. But unfortunately my colleague has the identical case before referee B in the next room. Referee B in the next room is well acquainted with these heart cases, too, and he's made up his mind. It doesn't matter what doctors my colleague bring in there. It may be the greatest doctor, he may bring Maimonides himself from the dead, he may bring him into the hearing room, but that referee has made up his mind that the strain theory is "hogwash." He follows Masters implicitly, and on the same facts he decides against the claimant. You have two opposite decisions on the same facts. They go up by chance the same day to Panel 1 of the Industrial Accident Commission and the panel acts on them the same morning, gives 55 seconds to one and 55 seconds to the other, and it affirms both decisions although they are absolutely contrary one to the other.

That's what happens, because there was substantial evidence in both cases to support the referees' decisions. And then we appeal to the Courts; we petition for a writ of review, and on the same day the writ of review is denied in both cases because there was substantial evidence in the record to support these two opposite conclusions. In other words, what we have now on these heart cases is Las Vegas Writ Large.

Now that's not enough trouble, because up until May of 1954 we thought we understood the apportionment rule and we thought we understood the liability of the Subsequent Injuries Fund. We thought we understood them. We thought that as these laws were enacted to encourage the employment of the handicapped that, therefore, the apportionment rule and the Subsequent Injuries Fund would not apply in any way to the man who may have had a pre-existing disease if the pre-existing disease was not manifest and did not handicap him in the labor market until he had the occlusion. Suddenly in the Sussman case the Industrial Accident Commission decided to take a frolic on its own. It forgot all about that long list of decisions beginning with the Colonial Insurance case, all about those tremendously long lists of decisions of the Industrial Accident Commission itself, all about the briefs filed by the Industrial Accident Commission that said the apportionment statute does not apply unless the pre-existing disease was disabling and symptomatic and it pro-rated Sussman's permanent disability even though his pre-existing disease was asymptomatic and non-disabling.

Then you have the doubly unfortunate case of Mr. Bowler, a claimant whom I recently represented before the Industrial

Accident Commission. He was unfortunate in that his case was decided after the Sussman case, and doubly unfortunate because the heart attack which the Commission found resulted from an industrial injury had not been preceded by a heart attack which had partially incapacitated him. Because of the Sussman decision, his permanent disability which resulted from the lighting up of a pre-existing arteriosclerosis was apportioned with only twenty-five per cent of the permanent disability payable by the employer; and because the pre-existing disease was asymptomatic and non-disabling he was unable to obtain aid from the Subsequent Injuries Fund.

Thus the grotesque result of the decisions in the Sussman case and the Bowler case is that because the claimant was not lucky enough to have had a previous heart attack he will have to bear the major portion of his disability without help from either his employer or the Subsequent Injuries Fund. If he had had a previous heart attack, his entire disability would have been taken care of by the employer and the Subsequent Injuries Fund.

A petition for a writ of review has been filed in the Bowler case and it is hoped that the writ will be granted so that the Court can reflect upon the departure of the Commission from the settled law on the question of pro-ration.

Well, the Industrial Accident Commission, following the Sussman and Bowler cases apparently became a little worried about the grotesque result occasioned by its departure from precedent. For every time you depart from established law somehow or other you get yourself into trouble. So they said, "Aha, we'll change the subsequent injuries law by ourselves: not by legislation, not by the courts, but by our own pronouncements. We'll just say," and they said it in the Strauss case, "the benefits of the subsequent injuries legislation will be available to all cases in which there was pre-existing disease where the total disability was seventy per cent or more, including those cases in which the pre-existing disease was non-disabling and non-symptomatic -- we'll just charge the State of California for the difference."

So now you have two cases on petition for writ of review before the District Court of Appeal representing two changes--two departures from established law by the Industrial Accident Commission.

If both writs of review are denied, or if both decisions of the Commission are affirmed after the granting of the writs, we will have a situation where the twin departures from established law will not matter much to the injured employee because what relief he does not receive from the employer he will receive from the Subsequent Injuries Fund of the State of California, save and excepting that the Subsequent Injuries Fund is getting lower and lower, and so the claimant may in the end just have a nice judgment that he can't collect because there are no funds available.

The employer will be much better off because he will receive the benefit of apportionment even though the social aim of the statutory provision, to encourage the hiring of the partially disabled, has no relationship whatsoever to the employer involved and obviously where the prior condition does not manifest itself no ground for discrimination in hiring exists. In fact, the only people hurt by a dual affirmance would be ourselves as representatives of all of the people of the State of California. For the former liability of the employer will, if the decisions of the Commission in the Bowler and Strauss cases are affirmed, be transferred to our own aching backs.

There is, however, a real danger involved in these joint appeals, in that the Court may well say it is quite clear that the Subsequent Injuries Fund cannot be liable where the worker, prior to the injury, had not been handicapped in obtaining employment. Thus the Court may reverse the Strauss decision and still apportion Mr. Bowler's permanent disability so that the poor fellow who unfortunately did not have a prior heart attack will now bear seventy-five per cent of his permanent disability and will eventually land on the relief rolls. Thus, in the long run the State of California will have to support him, but not until after he has been pauperized.

There is the third possibility, and this I sincerely hope will occur, -- that the courts will turn to the Industrial Accident Commission and say, "If you don't like the law as it is now, go to the legislature and ask them to change it. Don't you go and take a frolic on your own -- you leave the law as it is."

I hope I have given you a thoroughly clear picture of the state of the law as it is at the present time.

Remarks by HOWARD J. SCOTT, Attorney, Los Angeles

As the chairman has indicated, I practice in Los Angeles before Panel #2 of the Commission. This is a big state and apparently it is necessary that we have two divisions of the Industrial Accident Commission. I would judge from Mr. Rosenblatt's remarks that there is some hope for the employer, but so far it hasn't percolated down south. We are still trying these cases under the old law. So I'm encouraged by your remarks, Mr. Rosenblatt.

It is sometimes necessary that a lawyer invade the field of medicine in order to solve some of the problems that he faces in his practice. For example, the so-called cardiac or heart case in my practice of Workmen's Compensation Law. Early in my experience I was advised by an older practitioner never to pretend any greater knowledge of medicine than I actually possessed. I therefore here and now confess that the store of medical knowledge that I use in this work is pretty elementary, and it's probably little better than that of a cab driver in Washington, D.C. that I met several years ago. As you may know, the cab drivers in Washington are a rather garrulous lot and this particular fellow was no exception. He seemed to be blue and down in the dumps and he had just gotten his wife out of the hospital and the bill was staggering. In fact, he said, "You know there's a \$25.00 fee for the laboratory and my wife never used it once."

We have used the term cardiac here and it's kind of a fancy term. We call them heart cases in my practice, and it is my opinion that they are one of the biggest barriers to the employment of those afflicted with heart disease. These remarks are my own and I have acquired the background for them on the basis of personal experience and not solely through the study of statistics or looking through files. This was in the hard area of litigation; I've met employees, I've met the employers, and I've met the impact or whatever you might want to call it, of the award that eventually comes out.

I think we could safely say that under the present Workmen's Compensation Law in this state and its interpretation, any employer that indulged in a free and uninhibited cardiac employment policy would be either: first, ignorant of the law, or secondly, so altruistic and public spirited that he was willing to subordinate the interest of his company and its stockholders and pay the economic penalty for such a policy.

One might inquire from the employers standpoint how does he feel he is being penalized? I believe the employer's viewpoint in this regard would fall within one of the two following categories of cases. First, those cases where the employment is stigmatized as the cause of the cardiac disability under circumstances where the relationship is pretty tenuous. And, secondly, these cases where the employment is held for all or most of the cardiac disability under circumstances where the best medical opinion indicates that it is responsible at most for only a portion of the cardiac disability. The first classification is characterized by the situation involving a sedentary type of employment where a so-called heart attack occurs off the job and removed by hours or days from any employment service. It is nearly always possible for the employee to obtain a report from some physician blaming a particular feature of his employment for his disability. In these circumstances the employer reasons, not illogically I think, that each work day contains 24 hours, and that usually half or less of the time that a man is awake is devoted to his employment. What about the man's activities away from the job? The physician is usually silent about this and it is difficult to achieve Commission recognition of any possible cardiac causation that does not bear the label industrial.

The second classification of cases that I mentioned is characterized by the following situation, and I take this one from a file now in my trial docket. These are the facts. On February 2, 1953, according to the records of the family physician, a diagnosis was made of a condition of intermittent claudication of both lower extremities. The patient could walk only a few hundred feet without extreme pain in both calves. The doctor's records further show that March 21, 1953, the patient was worse and his records show that he continued under a medicinal regime which included priscoline. On December 10, 1953, the patient while at work raised up and struck the vertex of his head against a metal rod. He had only a momentary dazed feeling and continued with his work. His testimony was that thereafter he felt fine. He lost no time from work and had no further complaints. On December 30, 1953, he was at home, and while trying to get out of bed in the morning he was struck down by a stroke. Now, we presented that case to the Commission and that's pretty much what the testimony was.

The case was referred to an independent medical examiner

appointed by the Commission. The doctor reported that there was no absolute way to prove any relationship between the minor head trauma on December 10th and the stroke of December 30th, but the independent medical examiner went on to say that he was inclined to believe there might be some relationship. In the light of other medical opinion in the case, the independent medical examiner's report was liberal, to say the least. But the doctor, the independent medical examiner, went on to say in the same report, and I quote, "most of his present disability would have to be based upon his pre-existing illness. If forced to a percentage, may I suggest 60% of the patient's disability be attributed to his pre-existing illness and 40% to the accident in question."

One might think the story had ended, but it has not. Let's see how the Commission proposes to apply the law to these facts. The trial referee wrote the attorney for the applicant and myself, as attorney for the employer, suggesting settlement but holding this--I call it a club--over the employer's head, and I quote from the referee's letter: "In the report of the independent medical examiner there is a tentative apportionment of 60% of the present disability to the pre-existing arterial sclerosis and 40% to the trauma. However, I am not convinced that the doctor is not referring to an apportionment in the etiological sense rather than apportionment having in view the theorem that latent pathology of an asymptomatic character which is precipitated by industrial trauma is to bear no share of the legal liability for the symptoms precipitated. Although the applicant suffered intermittent claudication there is little doubt but that he was not occupationally disabled from his work. Before apportionment apparently he is entitled to 100% permanent disability rating plus life-long medical treatment." What the referee is saying in this letter, perhaps somewhat a little obscurely, is that no matter what the scientific facts are with reference to the role of this man's employment and his cardiac disability, the Workmen's Compensation law of California requires that his employer be held for all of his permanent disability and life-long medical treatment. In this man's case I would estimate the ultimate cost, if the case is decided along these lines, at between \$20,000 and \$30,000.

This employer happened to be an individual and I have reviewed the case with him since receiving this letter. He asked me, among other questions, "Mr. Scott, if I had known of this man's pre-existing condition before the accident he

claims, should I have continued to keep him in my employment?" Now I owe a duty to be frank with any client and I think you may know what my answer was.

By way of conclusion, it seems only reasonable that we should examine the present industrial compensation aspect of heart disease with this question in mind. Are we, in our present efforts to indemnify the cardiac claimant at the expense of the employer, not at the same time inflicting irreparable damage upon a much larger group of our citizens--that is, those with cardiac disease who are ready, willing, and able to work?

Summary by DOUGLAS A. CAMPBELL, Referee, State Industrial Accident Commission,
Los Angeles

The real problem in workmen's compensation in California is caused by the fact that the legislature has used the words "disease" in reference to "pre-existing disease," "permanent disability" when "apportionment" is to take place, but has failed to define it. There is also the mandate of liberal interpretation. I happen to have been with the Commission for 31 years last February. I find that there has been a complete reversal in the approach to the problem of heart disease. In the old days there had to be a showing of some unusual--some excessive--strain. on the theory that the heart had been compensated through a level of effort. It was only when it failed in the course of over-stress or shortly thereafter that it was compensable.

Now if you will notice the language of the Calabrese case quoted by Mr. Rosenblatt. Seemingly, it is immaterial how much stress or how much strain has been exercised by the individual. It is sufficient that he failed in the course of or soon after some stress or strain, on the assumption that, however light the stress or strain may have been, it must have played some part in producing the result. You will note this change through the years has been "judge-made"--or it may be "Commission-made," if you wish.

There are before this present session of the legislature a number of bills attempting to give legislative definition. As an attorney, I am hopeful we'll get the change there because really when we have definitions made by the Court we are living under "judge-made" law. Change of personality or

two personalities on the Supreme Court and they wipe out fifteen or twenty years of established rule. The Courts and the Commission, however, have planted themselves in the corner with an accretion of rules and it takes an amendment. I hope all of you who have legislative ear will approach the problem of trying to get a middle-of-the-road view--that's where the greatest strength is, the greatest advantage I see from a group such as this as we have an exchange of ideas--and approach it not from the idea of selfish group interest, but from the broad view. Which is best, to compensate a few individuals and create an army of unemployables, or create an employment atmosphere whereby, under controlled conditions, the handicapped may find employment?

So I, with those of you who have shown your interest by being here, will follow the legislative pattern and will attempt to get bills that are fair to complete the picture and remove the present inequities.

a panel discussion
REMOVING THE BARRIERS

Chairman:

Milton Chernin, Ph.D.

Dean, School of Social Welfare, University of
California, Berkeley

Discussants:

John C. Ruddock, M.D.

Medical Director, Richfield Oil Corporation,
Los Angeles

Ellsworth Metteer

Division Claims Manager, Liberty Mutual
Insurance Company, San Francisco

Z. L. Gullledge

Executive Secretary, State Senate Interim
Committee on Education and Rehabilitation of
Physically Handicapped Children and Adults

Nathan Nelson

Consultant, Bureau of Vocational Rehabilitation,
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Louis E. Davis

Associate Professor of Industrial Engineering,
University of California, Berkeley

PANEL

REMOVING THE BARRIERS

Introduction by Panel Chairman, MILTON CHERNIN, Dean of the School of Social Welfare, University of California, Berkeley

So far I have heard two contradictory statements about this conference. And I agree with both of them. Yesterday I heard someone say that the panel discussions in this conference were among the best he had ever heard, and I thought he summarized my own estimate of it. Another comment I heard, however, was that there were not enough jokes being told at this conference--so I am going to start the explanation of our panel by telling you a story.

During the Revolutionary War naval armament were much different from what they are now and ships-of-war had to get very close to each other in order to have the cannon balls hit each other. It was customary, before every naval engagement, to send a Marine into the crow's nest, and his job there was to spot and direct fire. Both sides knew that there was a Marine in the crow's nest, and both sides were anxious to get the temporary advantage that might accrue from knocking the Marine out of the crow's nest. So during every naval engagement there was a good deal of rifle fire directed at the crow's nest. It was a hot place, and to be given the duty of going up there was considered brave, but not too comfortable from the point of view of a fighting man. Now during the very famous battle between the American ship commanded by John Paul Jones and the British ship commanded by a Britisher whose name slips me for the moment, an American Marine was up there for about two or three hours of very heavy firing and, as you know, both ships were virtually on the verge of sinking when the Britisher seized a megaphone and hailed John Paul Jones, who had come up on deck, and he said, "American, are you ready to surrender?" And John Paul Jones issued those famous and immortal words that you all know, "I've just begun to fight." The Marine listened to that and said, "Isn't there somebody that never gets the word?"

Well, this is a panel that's going to give you the word! This is the panel which follows up yesterday morning's panel on "Barriers to Employment of the Cardiac," and yesterday

afternoon's panel "Industrial Compensation Aspects of Heart Disease"--which certainly was a dilly. Now we have a panel that's going to remove these barriers for you. And I say to you if you are interested in seeing them removed take careful note and the problem will be solved.

Remarks by JOHN C. RUDDOCK, M.D., Medical Director,
Richfield Oil Corporation,
Los Angeles

I am going to try to hold my talk this morning to the doctor's part in this situation; he occupies a very important one. He keeps them on the job; he screens them before they get on the job, and I hope he takes care of them when they get sick. In order that I might keep this subject within bounds, there are a few basic statements or questions that I would like to start with.

First of all, we'll make the statement, which we heard yesterday, that most of our heart problems are in the age groups over 40. At that age group, of course, we have all of the degenerative diseases beginning to show themselves: arteriosclerosis, hypertension, coronary artery disease, etc.

Number two statement: The cardiac cripple is only one of the problems of industry. There are many, many others. We have arthritis, diabetes, epilepsy, and many others that I could go on and name, but time does not permit.

Is the cardiac cripple seeking employment for the first time, or does heart disease develop while he is employed? These are two different problems entirely and need two approaches. This morning I will not enlarge on this, but will simply make the statement.

Then again, is the disease of an industrial nature or is it of a non-industrial type? Because the first is covered under the compensation laws and the other is covered under a health group insurance policy or health plan.

Management runs a company for its stockholders. If management fails to make money, the business quits; it is just as cold as that. If it does not make money, there is no industry. I want to make that as one of my points.

Now, as a doctor, I am here to tell you how to lift the barriers for the employment of cardiacs in industry. I heard

yesterday that a doctor wears horns--particularly the company doctor. A company doctor, certainly, shouldn't wear horns. If a doctor does wear horns, the best thing to do is to de-horn him. Let us begin by assuming that we cannot solve the problem; but we can do something about it, thereby tempering and lessening the evils.

How do we do this? A doctor should be the friend of every employee. If he is a company doctor, he should be trusted by every employee. How can he be trusted? All examinations should be confidential, and that relationship between doctor and individual should not be broken. The doctor should not run to management and tell everything he knows. He shouldn't tell management anything except to make the statement that the man is employable or he is not employable, and say when he will again be employable. What he's got makes no difference. These examinations are kept confidential, and the doctor should be the confidant of every employee under him. The door should be wide open. The doctor should advise the employee with regard to his ailments, advise him how he can prevent disability, etc. The motto of a medical department of a company should be "to keep as many men at as many jobs as many days as possible."

Now there are many things that affect the doctor, and I think this might explain, sometimes, why he is accused of being one of the big barriers. I've mentioned counseling. Many times, in seeking medical care for an ailment, a man will go to a doctor because that doctor once upon a time delivered a baby for one of his relatives, or because the doctor at one time cured a broken finger. But suppose this man is seeking aid because he has a heart ailment. Through counseling, we can at least sometimes get him to the proper doctor.

A company doctor should also arrange periodic examinations of his employees. Why? The purpose of these periodic examinations is not to find grounds to dismiss a man or to find him incapable of performing his work. The doctor does periodic examinations in order to find out if the employee has defects; and if there are correctible defects, then we can do something about them--because it is good business and proper policy to keep the man employed permanently (not temporarily) and to keep him employed to his age of retirement.

Now the company doctor can do another thing. He can have a facility within his company for the employment of disabled persons. I have, for instance, a garage where we keep employed approximately sixty people--although we could run the garage with ten. We have one man who can't bend over, and he is working on the same job with a fellow who can bend over. We have another man who can't go up and down stairs, and he is on the same job with a fellow who can go up stairs. So between the two of them, I mean the four of them, they can do the job of two.

Now these are just thrown out to you as ways to lift the barriers that might keep the man off the job.

We must also consider the big company and the little company. The big company has retirement benefits, welfare funds, vacation pay, sickness leave and many other things that the small company cannot afford, at all times, to give their men. The large company usually has, also, some type of group disability insurance.

Another thing that I wish to mention at this time is litigation--the doctor's part in litigation. Sometimes we have a great deal of difficulty in getting a man back to work after he is cured, and we have come to call this "litigation neurosis." The man is afraid to work, or he feels that his injury deserves additional recompense. Where he gets the idea that if he has heart disease he will never work again, I don't know. But I remember one time I saw a man who had been in bed for a period of two years; he was in bed so long that he wore all the hair off the back of his head. But after we got him up it was a very short time before he was back to work at almost full production. Medical facts must be correlated with industry and with employment, because we know that the actual pathology of myocardial infarction in coronary artery disease is healed in three months, but it takes the rest of the time (and often a long time) to rehabilitate the man. Now if he feels he can get paid, the illness and rehabilitation period will be prolonged. There should never be a penalty against anybody, or a gain of money for being sick; there are some instances and some cases, though not many, in which a man actually draws more money being sick than he does when well.

I am just briefly touching little things here because I haven't got time to develop any of them. Heart "bogies," for instance--that mythical, mysterious something that will get you if you don't watch out. That's another one. Rapid

palpitation of the heart--if someone shot a bullet past my ear, my heart would go 200 times a minute too, and there's nothing wrong with that, that I know of at the moment. These bogies are all instigated by fear, anger, passion, love, hate, worry and introspection. Remember that all of us are victims of those emotions, and every one of them might give us heart disease. Every one of us. And every one of them might actually bring you down before the Commission. You say, "I've got heart disease," but if you only realized that it's just a reflection of your own emotions, we might avoid days and days in trial and save a lot of money.

I wish to talk one minute about pre-placement examinations. This type of examination is very important. They are important because of the rating with regard to a pre-existing ailment that has been aggravated by employment, that you heard about yesterday. If we have a good examination record, which is very important, or a good screening record, we know what the man was or had before placement; and then after litigation we can intelligently and fairly apply the proper rating of disability that has developed since his injury or since his employment. We must take them as we find them. Listing all their defects is very important.

Time has allowed me only to make statements, although I would have liked to develop some of the different things that I have told you about.

In summary, therefore, the doctor plays an important part in lifting the barriers for the employment of the cardiac.

1. The doctor should be well trained and he should evaluate the employee and the job and by means of pre-placement examinations should fit the employee into the job within his capabilities.
2. The doctor should be trusted and should be available to the employee at all times in order to act as a counselor for his health problems.
3. Examinations should be of the same confidential nature as the examination of the patient by his private physician.
4. Periodic examinations should be conducted for the purpose of correction of defects and environment in order to keep the employee on the job to the age of retirement.

5. An intra-company facility for disabled employees is helpful in boosting the morale of old and trusted employees.
6. A new applicant with cardiac disease is a different problem from the employee who develops cardiac disease while employed.
7. More facilities, jobs and benefits are offered by large industrial organizations than by small ones.
8. Litigation over benefits to the cardiac forms a very large barrier from the standpoint of management and cannot be rectified unless changes are made in our compensation laws.

Remarks by ELLSWORTH METTEER, Division Claims Manager,
Liberty Mutual Insurance
Company, San Francisco

As a member of the insurance industry my interest in employment and heart disease concerns itself with those aspects having to do with the application of the workmen's compensation law and resulting cost.

No doubt during the course of this conference you have all become acutely aware of the many barriers impeding the utilization of that segment of our labor force afflicted with heart disease in one of its many forms. The ones I am going to discuss are of no mean proportion. Among other things they involve the problem of exposure and of cost.

The equitable assignment of benefits allowed by the Workmen's Compensation Law for aggravation of a pre-existing physical condition as a result of industrial injury is at best a difficult task for those charged with administering its provisions. When the pre-existing condition is a disease of this nature the problem is well nigh insuperable. Note for example that the statistics distributed here by the Division of Labor Statistics and Research of the State Department of Industrial Relations show that over the three year period 1952-1954 of the total fatalities reported 17% were disposed of by settlement, whereas 53% of the fatalities due to cardiovascular conditions were compromised.

When we appreciate that settlements are approved by the

Industrial Accident Commission only when the issues are in such dispute as to preclude a clearcut decision being reached, the inference of this wide discrepancy is obvious.

Then, again, the amount of benefits paid in those instances where cardiac conditions are ruled affected by employment are spectacular as compared to benefits for other types of industrial injuries. For example the Goldwater Study in New York State developed this interesting exhibit:

Workmen's Compensation Cases
New York State
(Closed Cases)

Year	Total Cases	Cost in Millions*	Cost per Case
1947	117,826	56.9	\$ 471
1948	112,389	67.9	605
1949	112,159	76.9	685

Heart Cases

1947	167	1.02	6,100
1948	223	1.94	8,700
1949	205	1.92	9,400

*Costs of indemnity only

As a result of these and other problems industry is understandably reluctant to venture into knowingly employing the cardiac.

How then can we approach these barriers to reduce or dissipate them? There are perhaps three avenues:

1. Proper Placement

From an insurance standpoint the presence of handicapped people in industry will not ipso facto affect compensation rates. This because our rates are made up from loss experience--if the frequency and severity of accidents go up, the cost goes up. If the reverse, it goes down.

It follows therefore that if a program of employment of the partially disabled is so designated as to place the individual where his handicap will not increase his exposure to frequency or severity of injury, then his employment should not affect insurance costs.

Cardiovascular handicaps do not lend themselves as readily to industrial placement programs as some of the other disabilities, but long strides have been made by organizations such as the one supporting this conference, and without doubt the results of such effort will continue to be gratifying.

2. Distribution of Cost

I believe it can be fairly said that most compensation claims arising from heart conditions are based on the allegation that a pre-existing condition has been aggravated by industrial injury. Obviously the impact of a given injury upon a person already laboring under some disability will be more severe than the effect of the same injury upon one not so disabled. Since under the Workmen's Compensation Law severity is measured in terms of dollars, an injury to a handicapped person will most likely cost more than the same injury to one not so handicapped.

In recognition of this problem, legislatures of the various states, including California, have attempted to encourage the employment of the handicapped by providing a cushion in the form of a subsequent injuries fund. Basically these funds provide that when an industrial injury superimposed upon a pre-existing impairment produces total disability, the employer or his insurer will pay only for that portion of the disability attributable to the industrial injury and the fund will pay the rest.

While it is true these funds were designed to apply only to cases of handicap as the result of the loss of a body member and then industrial injury resulted in the loss of the other member, or a combination thereof, there seems to be no valid reason to prevent these funds being adapted to pre-existing cardiac conditions.

3. The Delineation of Exposure

The third problem or barrier the cardiac is confronted with is the inability of his current or prospective employer to judge with any reasonable degree of certainty just what his cost exposure (either directly by compensation award or indirectly by insurance rates) is going to be if the employer-employee relationship is entered into or continued.

The framework of the compensation law provides benefits for injury or disease if these two conditions are met:

1. The injury or disease arises out of the employment, and
2. It occurs in the course of employment.

In other words, is the condition caused by the employment and did it occur during working hours?

These provisions as applied to cardiac conditions have been variously interpreted all the way from requiring that a heart injury must be shown to be the result of violent exertion or unusual strain in the course of employment to permit recovery down to more recent interpretations awarding compensation on a showing that the onset of symptoms occurred while at work.

We badly need some precise defining of just what part, if any, work effort and exposure plays in the onset or aggravation of cardiovascular conditions. I should think this needed definition might come from one or more of three sources:

1. Unanimity of medical opinion (which is not likely)
2. Further legislative definition
3. Consistent interpretation of existing law

If we can define the hazard we can provide for it--but in the absence of definition we have no basis on which to fairly calculate the risk.

Remarks by Z. L. GULLEDGE, Executive Secretary, State Senate
Interim Committee on Education and Rehabilitation of Physically Handicapped Children
and Adults

My task for the State Senate Interim Committee is one of traveling around the state and listening to experts, hoping that they will find some solution to some of the problems that you are discussing at this conference. I might say that the Committee has not had much success to date. The Committee would like to be able to say that they are introducing legislation that's going to solve the problem. I am sorry to report that no legislation, with the exception of one bill that I might mention later, is in the hopper of this session. So we will not be able to send out wires to our lobbyists to quickly start shooting at it.

About barriers: I am sure we are very well aware of these barriers (we always put an "s" on it, and then always come back and talk about one problem--why the employer doesn't hire the person that has a cardiac condition.) It comes down to the fact that it's going to be a liability to the employer--and we come back to the discussion of the problem of insurance rates, merit ratings, and related problems. I think we can make a simple overall statement and say that so long as we have a system whereby the risk of the individual has to be assumed by a particular employer, and his particular carrier, at a particular time, we are going to have a conflict of interest between the rights of the employee and the economic cost to the employer or his carrier, and which in turn is reflected in rates. We might, of course, equally state that the converse would be, if the risk were spread over all the workers, over all industry, and over all the years that the worker was able to be employed, then we might have a solution, because we believe the increased cost would be nominal. However, we do not expect to see this come about. Therefore, I think we have to deal with the problem as we find it and accept this as one of the major, if not the major, barriers to the employment of a person who has a heart condition.

There are several things we do not know. I'd like just to throw these out because we've talked about them and very often people come before the Committee with proposals that relate to these unknown factors.

What if we employed all of the cardiacs who are able to be employed--employed them properly, after proper classification, and placed them--and that industry did assume the additional cost that might result? How much would it be? Nobody knows. But it's assumed that it would be an increased cost. Then how much does it cost to maintain the individual in the community when he is unemployed? And how much of that cost is borne by industry and the insurance carrier as well? We know very little about that and we're not, perhaps, going to find out very much about it.

I think that we can, perhaps, make some suggestions that do not fall within the province of a legislative committee (we cannot introduce legislation to bring these changes)--that is, improvement in our classification. This is primarily a medical problem. A doctor just said this morning that when they have the proper information, they can properly place the individual on a job. But what is the proper information that

the person in industrial personnel--the person who is the foreman of the department--has to have in order to properly place that individual? And what information must the doctor have about working conditions in the plant in order to properly classify the individual? This is a matter of communication--better communication from the medical profession to people that are responsible for the placement of the individual in industry.

Perhaps the most hopeful of all the alternates is that of planned rehabilitation. Planned--meaning a combination of better evaluation, better communication, and the providing of all necessary services to place the individual in a situation where he can function with the maximum of his ability. This means skilled people in many fields--the social worker, the counselor, training programs for the individual and placing him in a situation where he can function effectively. Unfortunately, after we have trained him we still face the problem of selling him to industry, and industry comes hard up against the problems that have been mentioned so many times, I'm sure, during this conference.

One bill that was introduced is SB11144. This bill was introduced after conference with employer representatives and labor representatives and discussions with insurance companies, to have a tangible piece of legislation to discuss. It provides special funds for rehabilitation of the industrially injured which would include the cardiac. The bill is being circulated at this time to labor organizations, insurance companies, employer groups, for purposes of discussion. And I'd like to say that at this time I hope that the representatives of some of these groups do not get their guns out and start shooting just because they think it has wings. One of our problems has been that there is a vested interest in all legislation by executive secretaries of various committees of organizations, or special groups. Some lobbyists feel that they must make themselves valuable to their employer by pointing out the dangers of every piece of legislation that is introduced before we have had time to discuss it and find out whether or not it might lead to a better understanding and at least a partial solution to the problem.

We know that for many years labor has had bills introduced in the legislature to make rehabilitation services a part of Workmen's Compensation benefit. The employers' organizations and insurance companies generally have always opposed these bills because they could see in such a bill

the opportunity to convert a benefit to a cash benefit once it became a right to the individual. Professional people in the field of rehabilitation did not want to have to administer a program where they would not be able to professionally advise the individual concerning his needs and could make a plan with him that would meet his needs. There is also the fact that a program of this type might lead many people to accept rehabilitation just in order to get additional benefits. So, we've had to take all of these various interests and various groups and try to bring them together in this one bill--SB1144.

There is the problem of the self-insured. And the only solution at the present time is that those employed by the self-insured cannot be covered. There is the problem of temporary benefits to be paid during the time that a person is waiting to have his rehabilitation. Yet we realize it is one of the most important times to begin rehabilitation and one of the most difficult times because of certain fears of both the employer, the carrier, and the injured workman. We hope that we can perhaps save some money for the carriers by having maintenance pay during this period from this fund, and matching federal funds will not be charged as temporary benefits, this would result in an actual saving. No money paid out would be charged to any employer's account. These are some of the provisions that we are trying to group in the one bill. When the various organizations have an opportunity to discuss the bill they will have additional recommendations to make. There is one we can't get away from--somebody has to pay for it. The groups that are interested in rehabilitation for all people--the crippled children's groups, the TB groups, those that are interested in the cardiac--are competing for the small amount of funds that are made available. At the present time about one person in five is being served.

SB1144 provides for an increase of four-tenths of one percent in the in lieu tax and Workmen's Compensation payments. This would yield about \$550,000. These funds would be eligible for matching federal funds, so we'd only be really bearing half of the cost. These funds would be made available not as a right of the employee, but as needed, through the state rehabilitation agency which provides such services as would be necessary and when it is necessary for the individual to change his occupation. Now it's very important that these come through this state agency in order that they be matched. It's important that they not

be a right of the employee that might be converted to cash or another type of benefit. It's important that the decisions be on a professional basis rather than on a basis of an additional benefit.

I hope that people will study the bill and make suggestions as to improvement in this legislature. Many have been received already, and whether it passes this year or at another session it will be, eventually, some type of legislation. Some legislation of this type will make it possible to actually extend rehabilitation benefits to the industrially injured.

During the past year, out of some 2,000 cases closed for the Bureau of Vocational Rehabilitation, only 143 of them could be traced to industrial injuries--while we have over 140,000 time-lost injuries in California each year.

Remarks by NATHAN NELSON, Consultant, Bureau of Vocational Rehabilitation, California State Department of Education

In the vocational rehabilitation of the cardiac, significant advances have been made in most aspects of the problem except in securing employment. Medical management has resulted in improvement of the cardiac's condition so that both retraining and employment are possible for many formerly doomed to invalidism. Advances in counseling techniques through utilization of work classification units, and the team approach generally have made it possible for the counselor to guide the cardiac into an occupation where he can function effectively without harm to himself. Yet when we attempt to place the cardiac we encounter at times a reluctance on the part of the employers to hire him.

Why is the employer reluctant to hire the cardiac? We are told he fears that if the cardiac condition is exacerbated, or if death results, the worker or his survivor will claim and secure workmen's compensation. This possibility seems particularly threatening to the employer if he is a self-insurer.

How valid is the employer's fear? It is true that existing legal concepts as expressed in court decisions provide a basis for the employer's fears. However, it is pertinent to ask how great is the risk the employer takes when he hires a cardiac. Of about 132,000 California work

injuries reported in 1954 only 394 involved cardiovascular disease. Thus the incidence of work injuries in this category comprise only a fraction of 1% of the total. Of the 394 work injuries reported, substantial numbers did not receive compensation so that it is not true that all cardiacs are automatically awarded compensation claims. We are told that there are more than 350,000 California workers with heart and circulatory diseases, yet in the three years from 1952 through 1954 only 1,109 work injuries involving cardiovascular disease were reported.

We must tentatively conclude that the reluctance of the employer to hire the cardiac arises out of relatively few cases which loom large in his eyes. Before other steps are taken to remove the barriers to employment for the cardiac, it is first necessary to explain to all interested groups how small is the incident of workmen's compensation cases involving cardiacs. We should further explain the advances made in medical management of the cardiac and the degree to which the cardiac can work in safety when suitably counseled and placed.

But it is too much to hope that this information by itself will readily dispel the fears of the employer. The fact remains that the employment of the cardiac does involve a hazard to the employer however infrequently it may occur. We should then consider the advisability of removing this obstacle. This can be done by new legislation. Without going into any of the considerations that would necessarily be involved in new legislation, it is pertinent to point out that any elimination of this work on the part of the employer would involve a loss to the worker or to his survivors.

If through our democratic process we should propose to free the employer of this risk, some consideration should be given to compensating the cardiac for the loss caused by the change. Otherwise we could not expect support from all segments of the community for such a change.

Perhaps at this point we should consider some of the other programs which provide help to the worker or his survivors in disability or death. Among these are the disability insurance program, the health and welfare programs, the public assistance programs, vocational rehabilitation, old age and survivors insurance, and other insurance programs. Perhaps if some of these programs were

adequate to solve the problem faced by workers with chronic diseases the community would find it more acceptable to remove the barrier in the path of the cardiac by freeing the employer of this risk.

The cardiac who suffers from cardiac failure needs medical care, subsistence for himself and his family, and finally an opportunity to work at a suitable job. Medical care might be provided by more comprehensive coverage in health and welfare plans, by other more comprehensive pre-paid medical care plans, or by an extension of the State Disability Insurance Program. Maintenance could be provided by the State Disability Insurance Program, by a more adequate public assistance program, or by more comprehensive private insurance programs. Counseling, retraining and placement could be carried out by an expanded rehabilitation program working in cooperation with the Department of Employment. Or a co-ordinated approach could be made to this problem by providing some of these services through a single state agency.

Responsibility for the vocational rehabilitation of the cardiac now rests with the Bureau of Vocational Rehabilitation. We are now serving 326 cardiacs in California. This small number does not represent any particular neglect of the cardiac as such. The Bureau of Vocational Rehabilitation provides service to proportionately small numbers in other disability groups. It is unfortunately true that the Bureau of Vocational Rehabilitation has never been able to serve the needs of all the disabled groups in California because of limitations in staff and funds.

In closing I should like to point out that chronic diseases now represent our most difficult problem in working with our disabled population. Any segmented approach to the problems of disability will not prove acceptable to the community as a whole. Perhaps if we re-evaluate what we are doing for disabled people generally, we may be able to find fair and equitable means of removing the barriers in the path of the cardiac. The cardiac is not primarily the problem of the employer, of the Industrial Accident Commission, of the medical profession, or of Vocational Rehabilitation alone. He is a social problem, an unsolved problem. All of us pay the cost of maintaining him in the end. The community as a whole must provide the answer to this problem by providing the services the cardiac needs to maintain himself as a respectable member of society.

Remarks by LOUIS E. DAVIS, Associate Professor of Industrial Engineering, University of California, Berkeley

My remarks in terms of removing barriers to the employment of cardiacs will be directed to the problems of placement and job redesign. We heard considerable discussion yesterday concerning the activities of work-classifying of cardiacs and their placement on "suitable" jobs. The question that occurs to me, and perhaps it is more of a theoretical question than I make it out to be, is where are we going to get all of these suitable jobs for which cardiacs have been classified.

I believe that one of the barriers to the employment of cardiacs can be removed by understanding the nature of the problem, which, as I see it, has two sides. One is the side of job requirements and the other is the side of work capabilities, i.e., classification of workers. How much attention have we been paying to the side of job requirements? The impression I get, and I get it by omission, is that all of our speakers assume that the content of jobs are inviolate, not subject to either manipulation or change. This misimpression constitutes a barrier to employment, for it limits the number of suitable jobs available and shrinks the opportunities for placement.

The removal of this barrier depends upon knowing that job requirements can be changed. An examination of the Dictionary of Occupational Titles may lead you to wonder about the origin of the vast number of job titles contained in it. Some of the jobs are specified or determined by tradition and some are haphazardly determined. A study we have recently concluded has shed more light on the questions of how, on what bases, and by whom jobs are determined in manufacturing industries. In the study, which was concerned with job design, and unrelated to the rehabilitation of the handicapped, a sample of American companies was surveyed on these questions. The results indicate that the great bulk of jobs in manufacturing are determined by specifications written by engineers and not by personnel departments. It is unimportant, perhaps, as to who does the specifying. What is important, though, is to know who does it. The specifications for jobs are established by engineers with regard to the requirements of the manufacturing process. We discovered, however, that very narrow criteria underlie the decision made in the establishment of specifications.

These criteria are so narrow that it would appear there is great latitude for the manipulation of the content of jobs. If such is the case, and I believe it is for a great range of manufacturing jobs, then some great possibilities for placement can be opened up. The potential depends upon the extent to which job designers or specifiers can be brought into rehabilitation programs. To date only job classifiers have been brought into the rehabilitation activity. I would advise rehabilitation agencies in every community to seek out these industrial specialists in each locality and bring them into their programs.

During World War II, I had some limited opportunities of doing some job redesign for the handicapped--not cardiacs. A considerable amount of this work is now going on in England, and I refer to the work of redesigning jobs to suit people who have lost or never had the facility of sight. Jobs which on Monday were performed by sighted people during the war, after being redesigned were performed on Tuesday by individuals who had lost their sight or perhaps never had it. There are great opportunities by these means for utilizing the handicapped. However, those designing jobs must have information in the form of job design criteria and boundary conditions if they are to redesign jobs effectively. So, this indicates another opportunity to overcome a barrier to the employment of cardiacs. The opportunity here resides in the securing of this information which is dependent upon more research on the physiological cost of human work and on the specific limitations associated with various types of handicaps. Having such information would permit us to construct jobs to suit the capabilities of the individuals who have to perform them.

I believe that such research is of vital importance to the rehabilitation of individuals with any disability--and in this case we are talking about cardiacs. In this regard I hope that we fare better in obtaining this information than we have in obtaining information concerning the problem of fatigue. Physiologists and others have been unable as yet to give us some answers regarding the fatiguing effects of work. The design of working conditions as well as jobs, the placement of equipment and machinery, and so on, could be more accurately specified, if we knew more about the mechanics of fatigue.

Another barrier to the employment of cardiacs that can be overcome lies in the reduction of the physical requirements of work itself. Considerably more has been done in this regard by large companies than by small organizations.

The history of our industrial civilization is also the history of our progress in reducing the physical requirements of work, of lifting the burden of crushing physical work from man and transferring it first to animals and now to machines. Through the introduction of machinery and the study of jobs engineers have been and are continuing to reduce the physical requirements of jobs. The trend is continuing and accelerating. For the purposes of rehabilitation what is needed is to integrate and orient the reduction of physical requirements of work toward rehabilitational purposes as well.

Looking forward to the future, current plans and programs for rehabilitation will need to be severely revised. Developments taking place in American industry and business forecast very different worker needs and worker requirements than are in vogue at present. The result of the developments is Automation, which should begin to make its influence felt in from five to ten years. In the mass production industries and large business offices Automation will actually reduce the physical requirements for producing to a very great extent. Some see it as reducing the need for workers altogether. There are immense social problems to be solved by our society in regard to how to utilize the benefits of this development and yet integrate it with social needs. One thing we do know, which is exclusive of how society solves the problem of using its citizens, and that is that large business and industrial organizations will have need for very different kinds of workers from those we have today. Needed will be people who will contribute very little in terms of physical work but whose contribution will be in terms of the application of high skills. Considerably higher skills will be in demand and considerably lower physical work levels will be needed. In the more immediate future, the solution of the social problems of adjusting our society to Automation will overshadow the solution of rehabilitation problems. I suspect we may have (while I hope we do not) competition for jobs in some areas until we get a solution to the problem of worker utilization through an adjustment in working hours. This solution will come from the decisions society makes in regard to how it will reward the members of its work force. After the adjustments have been made, the solution to the problems of the employment of the handicapped will be considerably simpler than at present.

Before closing, I would like to advocate greater

utilization of the people who have the kinds of skills that I have been talking about; that is, engineers of various kinds--particularly industrial engineers. Most volunteer work in the Heart Association would benefit immensely by drawing to itself individuals with these skills. Such individuals can provide guidance and can influence their colleagues in industry in regard to job redesign for rehabilitation purposes.

In conclusion, I wish to indicate that I have knowingly omitted the discussion of the removal of the current major barrier. This barrier arises from the failure of the business and industrial community to provide job opportunities of any kind for the handicapped. The method of solving this problem is at hand through various social insurance schemes. What is presently needed is social action to implement the solution. If and when this action is taken, then the need will still remain for finding the means of gainfully utilizing the handicapped individual. Toward this end my remarks have been directed.

SUMMARY SESSION

Lester Breslow, M.D.

Chief, Bureau of Chronic Diseases, California
State Department of Public Health

Douglas A. Campbell

Referee, State Industrial Accident Commission

Milton Chernin, Ph.D.

Dean, School of Social Welfare, University of
California, Berkeley

Sidney S. Sobin, M.D.

Director, Cardiovascular Laboratory, Children's
Hospital, Los Angeles; Co-director, Los Angeles
Work Classification Unit

SUMMARY SESSION

Summarizing the discussion on BARRIERS TO EMPLOYMENT OF THE CARDIAC:

LESTER BRESLOW, M.D., Chief, Bureau of Chronic Diseases,
California State Dept. of Public Health

It was suggested that my review be based chronologically on the barriers to the employment of the cardiac. We might begin with the patient--who is, of course, the beginning of the difficulty. Yesterday someone noted that the attitude of dependency of the patient with heart disease is a considerable barrier to employment. In that connection, I think it is fair to point out again that since there are not enough jobs for everyone at the present time in this country, one can understand the patient's reluctance to give up any kind of a social benefit and expose himself to the hazard of not having any kind of income on the competitive labor market. But the patient's attitude of dependency is one that must be reckoned with.

Secondly, the physician comes into the picture immediately after the patient. Here we found serious lack of agreement among physicians as to the problem of the cardiac in industry. Not only do physicians fail to agree about the patients, but they have very little knowledge about the jobs to which the patients may be assigned in industry.

Accusations were made, thirdly, that when the claim goes to the Industrial Accident Commission, the Commission is entirely too liberal in its award of benefits. It should be pointed out that this is one of the myths in the field which is now being dispelled by knowledge. The work reported here by Dr. Beard corrects this notion that the Commission is "too liberal." The fact is that a panel of expert physicians, judging cases which had already been decided by the Commission, did not come out very differently from the way the Commission did. As a matter of fact, the physicians differed among themselves as much as they did with the Commission, and even the same physician looking at the case the second time showed as much variation as there was between the physicians' expert judgment and the Commission judgment.

Lawyers were omitted in my list yesterday. I think after yesterday afternoon's session, however, it would be incorrect not to mention lawyers as representing a barrier to employment of the cardiac. Our California system of Workmen's Compensation--which is a litigious system, one based upon trying to demonstrate some rights of a man under the law--brings the lawyer and the Courts prominently into the picture. The system is not based upon rehabilitation. That is a thought which deserves some attention. The employers, aided and abetted by the insurance companies, refuse to hire cardiacs on the notion that by keeping out the persons with cardiac disease they are cutting down their compensation risk. Again, this conference brought forth some factual evidence that this is simply not the case. Doctors cannot predict on the basis of their examination of a thousand persons which fifty or a hundred of them are more likely to have compensable heart disease in the next ten years than the remainder of the group. The fact that a man has arterial hypertension or a heart murmur does not make him any more a risk for compensable heart disease than the man who does not have such a finding. The evidence refutes a myth in the situation.

Union agreements and insistence upon seniority, which are supposed to provide protection for the interests of a particular segment of our society, also appear to interfere with the employment of the cardiac. The man who has got his claim through the Industrial Accident Commission and has been paid by the employer or the insurance company, and now has the possibility of going back to work, must next face union seniority difficulties.

Also, the very agencies--the reemployment and the rehabilitation agencies established to help him--it is alleged do not know enough about jobs for the handicapped, particularly for the cardiac handicapped. Another barrier.

Finally we got to the legislators who have the ultimate responsibility for social insurance programs which are designed to make possible security to individuals who are disabled--whether by industry or by other means. These programs at the present time tend to force persons to make an unfit use of the Workmen's Compensation program because of the absence of broader social insurance coverage, as brought out by Dr. Lewis' presentation yesterday.

Having got back now to the legislators, we have practically come the full circle back to the people from whom we started--from whom the cases come. We cannot, therefore, simply pick out one or another segment of that circle--the lawyers, the rehabilitation agencies, the doctors, the insurance companies, or any other. Ultimately this important social problem rests upon the people themselves. They will have to establish and put into effect the kind of social programs which will give employment security to all of our people, including the handicapped--and specifically the cardiacs.

In a personal estimation of this conference, I should be quite wary--having been among those involved in the planning of it. But if that can be overlooked for a moment, I would like to express the opinion that it has been a most successful conference. It has accomplished the two objectives which are important at the present time in this very difficult problem. First of all, it has provided a forum for the interchange of views--often very sharply divergent views--without which we cannot make progress. And secondly, it has brought forth some of the factual knowledge that is now being developed to underpin the future development of our ideas, attitudes, and policies.

Summarizing the discussion on INDUSTRIAL COMPENSATION
ASPECTS OF HEART DISEASE

DOUGLAS A. CAMPBELL, Referee, State Industrial Accident
Commission, Los Angeles

Like Alice, I have been in Wonderland. Those of you who have seen Cinerama, recalling your own reaction to its first viewing, can approximate my present feelings. Today I have encountered the quaint, the old, and the new approaches to our general problem. I have difficulty in presenting a coherent summary because I'm like a pup in a butcher shop--there are so many wonderful leads, so many new things and new ideas presented that my reaction cannot yet be crystalized.

I rejoice because the group thinking has progressed along the lines I suggested last year at the Western Industrial Medical Convention in Los Angeles--that the problem of attempting to fit the employment of cardiacs

into present legal standards of liability under the Workmen's Compensation Act needed revaluation.

While the statistics which were presented by Professor Baird's study have been encouraging, there seems to be agreement that an outstanding need exists for law change. With all respect to the importance of the problem of cardiacs in industry, it is only one of the compensation headaches. We have the companion problems of the arthritics and the sufferers from various other degenerative diseases.

Experience has indicated that as we get into the fourth decade, arthritic changes are encountered. The frequently occurring low back strains usually cost around \$2,500. Thus, while the statistics may minimize the significance of heart disease as a compensation cost, such cases still represent a spectacular loss involving a single phase of a larger problem.

Dr. Lewis has emphasized the importance of a full program of protection for the handicapped. Even if Society is prepared to accept the cost of such a full program, when we speak of workmen's compensation liability we are referring to a plan which places cost upon industry. The question as to who is to pay for the broad program visualized by Dr. Lewis is still to be answered. Industry is not willing to accept the burden of the cost of these basically health as distinguished from accident claims except under conditions which it feels are acceptable to it.

I urge all of you to become active in analyzing the legislation before the current and future sessions of the legislature. Support those bills which either in their original or some amended form will help solve our problem. Incidentally, I do wish that those of your profession who appear as witnesses in our cases at the Commission would be as humble in your testimony as you are in your discussions today. As you testify before us, whether for the applicant or the defendant, everything is brightly white or densely dark. There is no in-between. I have heard more "buts" and "howevers" in this convention than I have in over thirty years of testimony.

The thing that is outstanding, however, is the imagination of those who had charge of the formulation of the program. Those of you who heard the discussion yesterday must realize the wide difference of opinion between counsel

for the applicant and for the defendant and can appreciate in some measure the difficulty in weighing the conflicting opinion as to the etiologial influence of this, that and some other accused event in producing the final result.

I urge and invite each of you to continue the wonderful advance you have made individually and collectively in approaching this problem factually. I add one other suggestion: keep constant contact and intelligent communication with companion groups who represent other phases of the degenerative rehabilitation program. You can take no step which does not affect them. They can advance only with your assistance. It has been a pleasure to realize what can be done when eager minds and earnest hearts get together. Continue it, ladies and gentlemen.

Summary of the discussion on REMOVING THE BARRIERS

MILTON CHERNIN, Dean of the School of Social Welfare
University of California, Berkeley

I have not attempted to make a summary of the panel this morning on "Removing the Barriers" because I know it took place too recently to make a summary necessary. But what I am going to do is to report back to the conference what the participants in three discussion groups (the one that I had the privilege of working in and two others about which I was told by their leaders) thought of the conference.

It will come as a matter of no surprise to anyone that the discussion groups discussed the things that were presented so ably by the panel. These colored our discussions. It will also come as no surprise to anyone that many of our recommendations, or what impressed us most, were matters that were presented so effectively by the panels and that have already been mentioned by the previous summarizers.

Our discussion group thought first of all that there is needed much more research in this area of the cardiac and the cardiac in industry--research that is both basic and applied. We spelled it out more specifically by listing research in the medical aspects, economic aspects, legal aspects, and social aspects. We were impressed by the fact that although much useful information had been presented to us, everybody stressed how much more there is yet to be found out. As one specific illustration of this

general desire for more data, our section decided that they wanted to request the people who will compile the record of this conference to secure and include in the final report additional information on the Workmen's Compensation aspects of this problem. We were impressed by the many puzzling aspects of the subject. It was given so much attention here, yet the data seemed to indicate it was only a minor problem. We would like that clarified as much as possible in the proceedings.

After formulating the specific request for more information just presented, our section became even more avid. We decided that what was needed was a comprehensive monograph on this whole subject. When we asked "Are we asking for something that exists but which we do not happen to know about?", experts assured us that there did not exist a comprehensive monograph on the problem of the cardiac and his employment. We would like to suggest that perhaps the American Heart Association should fill this gap as soon as possible.

Our second conclusion was to emphasize in our own words what we understood Dr. Leon Lewis was saying to us yesterday. We were impressed by the fact that some comprehensive social engineering approach seems to be required at the present time, both for the cardiac in industry and all other handicapped people in industry. We don't have it, but we don't believe it's unrealistic to ask for it. We think actually it is more unrealistic to keep elaborating the little segmental approaches that everyone agrees are inadequate.

The third aspect we were impressed by was the need for effective local community organization. With respect to the entire problem of employing the handicapped someone pointed out to us that Knoxville, Tennessee, seems to have developed a particularly effective program called Operation Knoxville. Another section put it more specifically. It said that in each community there should be a committee consisting of representatives of management, labor, medicine, and the public, charged with the responsibility of studying and working out programs for the employment of the handicapped.

I don't know quite how to make our fourth point because I was warned not to use the words "we need more education on this subject." There seems to be a slightly

negative reaction to the word education, so we put down that we all need to know more about these problems. We were impressed by the humbleness with which everybody at the conference admitted that they didn't know everything about it and would like to know more.

Finally, we said we'd like to have more conferences. This first one was a good start, but we need more conferences and feel that the follow-up conferences might be a little different. We asked "How different?" Some people said, "We thought there would be more management people here. These are the people who can do something about these matters and we suspect that there were too few in proportion in our audience." Others said that they'd like to have more labor people here because certainly management and labor are the important ingredients in the formula of producing work for people. Someone else suggested that we might have demonstrations by cardiac patients at the next conference telling us their experiences, etc. All of this means, of course, that we liked this conference so much that we're asking for more with just a little variety.

Summary of the discussion on INDUSTRIAL MEDICINE AND HEART DISEASE

SIDNEY S. SOBIN, M.D., Director of the Cardiovascular
Laboratory, Children's Hospital,
Los Angeles, and Co-director of
the Los Angeles Work Classifica-
tion Unit

This morning during the session on Industrial Medicine and Heart Disease it was clearly demonstrated by studies done either retrospectively, over a period of years. or currently, as in the Lockheed Report and the Study of the Los Angeles City Health Department. that we have no great difficulty in evaluating individuals with heart disease at the time they are employed. The major consideration and presenting problem is the unpredictability of coronary artery disease. This presents two problems for the physician whose responsibility ultimately is to the patient and the patient alone. The first is the individual with known heart disease at the time of employment, and the second is the individual who develops heart disease after employment. These two classes present two entirely different problems for both industry and the physician, but in either case it

is possible to make specific recommendations relative to the future of this man's employment.

Whether or not the physician is employed directly by industry, or is in the strict sense of the word a private practitioner, the physician's ultimate responsibility still is to the patient. An unbiased medical opinion of "employability" of any individual must be primarily motivated by the medical safety of the individual for the specific job under consideration. This obviously necessitates critical evaluation of the ability of the heart to perform and tolerate work under the conditions of actual total job demands. The problems of insurance risk and compensation are not medical, although they derive from medical judgments which should be scientifically compounded.

The conference this morning touched briefly upon the Work Classification Unit. The latter is a potent source of demonstration, for it should be clearly pointed out that in the 500 cases studied in the five-year period by the Cleveland group, and the 1,000 cases studied in a ten-year period by the New York group, there have been no Workmen's Compensation claims arising out of these patients subsequently ill of heart disease. These data should do much to mitigate our concern for the compensation aspects of heart disease.

The Work Classification Unit attempts to evaluate the overall relationship between the patient with heart disease and his environment, of which only a part is the ability of the heart to help perform useful work. In a sense, the latter also is a measure of the functional capacity of the heart. The conference made note of the necessity of presenting a clear picture of a man's heart disease to industry and the industrial physician. In many cases this is not possible. Our ability to determine completely the capacity of the heart to work, first, is not possible today; and secondly, our ability to determine with great accuracy the specific limiting work factors is not yet possible. This does not mean we cannot approach it indirectly and incompletely, and attempts are being made in Work Classification Units which utilize physiological testing methods.

I would like to emphasize something which has already been stated: We have talked about the monetary cost of compensation of heart disease, and the obvious fact that industry does not want to provide such cost out of increased

premiums. This is truly a delusion, because ultimately the cost of compensation, whether we will it or not, is returned to society in one way or another, just as the increased cost of an automobile absorbs the great cost of its own advertising and is passed on to the customer.

Last evening during a dinner conversation, Mr. Douglass Campbell mentioned that he has remained with the Industrial Accident Commission for these many years. although when he finished law school and began to work for the Commission he did not intend to make it his lifelong work. What impressed him particularly and kept him in this field was the fact that California had and has a magnificent compensation law and he is certain that some day it will work equitably in all situations for all persons. I hope the conference can help make this possible.

There should be no question about the importance and necessity of continuing these conferences. The discussions on many difficult points have been stimulating and enlightening, and this conference can well establish itself as a precedent for future ones.

luncheon address

CURRENT KNOWLEDGE AND THE FUTURE OF HEART DISEASE

John J. Sampson, M.D.

Vice President, American Heart Association;
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California School of Medicine, San Francisco;
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Address by JOHN J. SAMPSON, M.D., Vice President, American Heart Association; Clinical Prof. of Medicine, Univ. of California; Chief of Medical Service at Mount Zion Hospital, San Francisco

CURRENT KNOWLEDGE AND THE FUTURE OF HEART DISEASE

Prophecy is fraught with alternative risks--first, the lack of appreciation of Man's extreme ingenuity in exploring the unknown composition and behavior of his own structure and his environment; and second, the dilated imagination, as in much science fiction, which assumes probabilities for excursions into hidden areas without prospect of means for such journeys. However, in these days of technical miracles conservatism is untenable.

Disease of the heart and its vital blood vessels may be produced by a variety of damaging forces. The cause and cure of some of these are known, but others are not known, especially coronary arteriosclerosis, now accounting for most of the 800,000 annual deaths in the United States.

We are living in an era when improved hygiene and the control of infections by antibiotics have saved people from dying early in life. This has resulted in an aging population which accounts for the disturbing figure of one-half of all the deaths as due to heart disease. Thus, the death rate of heart disease, when corrected for age, has not risen in recent decades. The diagnosis of coronary occlusion has only been widely recognized since 1925, which explains a rise in heart deaths for the decade succeeding that year. This may readily be appreciated when a review of the clinical history of the fatal illness of President Harding discloses signs and symptoms clearly pointing toward this condition and yet only one of his five attending physicians in 1923 suggested that diagnosis. Our President in 1955 was promptly diagnosed and thus will benefit by more appropriate care.

Let us survey what progress has been made in control of heart disease from various causes:

(1) Syphilis, which attacks the heart valves and muscle and the aorta causing aneurysms irrespective of the use of salvarsan, caused 10 per cent of cardiac deaths in 1925. With the early and short course of treatment of this infection by penicillin, it now kills less than one-tenth that number of patients. The future will probably see further reduction of the inroads of this disease unless resistant strains of the spirochete develop.

(2) Congenital Heart Disease is the deformation of the structures of the heart and great vessels due to faulty development prior to birth. Its recurrence in families suggests a hereditary fault and frequently it has been found in the children of mothers who had had German measles or other viral diseases in the first three months of pregnancy. Low oxygen content at the high altitudes of Peru seems to be responsible for a certain congenital defect, patent ductus arteriosus.

Since 1939 when Gross first ligated the communication between the aorta and pulmonary artery, the surgeons with increasing skill and ingenuity have successfully devised many life saving operations. They now split closed valves, including those caused by rheumatic fever; they shunt extra blood to starved lungs by transplanted arteries (the Blalock-Taussig blue baby operation); they close large holes in the walls separating the chambers; they cut out constrictions in the aorta--and they even construct artificial valves. Natural or plastic materials, such as preserved arteries, orlon, nylon and silk have been successfully used. They have learned how to maintain the heart in a vital state while opening it to repair defects by refrigerating the patient while the blood supply is cut off and by substituting a pump or a donor's blood supply for short circuiting the circulation around the heart chambers. Perfection of these and other techniques would indicate that eventually almost all major defects may be corrected if the child survives birth even for a few days.

(3) Rheumatic Fever presents a different problem. Here is a disease in which the streptococcus causes a peculiar allergic reaction, especially in the victim's joints and heart. The host must be susceptible. May Wilson of Cornell University has shown that this susceptibility is a recessive hereditary quality. Fifty times the number of children from rheumatic families acquired the disease as from non-rheumatic parents. Heredity and its theoretic control will be mentioned later. The streptococcus can be, as has been, widely suppressed by

antibiotic drugs, chiefly penicillin, in nearly 100 percent prevention of relapses. Although Dr. Wilson does not believe the disease has diminished in New York City, rheumatic fever wards are apparently being depleted of patients all over the world since the widespread use of penicillin for streptococcal infections and its continuous use as a preventive of relapses. Even prior to the discovery of penicillin, deaths from this disease in children and youths had fallen, nearly 80 percent apparently from a natural recession.

Much is being learned through modern techniques about the way in which the streptococcus causes its damage. An enzyme is produced by this bacteria which dissolves the protein in tissues and another substance which enhances the natural dissolution of binding tissues.

The future may well hold promise of controlling these agents that damage tissue integrity, leaving scarred heart valves and inflamed feeble heart muscle in their wake.

An immediate gain in this effort is the use of the adrenal "wonder" drugs--cortisone, hydrocortisone and metacorten--which have saved lives by suppressing the severe heart inflammation, and may prevent heart damage if used early in the course of active rheumatic fever.

The surgeons have saved many lives of patients with contracted heart valves from rheumatic fever. Probably there are 10,000 cases yearly in the United States that may need their valves split surgically.

(4) Arteriosclerosis, which narrows and blocks the channels for life giving blood to the heart, brain, kidneys and other parts of the body, is still the great mystery and the greatest challenge to thousands of investigators.

High blood pressure, which probably is related to the stress of modern living, causes damage to the body by hastening the development of arteriosclerosis. It has been partially alleviated by several recently discovered drugs, but its cause and basic cure is still a mystery.

Let us examine what we have recently found about arteriosclerosis.

(a) Arteries may thicken and block without fat deposits in their walls until after they are damaged.

(b) Only certain animals are naturally susceptible to its production by feeding fats or cholesterol; the herbivorous rabbit and chicken, for example, and others such as the carnivorous wolf and dog, are resistant, seeming to have a means of disposal of fats without depositing them in arteries.

Man occupies an intermediate position, and certain individuals--and especially certain races such as the Navajo Indians and the Eskimos--are relatively immune to high fat diet influences. Others seem to inherit the tendency toward premature arteriosclerosis. The Caucasians are largely susceptible, especially the mesomorphic or "athletic build" types, and seem to develop fat deposits in their arteries proportionate to the animal fat content of their diets. Kinsell found that unsaturated vegetable fats, e.g. nut oils, depress blood fats. Apparently Caucasians are more rabbit than wolf, irrespective of their muscular prowess. The poorer population of Naples, with adequate caloric intake but little fat in their diet, was recently found to have about one-tenth the incidence of coronary occlusion than the wealthier population of that city--accustomed to their pastes swimming in butter--and of the well fed general population of Minneapolis or Stockholm. Food restriction in England, Norway and Russia during the war resulted in a decrease of coronary occlusion.

Studies of the content in humans of various fatty elements of the blood, including the high-speed centrifuge (50,000 revolutions per minute) separation of small elements, reveal that certain substances are concentrated in patients with arteriosclerosis. Likewise these patients, as well as obese individuals, do not quickly clear their blood of fat absorbed after a meal. Large fat particles appearing after a meal are thought by some to migrate through the lining of the arteries. Walker and his associates showed that normal young men would exhibit high concentrations of these blood fats if fed high caloric diets and gained weight even though little fat was ingested. Thus the body can make its own fat and cholesterol, and this is done especially in the liver but can occur even in the cells of the artery walls. However, Mann and his associates found that the fat levels in the blood would not rise if the subjects exercised actively and did not gain weight or make their own fat. The moral of this data is that (a) most of us are susceptible to the high fat content of modern diet, 40 percent of total calories now as contrasted to 28 percent forty years ago;

and (b) that total caloric intake should be no more than can be burnt up in our daily activities. Finally, the blood fats may be artificially elevated by injecting detergents, but these fats do not cause arteriosclerosis. Thus there is not always a parallel between the fats in the blood and the tendency toward arteriosclerosis.

(5) Female humans without hypertension or diabetes prior to the menopause have one-sixth the incidence of coronary occlusion of males of the same age (under the age of 45.) This equalizes after the menopause. Katz found that female sex hormones would prevent arteriosclerosis of the coronary arteries but not of the aortic in chickens fed cholesterol. Katz and Barr have found lowering of blood fats in males given female sex hormones. Rivin and Dimitroff found that women with cancer of the breast had high estrogen excretion and little arteriosclerosis as did males with cancer of the prostate who had been given large doses of estrogens for long periods.

Whereas the incidence of coronary disease has fallen slightly in the female, it has risen markedly in the male under the age of 45 in the past 12 years. Whether this is due to an increase in virility or to the stresses of the post war world cannot be stated.

What is likely to happen to decrease this disease? We may predict that our diet habits can and will be altered if the stake is great enough and we pinpoint certain fats in our diet as the serious correctible element in precocious arteriosclerosis. How about those subtle changes that preceded fat deposit in the blocked arteries of 70 percent of the young American soldiers killed in action in Korea and probably in a similar age group of all American men? We are learning so much about the internal structure and behavior of our cells that one may predict that in the not too distant future the responsible complex process will be known and can be altered. The process of aging is poorly understood. but it is known that the function of cells slows down decade by decade with basal metabolism falling five percent in ten years. Can we alter the aging process and the hereditary factors? Possibly, but here we are approaching close to the principle of life itself, and that may elude us for many years.

Let us see what progress has been made in studying the living cell:

(6) Cell structure and function - As has been indicated, there are many mysterious activities proceeding in the body which warrant study of the behavior of the cells both with respect to their susceptibility to injury--as in the case of the streptococcal "poisons" related to rheumatic fever--and in their own tendency to form damaging substances --as in arteriosclerosis.

The living cell is more than a capsule containing a multitude of complex organic and inorganic compounds. Its life and function is maintained by innumerable specific catalyzing agents which maintain a sequence of reactions between, but do not combine with these compounds. Most of these are enzymes, supposedly broad surface protein molecules, which are infinitely small in comparison with the chemical products which they influence. One may speculate that the first form of life was the accidental formation of an enzyme in a medium of chemical compounds. It stimulated reactions in these compounds focused on the formation and rebuilding of its physical structure at the expense of materials in the immediate environment.

For minute study of cell structure the ordinary microscope with its 1500x magnification has been aided by high-speed movies, phase and polarized optics, and has been supplanted by X-ray diffraction and electron microscope photographs. The latter, with its stream of minute electrons, can resolve images to a magnification of over 40,000x. For example, such details are revealed as the thousands of holes in the cell membrane no larger than one-two millionths of an inch, through which the watery contents of the cell may spray like a sprinkler to adjust the internal pressure of the cell.

Needles too small to be visible with the naked eye can be manipulated under a microscope to dissect the cell structures and even remove the nucleus to demonstrate that a cell may live at least three days without this structure but cannot reproduce. Mazia states that a cell without a nucleus is a cell without a future. The nucleus has actually been replaced and the cell can then reproduce.

Our microchemists have learned how to analyze minute quantities of materials, for which the spectroscope has been widely used, sucked out of the cell by tiny hollow needles. Some cells are tough enough to stand centrifuging at high speeds so that their small structures will layer and be more readily extracted.

It has thus been found that the minute granules, called mitochondria, contain most of the important enzymes for respiration and energy production. They are the power plants of the cell and even govern the pumping out of water by changing internal cell pressure.

In heart failure where oxygen supply is faulty, these power plants of the enzyme system fail and water accumulates as minute globules in the heart muscle cells, further damaging their contractile efficiency.

We now approach the basic elements of heredity which are incorporated in the small fibres of the chromosomes of the nucleus. Within these chromosomes the phase optical system and the ultramicroscopes have revealed the genes as strings of tiny rods. These genes in the reproductive cells convey every trait of the ancestors to the descendants including, in addition to the color of their eyes, the pattern of their enzyme systems.

It is now known that they are composed of desoxyribonucleic or D.N.A., a sugar and phosphorus compound, presumably in joined pairs of long spiral molecules, as projected by Crick and Watson, with about 10,000,000 turns to the spiral. Binding these two lines together into a single band are repeated successions of four nitrogen-containing compounds that vary in their relative positions through millions of possible combinations. With division of the cell for reproduction, the joined bands split apart and the male and female half-genes join in the daughter cell with specifically coded instructions as to what type of animal will result.

How does this concern us practically? It is conceivable that knowing the chemical structure we may modify the inheritance of undesirable traits such as early arteriosclerosis or rheumatic fever susceptibility. This alteration has actually been accomplished in the cells of a mold wherein ultraviolet radiation radically altered the enzyme system of the daughter cells.

Finally, let us turn to the fascinating experiments of Englehardt and Lubimova in 1939 and more recently of Weber and of St. Gyorgi. They have discovered why heart or other muscle contracts. Extracting muscle they have found two substances, actin, a protein present in fibrils, and myosin, an enzyme-protein, in the smooth mass surrounding the fibrils. Artificially combining these materials they have made an experimental muscle fibre which will contract when potassium and ATP, an energy producing agent, is applied. Using this

schema it has been found that in heart failure the muscle fails to contract because of inadequate myosin enzyme. Digitalis permits the potassium essential for contraction to more readily enter the muscle bundle. Thus knowing the fundamental mechanisms we may more intelligently apply to Man the cures of myocardial disease.

(7) The nervous and hormonal influences on the heart and circulation are being thoroughly studied. The effect of acute or chronic stress of daily life is known to alter the secretions of hormones especially by the pituitary and adrenal glands. Blood pressure will fall without adrenal secretions and removal of adrenal glands has been used as a cure for high blood pressure. The new-found "magic" corticoids can alter the operation of cell chemistry and the retention by the kidney of sodium and potassium. Much is to be hoped for in the control of these hormones which largely act like catalyzers or enzymes in the improvement of our circulatory welfare.

As you have heard, there have been many recent advances in our knowledge of the control of heart disease, but our investigators of the future will go much further than we have with the use of these fragmentary pieces of knowledge.

As Newton said of Descartes, "I have been able to see farther than he saw because I am standing on his shoulders."

Harvey, the great physician of the 17th century who discovered the circulation of the blood, expressed the spirit of investigators who refuse to concede the impossible in revealing those facts which may save human lives:

"When I first tried animal experimentation for the purpose of discovering the motions and functions of the heart by actual inspection, I found it so truly difficult that I almost believed that the motion of the heart was to be understood by God alone.

"Finally, using greater care every day with frequent experimentation, observing a variety of animals, I gained accurate information of the motions and functions of the heart."

With this spirit and imagination, knowledge and technical skills, who can say how soon and how far our modern investigators will go toward solving the problems of disease of the heart and arteries?

ANNOTATED BIBLIOGRAPHY ON CARDIAC REHABILITATION

by

BENJAMIN LIEBERMAN, M.D.

When the work book of the First Western Conference on Employment and Heart Disease was prepared, it included a list of 22 references on industrial aspects of coronary occlusion compiled by Dr. Leon Lewis, one of the participants on the program. The merits of such a list on any subject are clear and it occurred to the writer that a more extensive bibliography covering several phases of the subject matter of the conference might lend additional reference value to the published proceedings. This bibliography, with comments on the items included, appears on the pages that follow. It is hoped it may be of sufficient value and interest to some readers to encourage them to consult the original articles listed.

The matter of arranging this rather lengthy bibliography in a readily usable form presented a problem. Although many classifications would be possible, it was decided to group the books, articles, papers, and other materials, under the following particular phases of the general topic:

- A. GENERAL AND HISTORICAL
- B. EPIDEMIOLOGY AND INCIDENCE
- C. REHABILITATION AND EMPLOYMENT
- D. WORK CAPACITY AND TESTS
- E. CLINICAL ASPECTS
- F. INDUSTRIAL AND COMPENSATION ASPECTS
- G. PUBLIC HEALTH AND EDUCATION
- H. OTHER SOURCES

Within each category the references are listed alphabetically by author.

A. GENERAL AND HISTORICAL

American Heart Association, Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Blood Vessels (Revised), Fifth Edition, New York: American Heart Association, 1953.

This manual should be a vade mecum for anyone working in the field of cardiology in any of its phases. While somewhat overly technical for non-medical readers, it may be used for reference purposes by them.

American Heart Association, Proceedings, First National Conference on Cardio-Vascular Diseases, New York: American Heart Association, 1950.

This is a broad survey of all the disciplines from anatomy to sociology that have a stake in furthering progress in this field. In the section on Rehabilitation is the statement: "There has been little or no work done in the field of rehabilitation of the patient with cardiovascular disease." As of this writing there are 41 cardiac work classification units in the United States supported by their local heart associations. It may be hoped that, if not now, in the years to come the above statement will no longer be true.

James B. Herrick, M.D., A Short History of Cardiology, Springfield: C. C. Thomas, 1942.

This is one of the few historical treatises in English in the cardiovascular field by the Chicago physician who himself made medical history by the first modern description of coronary thrombosis in the Journal AMA, 59, 2015, 1912. His fascinating account of his diagnosis of the condition ante mortem in patients in 1910 and again in 1914 is to be found in The American Heart Journal for January, 1944. It may be more than coincidence that present-day America's worst killer-disease was so well delineated by one of its own doctors. Dr. Herrick died on March 7, 1954, at the age of 92.

Paul D. White, M.D., "Idleness is Bad for the Health," Journal of Rehabilitation, 1955, vol. 21, p. 37.

Because of its general interest, a statement on this subject by Dr. White is quoted below:

"Work has a beneficial effect on body, mind and soul in any occupation in which it is possible for the cardiac patient to engage. Idleness breeds unhappiness and is actually bad for the health. It is a rare patient indeed who is fit for nothing.

"It is, as yet, difficult or impossible to make any prophecy as to the recurrence of future attacks of coronary thrombosis in a given case, but the majority of my patients have had but one attack and lived for years after it with or without any limitation of activity or duration of life.

"Certainly the patient should be given the benefit of the doubt and encouraged not to retire from business or to prepare for an early ending of his life, in view of our experience during the last generation. This is in sharp contrast to the pessimism of thirty years ago.

"Work is at least as important, if not more so, for a cardiac (within his capacity) as for a normal person. Therefore to deprive a handicapped person of an important therapeutic help in the form of a job is not only an unsound policy but also an unfair discrimination.

"So many new advances are made every year nowadays in the medical and surgical treatment of cardio-vascular diseases that almost anything is possible. There may be something just around the corner that may prove helpful to some patient who at present seems to be hopelessly ill. Thought of this possibility may, through the bolstering of the morale of both patient and doctor, actually aid in prolonging the life of some patients sufficiently to take advantage of new discoveries when they come."

Frederick A. Whitehouse, Ed.D. (papers available from American Heart Association).

"Rehabilitation as A Concept in the Utilization of Human Resources," 1955.

"Rehabilitation for Employment," 1955.

"Teamwork: Philosophy and Principles," 1955.

"Employment Outlook for the Cardiac," 1955.

"Rehabilitation of the Cardiac - Today and Tomorrow," 1955.

"Teamwork - A Democracy of Professions," 1951.

"Teamwork - An Approach to a Higher Professional Level," 1951.

"Teamwork: Clinical Practice in Rehabilitation," 1953.

"An Outline of Some of the Contributions of a Work Classification Unit."

Dr. Whitehouse is rehabilitation consultant for the American Heart Association. His various papers formulate the underlying philosophy, principles and practice in rehabilitation in general. They have applicability for the special type of rehabilitation that is part of the program of the Association and should be read by all workers in the field. They will obtain helpful orientation for their local projects.

B. EPIDEMIOLOGY AND INCIDENCE

Menard M. Gertler, M.D., Paul D. White, M.D., and others, Coronary Heart Disease in Young Adults - A Multidisciplinary Study, Cambridge: Harvard University Press, 1954.

This unique study is about 100 patients who experienced an attack of coronary occlusion prior to age 40. There were 97 men and 3 women. A group of 146 comparable males without heart disease were used for controls. This work must be studied to derive an idea of its broad scope. It indicates there is much more to coronary thrombosis (at least in the younger victims) than plugging of an artery. There is the lopsided sex ratio, body physique, endocrine factors (other than gonadal), certain biochemical features, genetic factors, and others.

John W. Gofman, M.D., "Some Concepts of the Problem of Coronary Heart Disease in Industry," Industrial Medicine and Surgery, April, 1955, vol. 24, pp. 289-301.

The author advocates a method for obtaining some predictive data of likely victims of coronary thrombosis. This entails the use of the ultracentrifuge for evaluating the quantitative distribution of various size lipoprotein fractions in the blood serum. It would have to be applied on a large scale among industrial employees, patterned after other screening methods employed in preventive medicine for the detection of existing or potential disease.

Arthur M. Master, M.D., and Harry L. Jaffe, M.D., "Factors in the Onset of Coronary Occlusion and Coronary Insufficiency," Journal AMA, March 8, 1952, vol. 148, pp. 794-798.

With the astuteness of close students of heart attacks over many years, Dr. Master and Dr. Jaffe differentiate them into several types or degrees of severity. On the question of effort the authors belong to the "almost never" camp, pointing to only 1.9 percent of coronary occlusion due to unusual or severe exertion found in their series of 1,347 attacks.

Metropolitan Life Insurance Company, "Factors in the Trend of Heart Disease," Statistical Bulletin, December, 1955, vol. 36, pp. 7-10.

There are estimates of 5-1/2 million people in the United States with all varieties of heart disease, and the addition of 1-1/4 million cases yearly. While the infectious types are diminishing, the coronary and hypertensive types are increasing, along with the increase of the population group above age 45. "Heart disease presents the most important medical problem today, especially among males. Particularly puzzling is the large and widening sex difference in heart disease mortality."

J. N. Morris, M.R.C.P., and others, "Coronary-Heart Disease and Physical Activity of Work," The Lancet, November 21 and 28, 1953, pp. 1053-1057 and 1111-1120.

This has become an example of a classic study by the author, applying the principles of epidemiologic study in the field of coronary disease. It concerns the comparative incidence of angina pectoris and coronary occlusion in London bus drivers and conductors. He proves that the more active conductors had less coronary disease than the drivers and less severe clinical forms of it. Using other occupational groups for controls, he formulated the hypothesis that: "Men in physically active jobs have a lower incidence of coronary heart-disease in middle age than have men in physically inactive jobs. More important, the disease is not so severe in physically active workers, tending to be present first in them as angina pectoris and other relatively benign forms, and to have a smaller early case-fatality and a lower early mortality-rate." The article is abstracted in the Journal AMA for February 27, 1954.

J. N. Morris, M.R.C.P., D.P.H., "Uses of Epidemiology," British Medical Journal, August 13, 1955, pp. 395-401.

Since 1947 the author has been studying available statistics in Great Britain and deriving from them certain interesting facts pertaining to morbidity and mortality in many fields. In his pursuit of "facts from figures" he considers epidemiology as a "procedure for finding

things out" about people "in relation to their environment and ways of living." This paper is a general discussion of his methods, with examples of his use of data. As applied to problems in clinical medicine this is a field that has been neglected too long in the search for "clues to causes." It may well be that such clues will be used in experimental and clinical research for a more direct search for causes.

Edward Phillips, M.D., "Cardiac Screening Procedures," California Medicine, February, 1955, vol. 82, pp. 118-120.

This study was directed to the development of a "simple, effective cardiac case-finding technique." It soon became evident that such a procedure could not be so simple and, in order to be productive of desired results, must include several components. Some 2,252 civil service employees of Los Angeles were surveyed by means of a questionnaire, medical history, and complete physical examination. Added to this was a battery of 14 tests, including complete electrocardiogram, chest X rays, and many laboratory procedures. It should not be surprising that with such thoroughness 7.2% of the group had "demonstrable heart disease"--about 45% hypertensive, 40% coronary and 15% rheumatic. What is revealing is the finding that in 80% of these there were clues to the condition by the worker's answers in the questionnaire, and the majority also had a "positive" medical history. Only a third so diagnosed were aware of their heart conditions. This study is reported in full detail in the American Heart Journal, March, 1953.

C. REHABILITATION AND EMPLOYMENT

American Heart Association, "Abstract of Papers - Second World Congress of Cardiology, and the 27th Annual Scientific Sessions of the American Heart Association," Washington: 1954.

Under the heading of "Occupational Cardiology and Rehabilitation," nine papers are listed treating the various phases of the subject. After the English abstract, the material is also presented in Interlingua.

Joseph G. Benton, Ph.D., M.D., and Howard A. Rusk, M.D., "The Patient with Cardiovascular Disease and Rehabilitation: The Third Phase of Medical Care," Circulation, September, 1953, vol. 8, pp. 417-426.

The authors are among the leading authorities in the country in this field of rehabilitation. The paper covers measures adapted for two disabling conditions; namely hemiplegia and cardiac diseases. Writing from their experience at Bellevue Hospital and Dr. Rusk's famous Institute of Physical Medicine and Rehabilitation in New York, they discuss several interesting phases pertaining to cardiac rehabilitation. They discuss present-day physiologic tests and their limitations for measuring cardiac reserve. Since their report, some reliable tests have been proposed in this country and in England. Job placement they feel is not uncommonly blocked more by cardiac neurosis in a cardiac or non-cardiac than the primary condition.

R. B. Crain, M.D., and others, "The Industrial Employee with Myocardial Infarction - His Ability to Return to Work," AMA Archives, Industrial Hygiene and Occupational Medicine, May, 1950, vol. 1, pp. 525-538.

This study at the Eastman Kodak industry covers a period of 19 years and 500 cardiacs out of 30,000 employees, including 184 cases of myocardial infarction. Of the latter only one case was adjudicated as compensable; 79 percent were able to resume work, though this was less likely among those with hypertension. The authors emphasize the

value of a liberal sickness allowance program and cooperation of management in their successful rehabilitation record.

Edgar Durbin, M.D., and L. J. Goldwater, M.D., "Rehabilitation of the Cardiac Patient," Circulation, March, 1956, pp. 410-418.

The authors estimate 10 million Americans with heart disease, and 800,000 deaths annually. About 25% of patients referred to Cardiac Work Classification Units are found not to have organic heart disease. Employability of a cardiac is affected by his mental attitude--welfare funds for disability may cause the "deterioration of ambition." "If people do not work for two years, they have a very bad prognosis for future employment." Among employed cardiacs there was an improvement in their health status. The article in part consists of a series of questions and answers. A good bibliography is appended.

John W. Ferree, M.D., and Frederick A. Whitehouse, Ed.D., "Rehabilitating the Adult Cardiac," General Practice, February, 1954, vol. 9, pp. 43-48.

This is an excellent description of cardiac-work classification units in action. While dealing mainly with those in New York and Cleveland, the paper outlines basic principles and practices for successful operation of such a project.

S. Charles Franco, M.D., F.A.C.P., "The Cardiac Can Work," Industrial Medicine and Surgery, July, 1954, vol. 23, pp. 315-320.

Dr. Franco describes the program for proper occupational placement by his company of 896 cardiacs in 1952. He also urges such exemplary medical and industrial cooperation as a method for minimizing the risks of industrial compensation for heart claims. Taken altogether his title tells of a praiseworthy program by one large industry.

Herman K. Hellerstein, M.D., and Elaine Goldston, "Rehabilitation of Patients with Heart Disease," Postgraduate Medicine, March, 1954, vol. 15, No. 3, pp. 265-278.

The team approach, involving physician, social worker, nurse, vocational counselor, etc., is considered in the various phases of rehabilitating a cardiac. The role of each person concerned will vary in emphasis at different times--acute illness, convalescence, and recovery phases. A significant aspect in this program is the emotional problem of the patient and his family in the trying readjustment. Dr. Hellerstein is well known for his work with the Cleveland Work Classification Clinic. He has produced a sound film on the subject.

Delavan V. Holman, M.D., F.A.C.P., "Preparing a Cardiac for Competitive Employment," Industrial Medicine and Surgery, January, 1955, vol. 24, pp. 23-30.

Dr. Holman describes the work of the unit at New York University-Bellevue Medical Center during the first two years of operation. He emphasizes the research value of such projects which by maintaining close contacts with cardiacs at work will provide much useful knowledge in this field.

Abraham Jezer, M.D., "Rehabilitation in Heart Disease," a paper presented before the Rehabilitation Committee of the American Heart Association, January 28, 1955.

The author discusses the many facets presented by a cardiac in the rehabilitation process out of his experiences in the Altro Workshop in New York City. His job prescription is dictated mainly by the AHA functional class of each cardiac. Those in Class I and many in Class II may be in full-time work, while Class III patients require sheltered workshop facilities. Retraining may be advisable for some Class I and II cardiacs.

J. G. Kaufman, M.D., and M. C. Becker, M.D., "Rehabilitation of the Patient with Coronary Artery Disease," Annals of Internal Medicine, July, 1954, vol. 41, pp. 9-17.

This study divides the care of the patient into three phases, dealing with the attack resulting in myocardial infarction, then the convalescent phase when the patient is ambulatory at home, and the final phase of occupational restoration or return to work. The difficulties of evaluating cardiac function are discussed, but work capacity must be defined with respect to a given job. The need for further studies in this field are properly emphasized.

Edward M. Kline, M.D., "Aiding the Cardiac Patient in Industry," AMA Archives of Industrial Hygiene and Occupational Medicine, May, 1951, vol. 3, pp. 454-460.

Writing as a physician for a large industry, Dr. Kline emphasizes the role he plays in cooperating with the cardiac's private physician to provide the proper "work prescription" for the patient. With an enlightened and cooperative management, it becomes a simple matter to fill such a prescription.

Los Angeles County Heart Association, The Physical Evaluation and Industrial Placement of Individuals with Heart Disease, Los Angeles: 1952.

This 22-page manual published by the Los Angeles County Heart Association is intended to be a guide for physicians in directing their thinking along vocational lines for patients with all types of heart disease. There is a very helpful commentary on compensation aspects by Douglas Campbell of the Industrial Accident Commission of California.

Arthur M. Master, M.D., "Immediate Care and Rehabilitation of the Patient with Coronary Thrombosis," Therapeutic Notes, December, 1955 (published by Parke, Davis & Co., Detroit).

A brief survey of the over-all aspects--clinical and vocational-- of the patient with coronary thrombosis by one

of the leading cardiologists of the U.S. The emphasis is on the clinical side.

Arthur M. Master, M.D., and others, "Survival and Rehabilitation after Coronary Occlusion," Journal AMA, December 25, 1954, vol. 156, No. 17, pp. 1552-1556.

Five hundred patients were followed for a period of one to twenty-nine years after coronary occlusion. Forty percent made a complete recovery in a clinical sense, and an equal number were left with only mild impairment. Of the total number 75 percent were working. Fifty percent lived more than 5 years, and 20 percent more than 10 years. In the face of these findings, optimism is warranted and return to work should be planned for those who want it or need it.

M. D. Kossoris, The Performance of Physically Impaired Workers in Manufacturing Industries, Bulletin 923, United States Department of Labor, Washington: 1948.

This is an outstanding piece of statistical work detailing the work performance of some 1800 workers with cardiac impairments. It covers a period from 1945 through early 1947, and compares, using a variety of standards, the records of the cardiacs in over 400 classified jobs with the records of 3,000 non-cardiac employees. Among the conclusions derived: "Based on the records it seems reasonable to conclude that the workers with cardiac impairments, properly placed, were not handicapped workers."

Simon Olshansky, A.M., and others, "A Survey of Employment Policies as Related to Cardiac Patients in Greater Boston," New England Journal of Medicine, 1955, vol. 253, pp. 506-510.

This is a detailed study of experience in this special field in the Boston area for the years 1948-1952. It suggests a trend, in that death claims for cardiac disease doubled in number for the period surveyed, and, in 1952, represent over a third of all death claims, and 24% of death benefits paid. To counterbalance this trend, however, claims for disability have not increased. The authors conclude that "it is in the matter of death claims

that the significant threat lies in discouraging the hiring of workers with heart disease."

United States Department of Labor, Bureau of Placement Methods, Dictionary of Occupational Titles (Second Edition) Supplement 1, Washington: 1955.

This supplement is arranged alphabetically by job titles, with the major work issued in its second edition in 1949. It makes a complete, descriptive, reference source of all conceivable jobs in our industrial society.

Frederic S. Weisenheimer, Problems of Employment and Heart Disease, San Francisco: California Heart Association, 1955.

Mr. Weisenheimer, Program Director for the California Heart Association, presents an up-to-date critical review of his subject. It is based on pertinent references in publications, as well as opinions derived by interviews with several authorities in the fields of medicine, insurance, and public health. The study is completed with an excellent discussion of a proposed broad solution to the problem posed in the title.

"Effect of Employment on the Course of Heart Disease," AMA Archives of Industrial Hygiene and Occupational Medicine, April, 1951, vol. 3, pp. 367-374.

This was a survey of 580 patients by the Staff of the Cardiac Work Classification Unit at Bellevue Hospital. The findings prove that occupational activity did not of itself aggravate heart disease. Some of the patients showed improvement in their medical condition during the course of their employment.

"An Occupational Analysis of 580 Cardiac Clinic Patients," Circulation, February, 1951, vol. 3, pp. 289-293.

This study from the Bellevue Hospital Cardiac Clinic was made in 1949. The patients must be considered a selected group in an economic sense. They represented housewives, white collar workers and unskilled laborers. Forty-five

percent of the males and 64 percent of the females were on full-time employment. An additional 8 percent of the males and 25 percent of the females were doing part-time work.

D. WORK CAPACITY AND TESTS

Erling Asmussen and Marius Nielsen, "Cardiac Output During Muscular Work and Its Regulation," Physiological Reviews, October, 1955, vol. 35, pp. 778-800.

This study belongs in the field of applied physiology. The authors subject to critical evaluation some of the time-honored theories of cardiac response to work, and come up with some new explanations (with due deference to Krogh and Starling). There is a wholesome and modest admission that with all that's known there is still more to follow. As proof of this they append a bibliography of 121 titles. This study was conducted at the University of Copenhagen.

Robert A. Bruce, M.D., "Evaluation of Functional Capacity and Exercise Tolerance of Cardiac Patients," Modern Concepts of Cardiovascular Disease, April, 1956, vol. 25, pp. 321-326.

In this article, Dr. Bruce describes a group of standardized exercise tolerance tests. These entail treadmill walking with simultaneous electrocardiograph records, oxygen consumption data, and blood pressure readings. The necessary equipment and procedures are beyond the scope of a physician's office, but are being used now in some cardiac work classification centers (Seattle, Los Angeles on the West Coast). Out of these research projects may come a simplified procedure adaptable for use by many physicians.

Howard Hansen, M.D., and N. K. Weaver, M.D., "Arteriosclerotic Hearts at Work," The Journal of the Louisiana State Medical Society, February, 1955, vol. 107, pp. 63-68.

This is a study of cardiac patients in the employ of the Esso Refinery in Baton Rouge. Patients were selectively placed in jobs by matching their physical capacities with the job requirements based on such capacities and requirements for all types of disabilities and jobs in that industry. With this approach as applied to 82 coronary cases (32 anginal and 50 post-infarction) it was possible to place them in a variety of jobs in the refinery.

Emphasis is placed on job reinstatement as early as possible to avoid development of untoward psychologic results such as cardiac neurosis.

Abraham Jezer, M.D., "Work Capacity of the Cardiac," The Medical Clinics of North America, May, 1953, vol. 37, pp. 667-684.

Dr. Jezer's article of eighteen pages is more comprehensive than is implied by the title. He supplies a set of observations as guides for physicians in the management of heart disease of different etiologies. Though intended mainly for the medical profession, it is not too technical for others to read.

Louis N. Katz, M.D., "What Stress Does to the Heart," Industrial Medicine and Surgery, June, 1954, vol. 23, pp. 267-269.

The author, one of the world's leading research men in cardiovascular physiology and disease, has devoted six columns of fine print to expound a concept. The word "stress" has many ramifications and since Dr. Hans Selye has transported the term from physics to physiology, a new concept of bodily adjustments in health and disease has been developed.

Dr. Katz's discussion is mainly along physiological lines. Arguing along such lines, he denies that work "can cause coronary closure and an infarction of the heart" unless there is pre-existing coronary arteriosclerosis present. Later he admits "work can aggravate the symptoms of heart disease already present" as a result of unusual effort. Where medicine leaves off, the law takes up. This is a vast subject and any further interest in it can be satisfied by reading a recent monograph by Dr. Harold G. Wolff entitled Stress and Disease.

R. Passmore and J. V. G. A. Durnin, "Human Energy Expenditure," Physiological Reviews, October, 1955, vol. 35, pp. 801-804.

The authors are connected with the departments of physiology at the Universities of Edinburgh and Glasgow, respectively. This is a detailed study of the energy costs of various activities. The authors cover a wide

range of observations of play and work, for "a wage-earner may use his muscles more in his leisure time than during his earning hours." The study is a review of energy costs of such daily vocations and avocations as sleep, locomotion of various degrees of speed, recreational activities, and specific occupational pursuits. The data is expressed in terms of kilocalories per minute from observations supplied in the reports the authors studied, which were considerable, since they list 137 items in the bibliography.

Leon Porcy, M.D., and others, "Value of Cardiac Function Tests in Industry," Journal AMA, March 8, 1952, vol. 148, pp. 813-819.

This paper is devoted to three main tests--Dr. Master's well-known 2-step exercise electrocardiogram, the anoxemia or 10 percent oxygen test, and the use of the ballistocardiogram. Without decrying the emphasis in tests as a research project, they are still to be considered at best as adjunctive measures to the usual basic clinical approaches.

D. Turner, "The Energy Cost of Some Industrial Operations," British Journal Industrial Medicine, 1955, vol. 12, pp. 237-239.

This interesting British study aims to answer the question of how much effort expenditure is involved in certain jobs. Two methods were employed--the "scientific" one of measuring the metabolic rate, and "a subjective assessment based on simple job analysis." The jobs studied required four gradations of exertion from light to very heavy work in 48 different occupations. The study proved "an observer can classify occupations with a fair degree of accuracy after a little experience without making any physical measurements."

E. CLINICAL ASPECTS

J. R. Durham, M.D., and L. C. McGee, M.D., "The Electrocardiogram in the Examination of the Industrial Worker," Annals of Internal Medicine, November, 1954, vol. 41, pp. 918-934.

The authors analyzed, from 1936 to 1952, a total of 37,000 tracings on 7,400 employees of the Hercules Powder Company in Delaware. The age range was 18 to 75 years. They concluded the test has no value in determining the "etiology" or causative type of heart disease, nor does it have any prognostic value. They also believe, from the study, "there is no evidence that physical labor or unusual effort predisposed to myocardial infarction or worsened hypertensive disease."

Leonard J. Goldwater, M.D., and others, "Study of One Hundred Seventy-Five 'Cardiacs' without Heart Disease," Journal AMA, 1952, vol. 148, pp. 89-92.

The authors reviewed the records of 175 persons out of 631 referred to the work classification unit at Bellevue Hospital between 1941 and 1950. This 28 percent of the group were found not to have heart disease or paradoxically speaking so-called "iatrogenic heart diseases." Half of these wrong diagnoses were acquired in the cause of examination for military service, in schools and industry. Since a fourth of the group were not employed at the time of this survey it brings up the extreme importance of tenable diagnoses in this field, a situation which has been helped considerably by recent advances.

National Research Council, "Symposium on Arteriosclerosis," held under the auspices of the Division of Medical Sciences, National Academy of Sciences, publication 338 of the National Research Council, 1954.

This is a fairly basic treatment of certain anatomic, physiologic and experimental aspects of the field of arterial disease. While highly technical, it is indicative of the wide scientific interest and research in this country.

George P. Robb, M.D., and Herbert H. Marks, "What Happens to Men Disabled by Heart Disease," a paper read at the Sixty-Second Annual Meeting of the Association of Life Insurance Medical Directors of America, October 14-16, 1953.

In the years 1925-1950 the mortality from rheumatic heart disease has been reduced by half, roughly from two-fifths to one-fifth of the total deaths. During the same period coronary-type heart disease has shown a reversal of the figures for the rheumatic type. In answer to the very important question of prognosis or life expectancy the two studies discussed here give complete data for men with coronary thrombosis; 70 percent lived five years or more and 50 percent ten years or more. These figures must speak for the practical necessity to provide these men with jobs. Additional information may be obtained in an article entitled "Prognosis in Heart Disease," Modern Medicine, November 15, 1954.

University of Minnesota and Minnesota Heart Association,
"Arteriosclerosis - A Symposium, presented on September 7,
8 and 9, 1955."

This 185-page report presented by authorities from the United States and abroad, may be said to be the last word in the clinical area of this problem. Because of its technical nature it will be of interest mainly to physicians. Others will be able to grasp the vast scope of the problem. While fairly generalized, much of the material pertains specifically to the heart.

F. INDUSTRIAL AND COMPENSATION ASPECTS

Samuel F. Aaronson, M.D., "Effects of Effort on the Diseased Heart - Medicolegal Implications, Northwest Medicine, January, 1956, vol. 55, pp. 54-56.

Dr. Aaronson gives a brief medicolegal discussion of the coronary problem, emphasizing the difficult role of the physician as a medical expert. There follows a helpful "Guide for Establishing Causal Relationship between Trauma or Strain and Heart Disease" developed by a special committee.

- a. Sudden death from acute coronary disease in which symptoms develop during the course of, or immediately following, exertion or strain that is both excessive and unusual for the particular individual concerned. This exertion or strain may be either physical or emotional; stated conversely, any such exertion or strain which is usual for the individual concerned should not be considered a cause of acute coronary disease.
- b. Coronary occlusion with myocardial infarction when the first symptoms or signs occur during or immediately following exertion or strain of the type described in (a).
- c. Acute coronary insufficiency when the symptoms or signs appear for the first time during or immediately following an exertion or strain of the type described in (a).
- d. Acute pulmonary edema or heart failure first occurring during or immediately following an exertion or strain of the type described in (a).
- e. Contusion of the heart when symptoms or signs occur within a reasonable time after non-penetrating injuries to the chest. The term reasonable should be determined in each case in accordance with natural history of the disease.

- f. Serious cardiac arrhythmias occurring during or immediately after chest injuries or exertions of the type described in (a). The disability should be considered to exist only so long as there are symptoms or signs directly attributable to the arrhythmia.
- g. Rupture of a heart valve when clear-cut signs and symptoms occur during or immediately after exertion of the type described in (a), or after non-penetrating injury to the chest.

William L. Adams, Jr., M.D., "Coronary Sclerosis and Coronary Thrombosis - Industrial Aspects Associated with Compensation," California Medicine, November, 1954, vol. 81, pp. 339-342.

Dr. Adams discusses many of the provisions and industrial applications of the California Labor Code and Compensation Laws. He recognizes the difficulties inherent in compensation for cardiac disability under the statutes because medical opinion must be often applied as if it were fact. The doctor is then put in the role of a quasi-judicial party in a litigation. Remedies he suggests include improved legislation and broader disability compensation coverage. The present law, for example, in Section 3212 of the Labor Code provides that firemen, policemen, game wardens, forest fire fighters and state highway patrolmen who die of heart disease or develop this condition, or hernia, or pneumonia, "so developing or manifesting itself in such cases shall be presumed to arise out of and in the course of employment." The State is then responsible "unless there is evidence of contradiction."

Association of the Bar of the City of New York, Impartial Medical Testimony, a report by a Special Committee of the Bar, New York, 1956.

Though mainly concerned with medical testimony in personal injury cases, its scope should interest those who may be called for testimony before Industrial Accident Commissions. It also discusses methods for organizing medical expert panels.

Rodney R. Beard, M.D., and others, "Heart Disease Claims under the California Workmen's Compensation Act," Circulation, March, 1956, vol. 13, pp. 448-456.

This is an important study by a special committee of the California Heart Association and the Industrial Accident Commission of that State. Heart claims were 1.7 percent of all claims decided by the commission. While there was discrepancy between the judgments of the I.A.C. and a group of expert physicians who reviewed the cases in abstract form, there was also significant discrepancy among the physicians themselves. Furthermore, there was variation in judgments by a physician on the same case after an interval of time.

J. G. Benton, M.D., and H. A. Rusk, M.D., "The Relation of Physical Activity and Occupation to Coronary Heart Disease," Annals of Internal Medicine, November, 1954, vol. 41, pp. 910-917.

Reference is made to the well-known diversity in medical opinion about the relationship between effort and coronary thrombosis, allowing for the agreed prerequisite of pre-existing intrinsic coronary artery disease. Emotional factors must be given their due weight. The work of Dr. J. N. Morris in his statistical studies of various occupational groups in England is quoted extensively. The article concludes with the general acceptance of the old dictum that "hard work never killed anybody."

Richard J. Clark, M.D., "Heart Disease and the Workmen's Compensation Act," a paper presented at the Assembly Panel of the American Heart Association Meeting, April 1-2, 1954.

This is a six-page mimeographed discussion of the experience in Massachusetts followed by a list of ten "Suggested Criteria for Compensability of Heart Disease." One additional cardiac, and two possible arterial conditions account for the greater number (by three) than the criteria proposed for Washington State. Already the question of non-uniformity of criteria in different states seems to suggest itself.

Richard J. Clark, M.D., Emma Sanborn Tousant, LL.B., and Howard B. Sprague, M.D., "Heart Disease in Massachusetts in Relation to the Workmen's Compensation Act," New England Journal of Medicine, March 24, 1955, vol. 252, pp. 478-484.

The authors refer to some recent decisions in Massachusetts as indicative of the trend to apply workmen's compensation as "a sickness insurance for degenerative diseases that are becoming more frequent with the increasing life span." The reaction will be to deny many persons the opportunity for employment, unless some substitutive measures are provided, such as adequate group insurance, "leaving workmen's compensation for the care of the worker truly injured on the job in accord with the original intent of the Act."

L. A. Kapp, M.D., "Trauma in Relation to Coronary Thrombosis," Annals of Internal Medicine, February, 1954, vol. 40, pp. 327-339.

Dr. Kapp analyzes the data on 42 patients after setting up three conditions as criteria for establishing causal relationships to the heart attacks. He considers the importance of a history of preceding trauma or strain followed by the onset of symptoms immediately or shortly following the incident, and the development of clinical features and electrocardiograms considered diagnostic of the disease. While the series may be too small for valid statistical conclusions, he found positive causal relationships in 13 cases, probable in 6, doubtful in 5 and nonexistent in 18.

Wilbur Lawrence, LL.B., "When is a Heart Case Compensable?", Northwest Medicine, January, 1956, vol. 55, pp. 48-53.

This is a thoroughly documented discussion of the legal aspects of the Washington Workmen's Compensation Act in its application to cardiac injury cases. Much of the material is based on that of Rutledge (listed elsewhere).

Earl D. McBride, M.D., Disability Evaluation - Principles of Treatment of Compensable Injuries, Philadelphia: J. B. Lippincott Co., 1953.

On page 629, the author briefly discusses the difficulty of evaluating cardiac reserve under various conditions since "there is no adequate gauge of cardiac reserve."

Alan R. Moritz, M.D., "Trauma, Stress, and Coronary Thrombosis," Journal AMA, December 4, 1954, vol. 156, pp. 1306-1309.

Dr. Moritz is one of the nation's recognized medicolegal authorities. With diagrams and discussions, he indicates the course of events and sequences following direct trauma to the chest and heart and the effects of stress.

S. Steven Rosner, "Workmen's Compensation and Cardiac Rehabilitation," Journal of Rehabilitation, March-April, 1955, vol. 21, pp. 15-21.

The author decries the tendency to take refuge in alibis about alleged obstacles to the hiring of cardiacs. But he seems to argue circuitously in his failure to recognize that the cardiac handicap is regarded differently from other handicaps by employers and insurance carriers. To remedy this situation, what may be needed is not new legislation but more education to remove existing barriers to employment of cardiacs. He makes a plea for the application of the second injury law and the use of medical advisory panels. Mr. Rosner was formerly on the staff of the Massachusetts Heart Association.

Ivan C. Rutledge, "Proposed Procedure for Administering Heart Cases Under the Washington Industrial Insurance Act," Washington Law Review and State Bar Journal, vol. 31, pp. 67-75.

The author points out that while the application of the law in the State of Washington in cardiac cases is based on medical opinion, the outcome often seems medically inconsistent; the fault is inherent in the variation of medical opinion. A heart attack is considered as an industrial injury and not an occupational disease because

court decisions have allowed for pre-existing heart disease. (This legal judgment may have a wider application than is generally realized in view of the studies by Dr. Herrman L. Blumgart of Harvard. In 40% of persons above the age 40 who died of other causes than heart disease, he found evidence of significant narrowing or occlusion of one or more coronary branches.)

Legal process must deal with cause and effect relations, i.e. "effort and heart attack." Litigation then becomes unavoidable in heart claims due to incomplete medical knowledge on this point. Toward a solution of this difficulty a set of "minimum medical criteria" has been proposed by medical experts to guide physicians in the evaluation of specific cases. Another recommended approach is the use of an impartial medical panel to serve in an advisory capacity to the Industrial Commission.

Senate Committee on Labor of the State of California, Partial Report Relating to Workmen's Compensation, Sacramento, 1955.

This legislative committee report is of general interest with respect to many problems in industrial compensation. Special interest with regard to the cardiac problem attaches to the section under "Views and Opinions," where divergent medical views and opinions are expressed by three physicians.

Louis H. Sigler, M.D., "Cardiac Disability and Death Caused by Strain: Problem in Workmen's Compensation," Journal AMA, January 23, 1954, vol. 154, pp. 294-299.

Dr. Sigler affirms a frequent relationship between cardiac injury and strain--physical or emotional. This he feels can be established when all the facts are ascertained--and he has a series of 250 such cases. He discusses certain criteria or circumstances with case illustrations that tend to prove his contention.

Meyer Texon, M.D., Heart Disease and Industry with Particular Reference to Workmen's Compensation Cases, New York, 1954.

The Journal of the AMA, in its review of this important work says, "This interesting study, clearly written and minutely documented, achieves its stated aims to present medical criteria for determining causal relationship between trauma and heart disease, to provide assistance to referees and medical boards by providing factual data helpful in reviewing controversial medical evidence and rendering opinions thereon . . . a useful contribution." The author has a pertinent letter in the New England Journal of Medicine, 252, 875, 1955, commenting on the article by Clark, et al., on page 478 of that volume of the same journal.

James H. Thompson, M.D., "Compensation Aspects of Myocardial Infarction in Industrial Medicine," AMA Archives, Industrial Hygiene and Occupational Medicine, March, 1951, vol. 3, pp. 292-297.

The author explains the increase of myocardial infarction in recent years to diagnostic accuracy, clarification of terminology, and increasing incidence in an aging population. He advocates that a medical board rate various diseases in workers to allow for "standardized compensation and settlements."

United States Department of Labor, "Discussion Draft of Proposed Model Workmen's Compensation Law," Washington, 1955.

An AP news release under date of December 21, 1955, reported the distribution of 2,000 copies of a proposed guide for state workmen's compensation laws. This would be an attempt, on a nationwide basis, to introduce some uniformity and equality in benefits for comparable conditions now covered by the different state laws. Accompanying the material is a clear discussion of it, in the form of an address by Undersecretary of Labor, Arthur Larson, given before the Industrial Hygiene Foundation in Pittsburgh, Pennsylvania, on November 17, 1955. With respect to cardiac employees, the new model law would make the second-injury fund applicable, providing there is prior registration of handicapped employees by the prospective employer.

United States Department of Labor, Workmen's Compensation in the United States, Bulletin No. 1149, Washington, 1954.

This is a 45-page monograph showing the unbelievably wide discrepancies in the provisions and administration of the various state compensation laws. Eight chapters covering as many different phases are written by experts in their own fields. As they indicate clearly, while the present legislation is good, it is in many cases not good enough. M. D. Kossoris points out in the first chapter that a hand is worth more in New Jersey than in Colorado, the loss of which is covered by 230 weeks' compensation in the former and only 104 in the latter.

Deficiencies in administration compound many inherent weaknesses. Only three states and Puerto Rico provide rehabilitation for injured workers. This lack may be met in the future by development of private, community-sponsored centers, possibly in cooperation with union groups and/or insurance carriers. The success of the Liberty Mutual in Boston since 1943 sets a good example. The short-comings in present laws may be cured by the new model law referred to in item 46.

L. E. Viko, M.D., "Medico-Legal Problems of the Heart in Relationship to Injury," The Utah Bar Bulletin, March-April, 1953, vol. 23, pp. 47-58.

Dr. Viko was identified with a committee of the Utah Heart Association which organized a medical advisory panel at the request of Industrial Commissioner O. A. Wiesley of that state. The above address was presented before an Institute on Personal Injury Litigation. It discusses the background of its title in general terms.

In a memorandum, dated May 22, 1954, to the American Heart Association, Dr. Leonard J. Goldwater, M.D., discusses the Utah plan. The memorandum, available from the Heart Association, touches upon many phases of the compensation problem and urges more activity to find some practical way of surmounting its difficulties that would be fair to all parties concerned. Dr. Goldwater speaks with authority since he may be considered the "father" of the cardiac work classification units in this country. There are two letters attached to the memorandum, one by

Dr. Viko and a longer one by Mr. Wiesley detailing some of the experiences of the Utah Commission. In his final report to the American Heart Association ("Workmen's Compensation and Heart Disease in Utah - Final Report, September 7, 1954"), on the Utah Plan, Dr. Goldwater gives a general recommendation for the plan and suggests that similar plans should be considered by other states.

"Myocardial Infarction and Workmen's Compensation," Journal AMA, October 15, 1955, vol. 159, p. 737.

This article is written in the form of questions and answers. In 350 words the high points are touched, indicating three camps of medical opinion--the "almost never," "occasionally," and "frequently" schools of thought concerning whether or not effort leads to coronary occlusion. One falls into a trap by trying to generalize, and the cautious-minded expert will fall back on specific situations surrounding individual cases.

"Do You Have Heart Trouble?", Occupational Hazards, May, 1954, pp. 21-23, 52-56.

"After a Heart Attack, What?", Occupational Hazards, October, 1954, pp. 33, 91-93.

These articles are concerned with the industrial compensation aspects and rehabilitation programs of cardiacs. The first article has an extensive table indicating the many and variable features of the different state compensation laws.

G. PUBLIC HEALTH AND EDUCATION

William A. Brams, M.D., Managing Your Coronary, New York:
J. B. Lippincott Company, 1953.

This book is a nontechnical, authoritative guide for the patient with coronary disease at all stages of his disorder. It emphasizes positive optimistic aspects. It is an example of "bibliotherapy" at its best.

Lester Breslow, M.D., M.P.H., "Heart Disease Control Activities of the California State Department of Public Health," California's Health, November, 1953, vol. 11, pp. 89-92.

Dr. Breslow, Chief of the Bureau of Chronic Diseases, gives a broad outline of the multiphasic activities of a state health department in this important field. Health departments at all governmental levels have taken on new tasks in the prevention and control of chronic disease. The California State activity is a good example of this type of project.

Blake Clark, "Is This the No. 1 Villain in Heart Disease?", Reader's Digest, November, 1955, pp. 109-113.

This article discusses some of the experimental, clinical, and geographic studies going on in various parts of the world implicating excess fat in the dietary as an important factor in coronary arteriosclerosis. There is a pertinent editorial comment by Dr. Paul Dudley White.

John W. Ferree, M.D., M.P.H., "Cardiovascular Disease and Public Health," Public Health Reports, February, 1956, vol. 71, pp. 115-124.

Dr. Ferree, Director of Community Service and Education for the American Heart Association, gives an account of the organization, history, growth, and program of the Association.

Donald K. Freedman, M.D., A Medical Study of Incapacitated Fathers Receiving Aid to Needy Children in California, California Department of Social Welfare, 1954.

This is a significant study in pointing to the urgent need for medical salvage or rehabilitation measures for many fathers now considered "incapacitated." According to the author, heart disease cases represent approximately 12% and circulatory diseases as a whole, 14% of some 6,000 families receiving aid. Based upon 1955 figures, the cost to the state for such cases approximates 1-1/3 million dollars annually. It is the author's logical contention that many, if not most of the fathers, with proper cardiac rehabilitation measures could become employable and economically independent.

C. E. Thompson, M.D., and H. Frederick Staack, Jr., M.D., "Executive Health--Diagnostic Study of 600 Executives," Industrial Medicine and Surgery, April, 1956, vol. 25, pp. 175-176.

This study is a careful evaluation of the "health check-up" or the periodic health inventory. The group consisted of 500 males and 100 females of the executive type. Among the diagnostic groupings there were 156 cases listed under Blood and Circulation. Of this number 107 were new and unknown to the examinees. Under the precise diagnosis of hypertension there were 59 new cases, and 39 new cases of arteriosclerotic heart disease. The results obtained certainly justify the overall labor and costs and represent a new approach in preventive medicine which deserves wide-spread extension.

"Heart Attack," Life Magazine, October 10, 1955, pp. 150-159.

"The Specialized Nubbin," Time Magazine, October 31, 1955, pp. 62-70.

"Help Your Husband Guard His Heart," This Week, February 12, 1956, pp. 7-9.

The first two articles in these widely circulated magazines are centered about President Eisenhower's now famous heart attack. The second item is especially complete as it

gives an account of the active research in the field exemplified by the career of Dr. Irvine Page. The third article is an excellent piece of popularized medical writing on behalf of the wife of Senator Lyndon Johnson. One gets the impression that if the advice offered in it were followed by America's middle-aged male population the result would be considerable health and life conservation.

Steps Toward Prevention of Chronic Disease, Summary of a Conference, March 1951, Chicago, Illinois, Raleigh: Health Publications Institute, Inc., 1951.

With the American Heart Association listed as a participating agency, this 31-page pamphlet sets forth utopia-like goals in the detection and prevention of chronic disease. With the admitted importance of the cardiovascular category of chronic disease, this material must appeal to all workers in the field.

"The Number One Killer" and "Coronary Ailments," Railway Car-
men's Journal, February, 1956, vol. 61, pp. 2 and 18.

These two articles are of a nontechnical nature and are written on a level of direct appeal to the periodical's readers. The first item is in the nature of editorial comment, referring to and endorsing the work of the American Heart Association. The article on Coronary ailments is in the form of questions and answers.

"Why Executives Drop Dead," Fortune Magazine, June, 1950, pp.
88-91; 149-156.

This article is available as a reprint from the American Heart Association. In the original it carries a page of colored illustrations of three types of heart disease. Possibly as a result of this bit of crusading by fright, it is reported that many corporations have arranged for comprehensive health inventories of their executive personnel, with considerable benefit to both sides. For an interesting discussion of this development one should read the feature article entitled "Ailing Bosses" in The Wall Street Journal, April 2, 1956.

H. OTHER SOURCES OF INFORMATION

ORGANIZATIONS

1. American Heart Association, 44 East 23rd Street, New York 10, New York.

This is the parent organization of the several state and local heart associations now functioning across the country. Anyone interested in the work of this voluntary health agency can obtain material from his local heart association or from the state or national office. A considerable number of informative and useful pamphlets and reprints are available free. With only a few exceptions, none of these are listed in this compilation, on the assumption that the original material deserves to be read in full by anyone interested.

2. National Heart Institute, U. S. Public Health Service, Bethesda 14, Maryland.

This is the arm of government in the field of heart disease. May it always receive adequate support from our budgeteers. As contrasted with the A.H.A. it represents the public health agency, and like it, is committed to a program of research on many fronts. It offers a variety of printed material for the interested citizen of any calling.

TAPE RECORDING - "My Heart and I," produced by California Heart Association, 1428 Bush Street, San Francisco, California, 1956. Available on loan.

This recording has the impact of a human interest document in sound. The material and dramatis personae are introduced by William Winter, the well-known news commentator; then, each of several recently recovered cardiacs reports in his own words his reactions to his illness, and problems and plans that followed recovery in the goal toward return to work. If a picture is worth a thousand words, then this tape proves that the audible word is worth a thousand printed ones.

PROCEEDINGS OF CONFERENCES

In recent years a number of the larger local Heart Chapters have held one-day or longer conferences with the general theme of employment of cardiacs. The first two listed below are from New York and Chicago, respectively, and the third was organized mainly for medical social workers. Much of the material presented in these publications is a down-to-earth discussion of the problem not to be found in any other publication.

1. Heart in Industry - New York Heart Association, New York, November 20, 1953.

This is an 84-page transcript of addresses and panel discussions. It includes the article by Dr. Katz listed elsewhere.

2. The Heart Problem of Industry - Chicago Heart Association, January 12, 1955.
3. Social Workers' Institute on Heart Disease - Public Health News, New Jersey State Department of Health, Trenton, New Jersey, October, 1954.

The paper by Dr. Edward Weiss dealing with physical and emotional aspects is outstanding.

Letter of Ivan C. Rutledge, Professor of Law, Indiana Law School, dated October 13, 1954.

This nine-page letter is addressed to a physician-member of the Strain Committee of the Washington State Heart Association on the legal aspects of industrial compensation for cardiac episodes. It embodies many of the ideas included in the article referred to elsewhere from the Washington Law Review (the latter being a later publication). This item should be of especial interest to attorneys, judges, and industrial commission members. There is an attached two-page excerpt from the Washington Compensation Law covering heart cases.