The patient with coronary disease comes into court, or his descendents for him, mainly under 3 major conditions: (1) it is claimed that he has received a personal injury which caused or aggravated his heart disease; (2) his cardiac mischief has been produced or worsened by his employment (Workmen’s Compensation); or (3) he is entitled to premature pension payments, governmental or private, by virtue of an occupational hazard to his heart.

In a case carried to the Supreme Court of Minnesota which was, however, not a cardiac problem, the Court said “Since we as judges lay no claim to expertness in these matters [the etiology of cancer], we can add nothing to the discussion, nor can we be expected to resolve these conflicts which the medical profession itself has been unable to resolve. Notwithstanding this uncertainty, we think we are bound to treat the opinions of these doctors as something more than speculation and conjecture, which are but polite terms for unscientific guesswork.”

And as Larson says “Plainly, the heart cases will continue to be troublesome as long as some reach the appellate courts on a record in which the medical testimony is emphatically certain that effort and exertion have nothing whatever to do with coronary thrombosis, while most such cases are based on the opposite thought.”

Thus, the reason for litigation, in the cases of coronary disease, is referred to differences in opinion within the medical profession. The skepticism of lawyers about medical disagreements is illustrated by Lambert’s belief that it is best to have adversaries in court rather than panels and “impartial” physicians, in these cases, since “the expertism of today becomes the wasm of tomorrow.” So litigation will go on, for, according to Justice Holmes “our ideal may be repose, but our destiny is effort.” It should be remembered that Holmes lived to the age of 94.

There are influences, foreign to medical thinking, which color the legal aspects of the coronary problem, but which, none the less, physicians should understand. The first of these is the difference between the lawyer’s and the doctor’s definition of causation. This has been well discussed by Small. The physician, indeed, must undergo an almost mystical revelation to accommodate his thinking to that of the legal profession as it relates to causation. “But,” as Small says, “the lawyer and the doctor have so pontificated over simple words, so preened them and institutionalized them, that the layman thus put in the dark, is as wise as the lawyer and the doctor when each is confronted with the other’s busywork.” “The lawyer simply is not after the same cause as the doctor, and therefore cannot be expected to reach the same causal ends.” This is perhaps even more striking in the case of Workmen’s Compensation than in personal injury actions, because of what Horovitz rightly calls the litigious phrase: ‘arising out of’ employment.”

The lawyer complains that the doctor has “difficulty in separating cause from etiology” whereas “lawyer—cause, whatever modifier be used, can have no meaning except that which it takes from the system, the system represented by the concept-term, Law. As that system is one of adjustment toward social harmony, certain policy considerations will inescapably control the adjustment process—policy considerations springing from social demands.”

*The Peter T. Bohan Lecture, delivered at the Alumni Day meeting of the University of Kansas Medical Alumni Association, Kansas City, Kansas, June 4, 1960.
Thus, "the defendant's part in the misfortune need not have been its sole cause, or even its principal cause, but only a cause of sufficient proportion, in the light of his conduct, to make it seem just for him to shoulder the cost."

It is in this phrase "policy considerations springing from social demands" that one sees the other chief influence affecting litigation of coronary heart disease. The physician attempts to have a scientific attitude toward causation, the lawyer's motivation is the socially desirable one of relieving the burdens of physical harm and economic tragedy. It is true that the physician at times describes in this yearning solicitude of the lawyer for humanity a certain element of crocodilian lacrimation when juries are notably generous on a contingent fee basis with attorneys' fees taking up to one third of the award; but how else could the indigent receive such skillful legal advice, is the lawyer's reply.

The tort, or personal injury cases, are of many sorts, from the fatal coronary thrombosis secondary to a shocking accident, to the exacerbation of angina from the mental stress of witnessing an altercation.

But it is not so difficult for the physician to attempt an assessment of the factors in such cases as it is for him to try to appreciate the change that has occurred in the purpose of Workmen's Compensation Laws.

Even among lawyers there seems to be a difference of opinion about the genesis of these statutes—one side believing them to be the outgrowth of older common laws concerning personal injury, but the most vocal advocates asserting that Workmen's Compensation has nothing to do with "tort law," "scope of employment," "proximate causation," "foreseeability," "assumption of risk," or "blameworthiness"—all factors in personal injury actions. As Riesenfeld says, it "is fundamentally a branch of social insurance, designed to protect a segment of the population against sub-standard living conditions brought about by a typical hazard of modern society."

Perhaps the most active defender of this concept of Workmen's Compensation is the National Association of Compensation Claims Attorneys, often called NACCA. Its journal is a rich source of material for tracing the historical development of the interpretation of the law as it relates to financial reimbursement for personal injury, and other forms of compensation. Similarly, Arthur Larson's "The Law of Workmen's Compensation" is the constantly current loose-leaf reference work of the highest authority.

Workmen's Compensation legislation started in Germany in 1884 as a part of state socialism to compensate the injured worker. Britain followed in 1897, Maryland had a Cooperative Accident Fund in 1902, Massachusetts set up its first commission to investigate the subject in 1904, the Federal Act was passed in 1908, in 1911 ten states passed Workmen's Compensation laws; finally in 1948 the last State, Mississippi, had joined the system.

The development of Workmen's Compensation differs in various countries. The British law originally defined the purpose in much the same way as do most of our present State statutes, namely, recompense for personal injury "by accident arising out of and in the course of employment." But it has become an "enterprise liability." "The enterprise of employment is responsible for harms occasioned by it." It is an entirely new social principle of "liability without fault." Or as Lloyd George is credited with expressing it, "The cost of the product should bear the blood of the workingman."

Larson, as United States Undersecretary of Labor, states the underlying philosophy as it applies in this country, at least in the vision of the welfare state, "Workmen's Compensation is one segment of or department of the overall pattern of income-insurance, which includes unemployment insurance, sickness and disability insurance, and old age and survivors insurance." This concept is obvious in England, Australia, and New Zealand. The American system is unique in that it "is neither a branch of tort law nor social insurance of the British or Continental type," but
has some of the characteristics of each. It is
"social in philosophy" but "largely private
in structure."

It will be seen that nonoccupational dis-
ability is the only interruption of employment
not yet generally covered by insurance in this
country, and in this fact lies the growing
modification of Workmen's Compensation
rulings toward making it a type of over-all
coverage for disability of any sort, and
through this painful, Procrustean process
chronic degenerative diseases, such as coro-
mary artery disease, enter the field. The de-
fense of the admission of these diseases as
industrial accidents is that the people demand
it; but this erosion of the concept of "indus-
trial accident" has placed the medical pro-
fession in an untenable position.

How has this come about? By the process
through which all law develops. As Roscoe
Pound said, "The law grows by judicial
application of reason to experience," and he
points out that "the legislation of the social
service state is, one might put it, changing
the center of gravity of the law."8

Several very provocative decisions have
almost succeeded in dominating legal prece-
dent in cardiae, and especially coronary, cases.
I say "almost," because decisions of appel-
late courts differ not only between states, but
within the same state, or even within the same
court. But certain features have become
firmly established.

In the first place, in 1903, an interpretation
was rendered by the British House of Lords
of the term "by accident" to include the re-
sult as well as the cause.9 Therefore "the 'by
accident' requirement is now deemed satis-
fied in most jurisdictions either if the cause
was of an accidental character or if the effect
was the unexpected result of routine per-
formance of the claimant's duties."

Also it is a legal principle that the employer
"takes the employee as he finds him." That
is to say, there is no provision for the "idi-
synertatic individual" who may well be the
subject of chronic disease at the time of em-
ployment, an argument of some weight in
favor of pre-employment medical examina-
tions.

There are 4 categories of employers liabil-
ity for accident (Larson):3

1. The liability usually holds when some-
thing "lets go," such as hernia, cerebral
hemorrhage, arterial or blood vessel rupture,
ruptured aneurysm, apoplexy, etc.

2. In injury from generalized conditions
during routine exertion the courts are less
definite. These include coronary thrombosis,
myocarditis, dilatation of the heart, and arte-
riosclerosis.

3. Routine exposure resulting in freezing
or sunstroke is usually admitted.

4. The weakest category, so far as proof
of accident is concerned, is routine exposure
causing disease, such as pneumonia, rheuma-
tism, nephritis, etc.

In the cardiac field a major legal tussle has
taken place over the point as to whether or
not an unusual degree of stress has occurred
to precipitate the attack, usually angina,
coronary occlusion, or acute congestive fail-
ure.

Georgia has carried its legal conclusions to
the ultimate stage and its court has said "an
accident arises out of employment when the
required exertion producing the accident is
too great for the man undertaking the work,
whatever the degree of exertion or condition
of health." In this State, heart failure has
actually been held to be an accident even when
the exertion was lighter than usual, as long
as it was considered to have precipitated the
attack.

This principle is accepted in New York,
especially since the Masse case (1950), when
it was held that "whether or not a particular
event is an industrial accident" is to be de-
termined, not by any legal definition but by
"the common sense viewpoint of the average
man."

That legal jurisdictions in the United States
are not consistent in awarding compensation
for disability from "general conditions," in-
cluding heart disease, is seen by the fact that
19 award such compensation and 13 deny it.2
It is admitted that there is a fear on the part
of Workmen’s Compensation Boards and the Courts that the heart cases will get out of control and that this sets some arbitrary boundaries for their decisions. They really do not want to compensate for deaths not actually caused in any substantial degree by employment. In general, there must be an unexpected result, and there must be some exertion capable, medically, of causing collapse. Yet how liable to disputation is the classical pronouncement of Chief Justice Rugg of Massachusetts in 1914: ‘‘Acceleration of previously existing heart disease to a mortal end sooner than otherwise it would have come is an injury within the meaning of the Workmen’s Compensation Act.’’14, 15

The physician views some of these decisions with amazement. In one case a man fractured a heel bone in a fall and was said to have had pain and to have been anxious. He died 3 months later of a coronary thrombosis. Only 1 of 5 doctors who testified thought there was any connection, but the Board chose this one’s opinion and held for the plaintiff.

In another instance, a judgment was given for the plaintiff on the basis that a coronary thrombosis, allegedly due to lifting, lowered his ‘‘resistance’’ so that he died of cancer of the bladder.

Courts have found for the plaintiff when he suffered a heart attack during an altercation in which he was the aggressor. This element of contributory negligence has disappeared from Workmen’s Compensation, an extreme example being the recovery of financial recompense by the heirs of a laundry man who was shot and killed by a testy husband who objected to the plaintiff regularly collecting his wife’s amorous favors, as well as the laundry. It was held that he was on the job at the time and therefore entitled to Workmen’s Compensation for an occupational hazard.17

Medical testimony may be completely ignored by the Court, and it is true that appeal boards tend to uphold compensation boards even in the absence of ‘‘a single shred’’ of medical evidence of causal relation.16

A truck driver may work long hours without regular sleep and gain 40 pounds in weight, yet if he has a heart attack the decision may imply that his work alone was the cause of his death. ‘‘Presumption as to cause,’’ says a Tennessee Court, ‘‘should be resolved in favor of the employee.’’

As Workmen’s Compensation expands it has entered an umbrageous area concerned with injury from emotional stress. In Massachusetts, this principle was held valid for the death of a motor vehicle inspector from a coronary attack occurring 1 or 2 hours after a supposedly stressful interview with the survivor of an accident. No testimony was submitted that the interview was emotionally disturbing. The Supreme Court merely decided it must have been!15

No one would deny the influence of an acute emotional stress in precipitating an attack of angina, but the assumption of stress as the cause of atherosclerosis or hypertension is scientifically unwarranted and socially dangerous in its implications. Furthermore, coronary thrombosis to be attributed to an emotional episode must, it seems to me, show its onset by symptoms appearing at the time of the stimulus or in relation to some measurable alteration in heart rate, blood pressure, or other significant vital index, which continues unabated after the episode. No one has shown convincingly that local alterations in the coronary vessels (such as subintimal hemorrhage or rupture of atheromatous abcesses), or hypercoagulability of the blood in these vessels, are related to either physical or mental stress.

In the United States Public Health Service Study in Framingham, for example, about one third of the new attacks of clinical coronary disease were revealed by sudden, unexpected death in the course of the accustomed lives of the victims, and about 20 per cent of new coronary events were revealed by electrocardiographic evidence in the absence of any convincing history of cardiac pain. There is one other compensation area into which coronary disease has entered by frontal attack. This is the disability pension system through the passage of so-called ‘‘heart laws,’’

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applying to certain categories of State employees. The Massachusetts Act may serve as an example. It has removed opinion concerning causation from the medical field and placed it in the legislature, because this law states that if certain State employees develop heart disease or hypertension, it is to be presumed that these conditions are service connected, that is, arising from the character of their employment, and such select individuals are to be retired at any time with the special pension privileges enjoyed by other employees retired for accidental disabilities. The favored groups at present include firemen; policemen; employees of the Registry of Motor Vehicles who perform police duty; employees in the Department of Correction whose duties require supervision of prisoners, criminally insane or defective delinquents; crash crewmen; crash boatmen; fire controlmen or assistant fire controlmen at the Logan Airport.

Such presumptive legislation is another example of the erosion of the role of the physician in determining the relationship of an occupation to disease. It matters not that there is no significant evidence that these specific occupations are associated with premature or enhanced incidence of hypertension or coronary disease; it is only important that the voting of these groups be powerful. The members of the Legislature wish also that their stressful devotion to lawmaking be recognized by inclusion of themselves under this law.

To some degree the medical profession is responsible for its sorry state. It has permitted medical testimony to be submitted in court which has been so far from reasonable that it has cast doubt upon all medical testimony. As a result, affirmations of no scientific value are accepted on the same basis as those of high authority. As Hubert Smith phrased it, "Courts have plodded along, quite willing to recognize any holder of an M.D. degree as a universal expert on science. This naïveté is surprising, for the same judge who rules a general practitioner competent on his qualifying or voir dire examination, will take the train for Mayo Clinic if he stands in need of specialized surgery!" Courts and legislatures conclude that social pressures are such that they might as well decide causation by judicial or legislative fiat as to weigh conflicting medical opinion. Only occasionally does a court assert that mere possibility of causal relationship is not enough to sustain a finding.

In the Supreme Court of the State of Washington, for example, a judgment was ordered for the plaintiff's heirs because he was found dead 40 minutes after the end of his working day, during which he pulled levers. A physician had testified that "the fatal attack was precipitated by some physical activity which caused the clot, shown to be of long standing, to let loose." The right coronary artery was shown at autopsy to be occluded by a thrombus. Is there any wonder that such evidence makes high court pronouncements about causation meaningless, as one from the Supreme Court of Idaho, "evidence of likelihood is enough"; especially, as Smith says, since "some medical witnesses are venturing opinions in Court which they would not assert before medical societies."

Lay bugaboos become enshrined and used as precedent, as in a Tennessee case, "The Court takes judicial notice that climbing of stairs is condemned by the medical profession as among the activities most harmful and dangerous to persons afflicted with heart trouble and arteriosclerosis." This is similar to the superstition about the danger to cardiac patients of raising the arms over the head.

Is this uneasy medicolegal situation likely to continue? Can any principles be promulgated concerning the relationship between overt coronary disease and the environmental influences subject to litigation?

It seems to me that the American system favors adversary action in the courts for an indefinite time. Certainly this is true in personal injury cases, since they must remain so highly individualized.

The American Heart Association has a Committee on Strain and Trauma which, for several years, has been investigating the medical and the legal aspects of the whole prob-
lem. As a member, I know the difficulties it faces, and the uncertainties of defining scientific proof. The precipitation of an attack of angina, fatal or not, can reasonably be shown at the time of an unusual event, but the relationship of such an event to the clinical pattern of coronary occlusion and myocardial infarction is much more obscure.

Blumgart has stated the situation clearly: "Recognition of the causal relationship of effort to acute myocardial infarction should not lead the medical officer or physician to ascribe every attack of acute myocardial infarct to preceding effort. The occurrence of acute myocardial infarction in the foregoing cases during or immediately after strenuous effort clearly establishes a causal relationship. As with most diagnostic problems in medicine, the relation of effort to an attack of acute myocardial infarction in a particular patient may be certain, may be probable, suggestive or improbable or may be considered to be nonexistent.

"The relation is considered definite if the following criteria are satisfied:
1. The development and increase of cardiac symptoms such as pain or substernal distress during or immediately following unusual effort.
2. Continuation of symptoms after cessation of effort.
3. The presence of the clinical signs and symptoms of acute myocardial infarction.
4. Development of the characteristic electrocardiographic pattern of acute anterior, posterior or lateral wall infarction."

Regan and Moritz have also delimited the influence of trauma and stress on heart disease. In the Editorial Comment accompanying a reprint of this article in the book of Moritz and Helberg, the opinion is given that "If a medical witness is to be justified in attributing the disability for which compensation is claimed to some specific episode of trauma, he should have valid reasons for believing that the same degree or kind of disability would not have developed at the time that it did were it not for the specified traumatic event. This means that the witness should be able to defend the proposition that the particular manifestation of the disease for which compensation is claimed was not consistent with spontaneous occurrence and was, therefore, caused or contributed to by the effects of the trauma."

The much bolder concept that occupations as such, especially the so-called emotionally stressful ones, are responsible for coronary artery atherosclerosis and disease is entirely lacking in proof. Regan and Moritz state "In no circumstances can stress or injury be held accountable for coronary atherosclerosis." A great cult of stress is being developed in this country, aided by reports that, under conditions of emotional pressure, serum cholesterol rises and coronary troubles ensue. Gofman has recently shown, however, that in one of these studies the rise in serum cholesterol was completely explicable on the basis of the admitted fact that the victims (accountants) under stress ate more.

Whether or not we are ready to admit overeating and physical inactivity to the category of industrial hazards is questionable, yet this would seem to be true, for political purposes, in the passage of "heart laws." However, there would appear, in fact, to be more evidence that the energetic stressful reactive life has protective value, but since it is impossible to titrate emotional stress the conclusions of "stress" studies are largely meaningless.

In the field of Workmen's Compensation one cannot disregard the pressure to include the degenerative diseases in compensable injuries, simply on the basis of social desires. Dawson has called this "a distinctively North American development." It is of interest, however, that there is a tendency for some of the labor unions at times to deny occupational relationship because the benefits under sickness disability insurance provided by some companies are greater than under Workmen's Compensation. Similarly, we have seen one pressure group, successful in obtaining special favors under the "heart law" of Massachus-
setts, now objecting to the extension of the law, to include further categories of State employees, for fear that the pension funds will be unable to bear the rapidly mounting expense.

It is to be hoped that some solution will be reached, since not only is the potential liability for coronary disease enormous in the American pattern of life, but the need for rehabilitation and employment of cardiae subjects and older workers demands a classification one way or another, either coronary disease is to be considered occupational and included in Workmen’s Compensation or it should be provided for by some form of sickness disability insurance. One may present as many difficulties as the other, since sickness insurance is notoriously subject to abuse, but this sickness cash-benefit insurance exists (1951) in 5 states and under the Railroad Unemployment Insurance Act.

One senses a certain apprehension on the part of some lawyers that litigation may diminish if compensation cases are too readily adjudicated, but a further source of litigation has been suggested, namely, that even when Workmen’s Compensation payments are granted to the employee he should also be allowed to return to his old common-law privilege of suing the employer in addition, if the latter has been negligent. I have seen no such solicitude for the employer when the worker is negligent.

The position of the physician in this whole picture is truly anomalous. He is still necessary for the process of the law but his testimony is accepted or rejected often quite cavalierly by the courts, and in relation to the social philosophy of the geographic area.

Of course the doctor who has treated the plaintiff is in a difficult situation and may be subject to the dichotomy of loyalty to his patient vis-à-vis his scientific conscience. There may be the desire to be a “good fellow,” or even the knowledge that a favorable judgment would ensure his medical fee, or an unfavorable result, for want of his support, might lose him his patient.

On a less subjective level the medical man is forced to realize that in many cases he cannot be dogmatic about causation or aggravation. He can only offer his considered judgment and there is no question that a well-trained practitioner may know his patient better than the specialist. However, this does not excuse the practitioner or the expert from giving evidence so far from accepted scientific knowledge as to discredit the profession. It has even been suggested that a special committee of the state medical society review the recorded testimony of all physicians in court to determine their honesty or venality.

The Moreland Commission of New York13 in 1957 studied the cardiac problem and from the answers of 398 internists and cardiovascular specialists they concluded, in part, that “work does not produce heart disease (93.9% against 1.5%); performance of the same type of moderately heavy work without engaging in unusual exertion or strain has no injurious effect upon the heart. A myocardial infarction occurring during such work is not causally related to the employment (88.6% against 7.1%).”

This is at least highly competent medical opinion, but the difference in probative weight between medical judgment and judicial decision is illuminated by a Kansas case where it was held that compensation should be granted to the plaintiff since, “if his physical structure gives way under the stress of his usual labor, his death is an accident.”

To the physician it appears more reasonable to allot a certain percentage of disability to an occupational aggravation of a chronic disease. This is the practice in California, Kentucky, and North Dakota. Above all, insistence upon an autopsy in death cases is, I believe, imperative.

Finally, the doctor is at a disadvantage in that he must maintain a scientific attitude—his greatest strength lies in this— but in Smith’s phrase “the anvil of the law has always resounded to the striking iron of science” and “few members of the populace can have failed to hear the reverberating blows or to see the cascading sparks which fly from these impacts.” He thinks that the
lawyer, the doctor, and the man of science ‘may find themselves companion toilers on a more intricate pattern called ‘social synthesis.’”

What I wish to emphasize by this quotation is that the physician should have as much right as the lawyer to think in terms of this ‘social synthesis’ within the rigorous confinement of scientific observation. The lawyer may rationalize his endeavors to prove that his client’s occupation disabled him with a coronary thrombosis, and therefore that he should be paid, as contributing to the higher good, but the physician should also allow his broader viewpoint to prevail in denying the relationship, in the absence of reasonable evidence, with the hope that the social pattern would thereby be improved by lowering the barriers of the economic fear of employing cardiac subjects.

It does no good for the doctor to consider the lawyer ridiculous or nefarious, nor for the lawyer to think of the doctor in court as unsure, indefinite, or merely an instrument on which to play his tune.

When all is said and done, public opinion and social demands will determine the interpretations of the courts. The medical and legal professions stand as great symbols of free and individual enterprise. Both bid fair to lose status in a socialist polity but the physician especially is speeding the coming of this state if he fosters the establishment of a legal precedent that work is always an evil and must perforce accelerate chronic disease. He should instead stick to his scientific guns and let the evils of poverty, chronic non-occupational disease, and misfortune be alleviated by other processes than by forcing him to accommodate his medical knowledge to the purposes of the social-service millennium.

Summario in Interlingua

Exemplos ab le sphera del morbos cardiaci es usate pro illustrare le argumento general que le concepto medici de causa como factor etiologic e le concepto legal de causa como factor responsable non es identic. Le autor deplora le progressive degeneration del testimonio medici in casos de compensation pro accidentes occupational. Ille analysa le situation in omne su ramifieationes super le base del conviction que le rolo legal del profession medical non pote restabilir su dignitate si le medios mesme non apprecia le fortias e tendentias extra-medical—i.e. social, sociologic, e mesmo socialista—que codetermina le functiones del cortes.

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