The earliest professional organization devoted to fulfilling the needs of physicians in the specialty of life insurance medicine was founded 100 years ago: "At the suggestion of Dr. John M. Keating, Medical Director of the Penn Mutual Life Insurance Company, an informal meeting of the Medical Directors of the Life Insurance Companies of the United States was held at the Union League Club, in New York City, on May 29th, 1889." At the first formal meeting of the new organization at the Cambridge Hotel, in New York, on December 6th, 1889, it was named the Association of Life Insurance Medical Directors, and its object, as set forth in article II of the constitution, was thus described: "It has as its object the promotion of medical science, as applied to life insurance medicine, by personal interchange of the members, presentation of papers, discussion and such other methods as may be found desirable, and also the encouragement of social and friendly relations of its members, and the advancement of the general interests of life insurance."

From this 19th century beginning the Association (ALIMDA) has grown to a vigorous maturity, with over 600 members representing life insurance companies distributed worldwide, although most of the members continue to be located in the United States and Canada, reflecting the geographical phrase "of America" added to the original name of the Association. As ALIMDA marks the 100th anniversary of its founding year at its annual meeting in Seattle, Washington, September 25-27, 1989, current members may wonder what was the state of medicine in 1889, when many of today's prestigious medical organizations and journals were not yet in existence. Present readers of the Journal of the American Medical Association (JAMA) know that a column regularly appears with a selection from the journal of 100 years ago. As I delved into sources that might help outline a picture of medical knowledge about 1889, it occurred to me that insurance physicians might be interested in a sketch of this sort. Most of the medical specialties of today were actively practiced in America a century ago, although without the formality of board certification. Medical textbooks, excellent within the limitations of existing medical science, were available in profusion. Advances in medical science were reported in medical journals and rapidly disseminated then as they are now. Medical education was very uneven in quality, but the best elements of modern medical schools had been inaugurated in the 15 years or so preceding 1889. What was medicine like 100 years ago? What was life insurance medicine like?

In the late 19th century medicine was preoccupied with the epochal advances in the control of infectious diseases, partly through application of the findings of the new science of bacteriology and partly through effective measures of public health and sanitation. Tuberculosis alone, with a death rate in Massachusetts in 1889 of nearly 260 per 100,000, accounted for 13% of the total mortality rate, and in three large cities (New York, Philadelphia and Boston) the tuberculosis death rate exceeded 300 per 100,000. It is something of a shock to realize that U.S. mortality statistics are not available prior to 1900, when the death registration area consisted of only 10 states, several large cities and the District of Columbia. Mortality statistics in the 19th century are usually derived from those in large cities or in states such as Massachusetts, where Lemuel Shattuck had succeeded in obtaining passage of an 1843 law providing for statewide registration of deaths, births and marriages. Annual death rates from such sources show the epidemic fluctuations of mortality from infectious diseases, such as typhoid fever, diphtheria, cholera and smallpox, superimposed on a generally downward trend. In Massachusetts the diphtheria death rate was 102 per 100,000 in 1889, but had dropped to 73 in 1890. The 1889 death rates were 41 and 8 per 100,000 for typhoid fever and measles, respectively. Smallpox deaths were very few in Massachusetts in 1889 and afterward, whereas epidemics did occur in New York in 1892 and 1902. There was little progress, however in reducing tuberculosis mortality in large U.S. cities, in contrast to Great Britain, where the institutional treatment and isolation of tuberculosis patients had cut the death rate from 297 per 100,000 in 1848 to 154 per 100,000 in 1888. The first such hospital in the U.S., the Adirondack Cottage Sanatorium, was not founded until 1884, and Flick in 1890 was urging the American medical community to found additional such hospitals, with free care for poor patients, as a public health measure.

The state of the art of medicine about 1889 is reflected in textbooks of medicine of that period. Two well-known and much used volumes were those of the sixth edition of Austin Flint and William Osler in 1889, and the first edition of William Osler in 1892. Austin Flint, who was Professor of the Principles and Practice of Medicine at Bellevue Hospital Medical College, put out the first edition of his text in 1866, and he died in the year in which the sixth edition was published. His son, Austin Flint, and William Welch, later to gain fame at Johns Hopkins, assisted with the writing of Part I, some 110 pages on General Pathology. Part II deals with Special Pathology, or the Practice of Medicine, in nearly 1000 pages, a considerable expansion over the size of the first edition. In addition to new articles most of the others were partially or completely rewritten to accommodate advances in medical knowledge. It is also stated in the Introduction that full consideration has been given to "recent discoveries concerning the bacterial origin of various infectious diseases ..." A great deal of the clinical and pathological description in both texts is surprisingly modern, and both of
these physician authors made extensive use of notes made from close observation of their patients. The organization of
the text devoted to a given disease has changed little in modern
texts. Prognosis is used as a subheading in major diseases,
but mortality rates, if given, are always for the acute stage of
a disease, such as typhoid fever. There are no long-term mor-
tality or survival data in a chronic disease, such as coronary
heart disease or cancer.

In both volumes it is interesting how brief the text is for
coronary heart disease, although both give an accurate de-
scription of angina pectoris (amyl nitrate was used for recall
of the pain) and relate coronary artery obstruction to sudden
unexpected death. Flint states that “Lesions of the coronary
arteries causing obstruction are of great clinical and patholo-
gical importance,” but does not expand on this brief assertion.
The term myocardial infarction is not developed as a disease
entity. It is difficult to believe that myocardial infarction con-
sistently eluded the diagnosis of such keen medical and au-
topsy observers as Flint and Osler. A more probable hypothesis, to me, is that incidence and prevalence of myocar-
dial infarction were indeed much lower in 1889 than they
became in the 1920s and later. At any rate, both of these
textbooks of medicine did incorporate the latest advances up
to the time of writing and both were excellent tools for medical
education and reference. It is probable that a similar evaluation
could be made for the many texts in preclinical sciences,
medicine, surgery and the specialties, available to the medical
student or practitioner in 1886 in the list offered by Lea Broth-
ers, publishers of Austin Flint’s book.

Flint had a special interest in pulmonary tuberculosis. His
1875 monograph9 is based on personal observation of 670
cases, of which 279 were known to end fatally, and only 44
were considered to have recovered, with another 31 becoming
arrested or non-progressive. Some patients were followed for
as long as 25 years, and Flint had results of 80 autopsies. This
is a good example of careful observation in a single disease of
major public health importance. One more text may be cited
as an excellent achievement of an American physician in the
field of bacteriology, in which most of the voluminous litera-
ture was appearing in French or German scientific journals
Sternberg’s “Manual of Bacteriology”10. Bibliographic sources
are thoroughly discussed, and with over 100 pages of refer-
ces in this nearly 900-page text, it is clear that the author,
who had been appointed Surgeon-General of the U.S. Army
Medical Corps, had a knowledge, truly in depth, of his subject
matter. It was a monumental achievement to produce such a
complete and up-to-date American text and reference for
bacteriology in 1893.

Another very important medical information tool was also
available to physicians in 1889: the Index Medicus started by
John S. Billings in 1879. Volume XI, Series 1, covering medical
articles classified January-December, 1889, was published in
189011, as a combined volume of 12 monthly issues, with an
overall author index and an alphabetical subject index. The
subject organization was a pragmatic one, and has undergone
extensive modification in the past 100 years, as the Army
Medical Library (then small enough to be housed in Ford’s
Theater!) has evolved into the massive National Library of
Medicine of today. It is of interest to see how few references
there are to angina pectoris, to the coronary arteries and their
diseases, and how articles in French and German outnumber
those in English.

Additional perspective on the state of American medicine in
1889 may be gained by a look at a medical journal of that
period, such as Volumes 12 and 13 of the Journal of the
American Medical Association (JAMA). In Volume 12 I found
two reviews dealing with advances in bacteriology. One en-
thusiastic review by a physician in Iowa gives an excellent
summary of Koch’s postulates and the advances made, espe-
cially in the preceding six years, concluding with this apt
sentence: “Let us, then, hope that this new science, so auspi-
ciously cradled by the French school in the 50s, so grandly
nursed to vigorous youth by the Germans within the last six
years, may continue to develop as rapidly in the future as it
has done in the past”12. It is notable that the editor of the JAMA
accepted this review in the absence of all references! However,
another review by a Boston physician did include not only 26
references but also two tables of rather cryptic experimental
results on “Culture Bulbs” and “Bioplasmic Matter”12. Ad-
vances in bacteriology therefore were brought to the attention
of readers of the JAMA.

The 1889 annual meeting of the American Medical Association
was held at Newport, Rhode Island, and the address by Pres-
ident Dawson touched on a wide range of topics such as the
history of education and medical education, the physician of
the future, medical schools, laboratory work (especially the
newly established centers for bacteriology), medical journals
(including a plea for expansion of the JAMA, then only seven
years old, with annual subscription of five dollars), medical
libraries, including the library and museum of the Surgeon-
General’s Office then containing 92,000 volumes, and several
other topics13. The index of Volume 13, as might be expected,
refers to numerous articles on infectious diseases, such as
tuberculosis, typhoid fever and diphtheria, and to news items
from medical societies. Some interesting topics were facts
about brain surgery, cow’s milk for infant food, cooking by
electricity, intestinal diseases of children in hot weather, milk
as a vehicle of tubercular infection, “perityphlitis from perfo-
ration of the appendix vermiformis” (a plea for early operative
treatment), ptomaines and leucomaines and their relation to
disease. As noted above, current issues of the JAMA regularly
contain an extract from an article published 100 years pre-
viously, and these lend more color to the picture of medicine
a century ago.

How did life insurance medicine compare with general med-
icine in 1889? Although methods used may also seem primi-
tive today, the overall relation of life insurance medicine to
medicine as a whole had already been established at that time,
and this relation has not changed. In screening problem appli-
cations for individual life insurance (and very large dollar
amounts may be involved) the first requisite for a medical
director is and always has been a thorough knowledge of
diagnostic and clinical medicine. A second and equally import-
ant requisite is the application of principles of life table meth-
odology to the classification of the extra mortality risk, once the diagnostic classification has been established as firmly as possible. The actuary has developed the techniques to calculate the standard premium based on the age and sex of an apparently healthy applicant, and the extra premium needed to cover the extra mortality risk, all of these calculations dependent on the plan of insurance desired. Additional factors must also be considered in setting the premium: expenses, the accumulation of a policy reserve, interest on the reserve and distribution of the annual surplus, to the policyholders in a mutual company, or to the stockholders in a stock company. When the mortality of the applicant is estimated as being too high, the application must be declined, because the premium would be prohibitive.

It is this second specialized aspect of the work of the medical director, the process of medical risk appraisal, that is so little understood among physicians at large, because it has never been a part of their training. The average physician in clinical practice has no "feel" for the extra mortality risk entailed in moderate overweight or borderline hypertension, two common findings in life insurance applicants, and this may lead to misunderstanding if his patient reports that he has been offered "special class" insurance (with an extra premium) because of such a finding, which the physician may regard as of little consequence. Mortality statistics in many studies now provide abundant justification for the insurance company to charge a premium that is equitable in accordance with the degree of an extra mortality risk above the standard for a given age and sex. If the physician is not familiar with these studies and the principles of comparative mortality it is difficult for him to understand why the medical director or underwriter has acted in this adverse way. For the most part this still remains true today, despite the wide medical reporting of long-term mortality studies, such as the Framingham and End-Results Studies, and the results of clinical trials.

In 1889 data from mortality follow-up studies, to aid in medical risk classification, simply did not exist, even from insurance company records. The founding members of ALIMDA were acutely conscious of this lack, as the record of their annual meetings shows. When a paper was read on the relation of some disease or finding to longevity, at first no follow-up data could be cited, and the lack of such data was often lamented. Constructive action was taken when Drs. George R. Shepherd and John W. Brannan were constituted a committee in 1895 to prepare tables of weight and other measurements against height, as reported for a large number of applicants, so that average weight could be determined for each height, and from this the percentage overweight or underweight. This was a necessary preliminary to the investigation of mortality in relation to overweight or underweight build. The report of this committee was apparently printed and distributed to the membership in 1897, but was not included in the first volume of the published proceedings of the Association, covering the years 1889-1905. A very brief mention of the submission of the report does appear in the next volume, with a paper by Dr. Shepherd (15), in which overweight more than 20% is considered to have enough excess mortality to justify declination (at that time few companies offered special class insurance). The earliest mortality data on overweight appear in the first volume of the Proceedings, in a 1901 paper by Dr. Oscar H. Rogers (16). This is the first of a remarkable series of mortality studies reported by Dr. Rogers, studies which were of immense value to risk classification or the underwriting of life insurance application. Most of these studies were done in collaboration with Arthur Hunter, the Actuary of the New York Life Insurance Company, with which both men were associated.

A true classic from this series by Rogers and Hunter is the paper given at the 1919 meeting of ALIMDA, with the title, "The Numerical Method of Determining the Value of Risks." The essence of this method is to relate mortality in a group under study, for example a group more than 30% overweight, with mortality in an age/sex/duration-matched group of policyholders issued standard insurance. If the observed mortality is twice that of standard, the mortality ratio is 200%, or the risk involves 100 debits above 100% as the standard mortality. If there is more than one independent extra risk, debits for each risk are added. Extra premium classes are established on the basis of successive ranges of debits, the upper limits of standard being set at 125% instead of the average 100%. If mortality data are available for a combination of medical or occupational hazards, they can be used instead of the sum of the separate debits. This method became the general risk classification tool used in virtually all insurance companies, although in a minority of risks a flat extra premium, such as $10 per $1000 of insurance, has been found useful as a substitute for or supplement to the tabular extra premium.

In the years from 1905 to 1911 very few physicians had taken advantage of that "newfangled" device, the sphygmomanometer, to take a blood pressure reading as a part of the examination of their patients. However, the importance of a quantitative measure of blood pressure was immediately recognized by members of ALIMDA, and use of the sphygmomanometer was first urged, according to the printed discussion, at the 1905 annual meeting. Medical directors began to experiment with blood pressure readings in the life insurance examination, but they also stressed to their examiners the value of a blood pressure reading in the general practice of medicine. A committee was set up to evaluate this new instrument. The ever-industrious Dr. Rogers developed one of the earliest sphygmomanometers that utilized an air pressure gauge instead of a mercury column to measure the air pressure in the cuff, and participated with his company actuary, Arthur Hunter, in a nationwide study of normal blood pressure standards.

After some preliminary experimentation, Dr. J. W. Fisher, Medical Director of the Northwestern Mutual, in 1907 set a blood pressure reading as part of the required insurance examination in applicants age 40 and up for all examinations at the Home Office (in Milwaukee) and in the larger cities where examiners had been persuaded to equip themselves with a sphygmomanometer. Over the next few years a blood pressure reading was obtainable in over 500 cities in which the company sold life insurance, and Fisher was thus able to collect nearly 14,000 applicants with blood pressure readings, from 1907 to 1911, and to report on these at the 1911 annual
during observation was very short, only 2.1 years. Several massive intercompany mortality studies of blood pressure (both systolic and diastolic readings) have been completed from 1925 on, and all of these, including the most recent, give conclusive evidence that the mortality ratio increases with increasing duration of follow-up. We now know that a reading in the high normal range, such as 135/85, is associated with a significantly higher long-term mortality than found in policyholders with average blood pressure. Similarly, policyholders with a low normal pressure, such as 110/70, have a mortality ratio significantly lower than the 100% average for all policyholders issued standard insurance. There is no sharp dividing line between normal and elevated blood pressure, although most companies issue insurance standard to otherwise qualified applicants even with an average blood pressure slightly above the arbitrary dividing line of 140/90, despite a mortality rate of at least 135% associated with such readings.

Such early mortality studies reported by Shepherd, Rogers, Fisher and other medical directors were notable achievements, because there was little precedent to guide them, and the methods of comparative mortality were still in process of development. The studies were usually carried out with the collaboration of the company’s actuary. One more important development was the formation in 1907 of a Medico-Actuarial Study Committee, with members from the two professional organizations, ALIMDA and the predecessor of the Society of Actuaries, also founded in 1889. The Actuarial Society had published in 1903 the first extensive intercompany study of combined experience on policyholders coded for a variety of medical and other potential risk factors present at the time of application. The Study Committee, with Dr. Edwin Dwight as chairman, planned and carried out the Medico-Actuarial Mortality Investigation, results of which were published in five volumes, 1912-1914. The joint efforts of many members of this committee, medical directors and actuaries working closely together, have resulted in a dozen intercompany mortality studies, many of them with over 100,000 deaths to be analyzed, over as much as 25 years duration, on a wide variety of medical and occupational hazards. These studies have greatly enriched the fund of epidemiological knowledge about comparative mortality and survival in many chronic diseases.

During the past 100 years the medical community has participated in nothing less than revolutionary changes in the practice of medicine, changes brought about by ever-accelerating advances in medical science and technology, sweeping changes in the organization of patient care, and rising expectations of the public and the body politic. Thanks to public health measures and the introduction of immunization and antibiotic agents mortality due to most infectious diseases, including tuberculosis, had dwindled to low levels soon after World War 2, although total mortality in older adults was little affected. In public health interest became focused on chronic diseases such as atherosclerosis, coronary heart disease and cancer, which are relatively uncommon in children and adults under 40, who benefited the most from the successful battle against the traditional communicable diseases. The physician was armed with a host of diagnostic and therapeutic tools. In diagnosis blood chemistry, immunology, applications of physiology, the electrocardiogram, X-rays, modern imaging techniques, molecular biology, endoscopy and catherization techniques, and computerization are among the modalities that have come into use, and incidentally raised the cost of both hospital and outpatient care.

In medical therapy some of the advances include antibiotics; steroid, antihistimanic, antihypertensive, diuretic and antiarrhythmic drugs; intensive care units; and emergency medicine. Radical innovations in surgery include cardiopulmonary bypass, advances in anesthesiology, dialysis for chronic as well as acute renal failure, cardiac surgery (valve replacement, coronary bypass and repair of severe congenital defects), and organ transplant. Medical education has witnessed the disappearance of second class schools and the narrowing of quality differences in training received. New schools have opened as the curriculum content has bulged at the seams. Specialty boards and residency training programs now provide improved qualifications for the specialist, regardless of specialty field, and continuing medical education has become a requirement. Health insurance has revolutionized payment for most medical care, but has not yet solved the many problems of spiralling costs. Economic problems remain in an aggravated state with respect to the uninsured, programs such as Medicare, and how to meet the unrealistic expectations of the general public and many legislators. Malpractice litigation has skyrocketed, together with the cost of liability insurance. State medical societies and the American Medical Association have had to devote increasing attention to economic, legislative and legal problems. All of these and the specialty societies are also involved in consideration of basic questions of medical ethics. Research in medical science has become increasingly organized in its conduct, and the financing, now mostly through federal grants, approaches the dimensions of a big business. Congress set up the National Institutes of Health, which now fill an important role, not only in the conduct of basic medical research but also in the allocation of research grants and the sponsoring of consensus conferences. Finally, medical articles in a host of new journals have risen in a torrent that threatens to engulf the physician who attempts to keep abreast of research and clinical advances. Of material help are the computerized indexing and search services provided through the National Library of Medicine, many abstracting services, including those of the JAMA, and the appearance of annual review volumes in medicine, surgery, and all of the specialties. Dr. Billings surely would be astonished but gratified to see what his Index Medicus has evolved into a century later.

As a counter to this optimistic picture of modern medicine we
must take note of some adverse developments: the toll of accidental deaths caused by the automobile; a host of environmental and occupational health hazards; the social and health consequences of smoking and drug addiction; and the terrifying appearance in epidemic form of a new and lethal communicable virus disease, the auto-immune disease syndrome (AIDS). Not only is patient care a mounting problem, but the tragic premature mortality in young adults also represents a serious problem to life insurance companies, whose premiums in this age group are based on the favorable experience of the decades from 1950 to 1980. This crisis in medicine therefore also has a direct effect on life insurance medicine.

It is not possible for a brief summary to do justice to the enormous changes that have been wrought on the medical scene today in comparison to its appearance 100 years ago. Life insurance medicine has also changed in a parallel fashion. Insurance medical examinations have been altered, with addition of requirements such as an ECG or chest X-ray or other tests when required by medical history or large amount applied for. With smaller amounts, increasing use has been made of nonmedical applications (health questionnaire completed by the agent), or limited examinations by paramedical personnel. Underwriting selection has been increasingly refined with the help of mortality studies (both individual company and intercompany) and better underwriting manuals. Life insurance is now available with an extra premium to a much wider range of medical risks than formerly, even quite high risks. Group life and health insurance, and individual health and disability insurance policies are offered; the latter require underwriting.

ALIMDA established a Board of Life Insurance Medicine over 30 years ago. The Board gives periodic courses in life insurance medicine, publishes course material, and certifies qualifying applicants by examination of experience credentials and oral and written examinations. ALIMDA now gives AMA Category I accreditation to its own annual meeting program, and qualifying programs sponsored by the Medical Section of the American Council of Life Insurance and regional medical director groups. Another educational project initiated by ALIMDA has been a series of seminars on life table methodology and its applications, open to nonmembers as well as members. ALIMDA now has active official representation in the House of Delegates of the American Medical Association and in various ways is responsive to pending state and federal legislation on insurance matters.

In mortality research on the experience of life insurance policyholders the Medico-Actuarial Study Committee has been replaced by a Liaison Committee of medical directors and actuaries. The function of this committee is to approve new studies and to set up ad hoc committees to direct them. To aid in the data processing and preparation of tables and text for publication, a Center for Medico-Actuarial Statistics has been established within the Medical Information Bureau (MIB), a non-profit information exchange whose purpose and operation have been described22.

Feeling a need to supplement the insurance studies, members of ALIMDA about 20 years ago to set up a project to utilize results of the increasing number of medical articles dealing with mortality or survival follow-up, and to put these in a "mortality abstract," with brief descriptive text and tables of comparative mortality. Actuaries were invited to participate in this work, which culminated in production of a reference volume of about 800 pages22. Like the Intercompany Mortality Studies this volume was sponsored jointly by the Association and the Society of Actuaries. These mortality abstracts were considered to be potentially useful not only to medical directors, underwriters, and actuaries, but also to other medical practitioners interested in follow-up studies: clinical investigators, surgeons, other physicians, epidemiologists, public health specialists and statisticians. The recent flourishing of large randomized clinical trials has generated an interest in the interpretation of statistical results and many articles on methodology. A lively and healthy discussion of some of the controversial problems of interpretation appears to leave plenty of room for observational studies to supplement those of randomized clinical trials.

The preparation of mortality abstracts has continued in various ways. A newsletter started by ALIMDA has evolved into a sizeable Journal of Insurance Medicine, which now regularly contains new mortality abstracts or other articles dealing with the general subject. A considerably larger reference volume of abstracts and chapter text is in the stage of final editing for publication by Praeger publishers. Some tables are from insurance studies, but most are from medical articles. The entire process of mortality abstract preparation is in a state of change, as ALIMDA is setting up a Research Center, a major function of which will be a more systematic retrieval of suitable articles, selection of the best ones, and other steps to facilitate the completion and publication of the abstracts on a regular basis.

From this historical sketch today's physician may reasonably conclude that the era of modern medicine began prior to 1889, a century ago. If any one scientist can be credited with inaugurating the era of modern medicine based on principles of science, Louis Pasteur must be the leading candidate. His work on fermentation led to basic techniques that made the new science of bacteriology possible, and he made many of the fundamental discoveries himself in the identification of bacteria, in establishing the role of some of them as causes of communicable diseases, and in developing immunology and applications of great importance to medicine. This occurred in the middle of the 19th century, a time of crisis for public confidence in medicine, as emphasized by the socio-medical historian, Richard Shryock. Without firm evidence for the bacterial origin of communicable diseases there could be no rational methods of diagnosis, prevention and treatment of diseases that took such a heavy toll of human life, especially in children and young adults. Hospitals were viewed as places to enter only to die, a public perception that was all too true. There was greater loss of life due to infection than to wounds in both the Crimean War and the Civil War, which took place just after the midpoint of the 19th century. The rise of modern medicine is really due to the work of Pasteur, Koch and others in the period from about 1855 on. The transformation in
outlook and results was clearly evident to the general public. Public confidence in medicine and in physicians was largely restored by the time of our index year of 1889. As I have tried to show, despite the incredible achievements in medical science and technology since then, modern medicine and modern life insurance medicine were well established a century ago. The inter-relations of medicine and life insurance medicine manifest no basic change over these 100 momentous years.

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From The Past

Thirtieth Annual Meeting – 1919

On the second day of the Thirtieth Annual Meeting in 1919 the Association of Life Insurance Medical Directors held a joint meeting with the Actuarial Society of America at the Hotel Astor, New York City. Dr. Oscar H. Rogers and Arthur Hunter presented a paper, which began as follows:

THE NUMERICAL METHOD OF DETERMINING THE VALUE OF RISKS FOR INSURANCE

Those of us who believe in a numerical system of estimating the value of lives for insurance welcomed the publication in 1918 of the Joint Committee's report on "Standard Mortality Ratios Incident to Variations in Height and Weight Among Men," because it rendered accessible to all, foundation ratings upon which a scientific method of estimating the value of lives for insurance might be built up. Indeed these ratios, taken together with the material brought out in the Specialized, in the Medico-Actuarial Mortality Investigation, in the work of the Joint Committee, and in the various excellent studies presented through the Actuarial Society and the Association of Life Insurance Medical Directors, give us abundant material with which to answer with reasonable accuracy most of the questions likely to arise in connection with the valuation of lives for insurance. Two companies have already established with these or similar data a complete system of numerical ratings by which they carry on their medical selection; still other companies have adopted the numerical system in whole or in part, and from the steadily increasing interest manifested in the subject we believe the time is not far distant when the numerical method, or some other built up along scientific lines, will generally replace the old empirical method of selection.