

ACTUARIAL TABLES AND DAMAGE AWARDS

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Whenever it has become necessary to predict the length of a person's life, recourse has been had to tables which purport to show that expectancy. The most obvious use of these tables, of course, has been in setting the premiums for life insurance and annuity contracts. Actuarial tables have also been used in the computation of the value of dower rights, remainder and reversionary interests, and in the determination of inheritance and other death taxes. In most of these cases the amount probably is liquidated. The tables are used to pro-rate a sum between two or more lives. A different problem arises, however, when the tables are used in determining damages for personal injuries. To the deficiencies of the tables as predictors of the length of a person's life are added the weaknesses of proof of the other elements of the plaintiff's damages. Because of these additional variables, the tables are less valuable as evidence in assessing damages for personal injuries than they are in the other computations.

As plaintiffs' attorneys have become more aware of the impressiveness of statistics in convincing the juries of the large amounts of damages their clients have suffered, it is not surprising that they have been making greater use of mortality tables. And, as the verdicts reach higher and higher figures, neither is it surprising that the defendants' attorneys are heard to complain of the use which has been made of the tables. It is the purpose of this paper to examine the tables and the use which has been made of them in personal injury actions. It is hoped that as a result of this investigation more profitable and accurate use may be made of the tables in the future.

Mortality tables of some form, crude though they may have been, have been known from the third century, A.D.¹ However, the *Northampton Table* was the first one to be used to any great extent for life insurance purposes.² First published in 1783, this table was based upon the deaths over a forty-six year period in a parish in the town of Northampton, England. Since there were no census figures available for the derivation of this table, it was not too reliable. In spite of the fact that it showed too high a mortality rate, it was used for insurance purposes and for inheritance tax computations. In 1815 the *Carlisle Table* was published. It was based on the death lists from 1779 to 1787 in two parishes in Carlisle, Scotland, and upon the census figures for 1780 and 1787 in the same parishes. This table was used very widely

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¹ BULEY, *THE AMERICAN LIFE CONVENTION* 7 (1953).

² NELSON AND WARREN, *PRINCIPAL MORTALITY TABLES, OLD AND NEW* 44 (n.d.). Most of the material concerning the background of the various tables has been taken from this work.

and is still used for inheritance tax and reversionary benefit computations under some of the state statutes. Both the *Northampton* and the *Carlisle* tables were population tables, that is, they were derived from experience with the death rate of the whole population in the parishes in which the studies were made.

In 1843 the *Combined Experience Table* was constructed from the English insurance companies' experience with the mortality of their insured lives prior to 1838. This was the first table derived from insurance statistics to enjoy general use and was adopted widely in the United States. The *American Experience Table*, first published in 1868, was the first American table to be used extensively. This table was based upon the experience of the Mutual Life Insurance Company of New York during the years 1843 to 1860. It was in general use for life insurance valuation purposes until 1948. In that year many states replaced it for valuation purposes with the *Commissioners 1941 Standard Ordinary Mortality Table*. This table was derived from the material contributed by several of the larger insurance companies in the United States and was based on ultimate life insurance experience among standard insured lives from 1930 to 1940. For the ages under seventeen, experience for the period 1925 to 1935 was used. Another table which has been used in this country is the *American Men Table* which was published in 1918 and was based on standard insured lives from 1900 to 1915. The ultimate form of this table, called the *American Men(5)*, has been used rather widely. The recent ordinary ultimate mortality experience is shown by the 1946-1949 *Ultimate Basic Table*. This table was published in 1950 and represents mortality experience based on the sixteenth and subsequent policy years of standard insured lives from policy anniversaries in 1946-1949. At intervals the federal government has published population tables based upon census and mortality statistics. The most recent of these is the *United States Life Tables: 1949-51*, published by the National Office of Vital Statistics, Department of Health, Education, and Welfare.

Among the tables in use for annuities is McClintock's *Annuitants' Table*. Published in 1899, this table was based on the annuity experience of fifteen American companies prior to 1892. Approximately three-fourths of the lives used in the construction of this table, however, were European. The *American Annuitants' Mortality Table* was published in 1920 and reflected the annuity experience of twenty American companies prior to 1918. In both cases there were separate tables constructed for men and women. Other annuity tables in use are the *Combined Annuity Mortality Table*, published in 1928, and the *1937 Standard Annuity Table* published in 1938. The former was prepared for group annuity valuation purposes. Nevertheless, it has been demonstrated that it is usable for valuation standards for individual annuity contracts. The latter has been adopted by many states since 1948 as the

minimum standard for valuation of annuity contracts. Both tables as constructed are used for annuities for male lives. The *Combined Annuity Mortality Table*, however, can be used for females by reducing the age four years. The same practice can be followed in the 1937 *Standard* by reducing the age five years. The more recent annuity tables are the *Annuity Table for 1949* (A1949 Table) and the same table projected thirty years. The latter table takes into consideration that the life expectancy of annuitants is likely to increase in the future. In these last two cases separate tables were constructed for men and women.

The spread in the expectancies as determined by these various tables can be seen from the following chart. It shows the expectancy indicated by the various tables for persons twenty-five and fifty years of age.

Table	Age 25	Age 50
Northampton	30.85	17.99
Carlisle	37.86	21.11
Combined Experience	37.98	20.18
American Experience	38.81	20.91
Commissioners 1941 Standard Ordinary	42.12	21.37
American Men(5)	41.83	21.29
United States Life 1949-51 (Male)	44.93	22.83
United States Life 1949-51 (Female)	49.77	26.76
McClintock's Annuitants'	38.58	21.11
American Annuitants'	41.71	22.09
Combined Annuity	44.52	22.91
1937 Standard Annuity	46.53	24.78
A1949 (Male)	49.41	26.23
A1949 (Female)	54.55	30.81
A1949 projected 30 years (Male)	52.25	28.60

Part of the difference in expectancy as shown by these tables is attributable to the fact that the expectancy of the population as a whole has increased in recent years. Other factors involved are the differences between population and select tables, between select and ultimate tables, and between insurance and annuity tables. The tables reflect the experience of the people whose lives are used. Thus, it is not surprising to find a lower expectancy in the population tables than is found in the insurance tables. The insurance tables are select tables, that is, they are based on the experience with a select group of lives, those of individuals who have taken out insurance. This group is composed only of those persons who have been able to pass a physical examination and so the average member of this group can be expected to live longer than the average person. The type person who takes out insurance also will affect the selectivity of this group. For example, the early population tables, such as the *Carlisle Table*, were based upon the lives of both men and women. About half of the group could be expected to be women. On the other hand, the earlier experience of the insurance companies was

that only about ten per cent of their insured lives were women. The inclusion of the lives of fewer women tends to decrease the average expectancy shown in the tables.

It should also be kept in mind that there is some selectivity in most population tables. Until 1910 the *United States Life Tables* were based on the census and death records of the original registration states only. As a result they gave much greater weight to the experience in the states in the northeastern section of the country. Since that time a wider base has been used, but the statistics are still selected in order not to give undue weight to the higher mortality rate in the southern states. Separate tabulations are made in these tables to show the mortality of male and female, urban and rural, white and non-white, and native-born and foreign-born.

The selectivity acquired by the insurance physical examinations is likely to have little effect after a short time. The average expectancy of a group of persons of the same age who have passed a physical examination is likely to be longer than that of a group of the same age who have not taken the examination. But, five years later there would not be much difference in the average expectancy of those of the two groups who were living at that time. If in the construction of the tables we exclude from consideration the experience for that period following the physical examination which affects the expectancy average, much of the selectivity of these insurance tables can be avoided. Tables which have been constructed on this principle are called ultimate tables. Thus, the *American Men(5)* is an ultimate table in which the experience of the first five years after the physical examination was not used in the computation. The 1946-49 *Ultimate Basic Table* used the experience of the sixteenth and subsequent policy years. The effect of the selectivity having been avoided, the health and physical condition of the subjects are not as important in the use of the ultimate tables as those factors are in the use of the select tables.

When one looks to the annuity tables, another difference is seen. The people who take out the annuities are those who have reached older age and have prospects of living longer than the average person. This is one reason these people prefer an annuity policy to an insurance policy. Since the tables are constructed from the experience the companies have had with the lives of such persons, a longer expectancy is shown by those tables than by the insurance tables. Since the purpose of annuity and insurance policies is just the opposite, it is not surprising that in constructing these tables the weights given the expectancy factor are in opposite directions. Thus, in the insurance tables the companies are likely to underestimate the life expectancy in figuring their premium while in the annuity tables they are likely to overestimate the expectancy.

One factor often lost sight of in the use of these tables is that the figure given for "life expectancy" is the average future lifetime of

people of the particular age. It is not the same thing as the "most likely future lifetime." For example, the *American Experience Tables* show that more people can be expected to die between their seventy-third and seventy-fourth birthdays than at any other age. Consequently, it can be said that a person who was thirty years old would have a "most likely lifetime" of forty-three years. His average expectancy as shown by the tables, however, is 35.33 years.³ Thus, people in their younger years will have a longer "most likely lifetime" than "average lifetime." In their later years their "most likely lifetime" will be shorter than their "average lifetime." The dividing line using the *American Experience Tables* would be age fifty-seven.

In using any of these tables it must be kept in mind that none of them was constructed for the purpose of determining damages. Each of them has built-in factors to make it usable for the purpose for which it was intended. Each insurance company may construct its own tables to serve its peculiar needs. Any table used as an aid in determining damages must be used with other factors. These other factors will limit the effect of the table and in some instances render the table completely valueless.

In those cases where the life expectancy of an individual is a pertinent element in the proof of damages, the expectancy need not be proved by the use of actuarial tables.⁴ It can be established by the proof of the person's age, health, physical condition, and habits.⁵ Juries have been permitted to determine a person's age⁶ and expectancy,⁷ without further evidence, by observing him as he appeared in court. It has been held

³ This is the example given in MACLEAN, *LIFE INSURANCE* 79 (4th ed. 1935).

⁴ Gilligan v. Blakesley, 93 Colo. 370, 26 P.2d 808 (1933); Willis v. Schertz, 188 Iowa 712, 175 N.W. 321 (1919); Garton v. Powers, 252 Mich. 442, 233 N.W. 373 (1930); Prince v. Kansas City So. Ry., 360 Mo. 580, 229 S.W.2d 568 (1950). In Central City v. Engle, 65 Neb. 885, 91 N.W. 849 (1902) the court said at 91 N.W. 850: "We are, however, strongly of the opinion that, in these days when tables of expectancy and expert testimony concerning that subject are readily procurable, it is error in any case to submit that question to a jury without the production of some of them."

⁵ St. Louis, I.M. & S. Ry. v. Glossup, 88 Ark. 225, 114 S.W. 247 (1908); Boswell v. Barnhart, 96 Ga. 521, 23 S.E. 414 (1895); Pennell v. Baltimore & O.R.R., 13 Ill. App. 2d 433, 142 N.E.2d 497 (1957); Beems v. Chicago, R.I. & P.R.R., 67 Iowa 435, 25 N.W. 693 (1885); Atchison, T. & S.F.R.R. v. Hughes, 55 Kan. 491, 40 Pac. 919 (1895); Deisen v. Chicago, St. P., M. & M. Ry., 43 Minn. 454, 45 N.W. 864 (1890); Heath v. Stephens, 144 Wash. 440, 258 Pac. 321 (1927).

⁶ S. A. Gerrard Co. v. Couch, 43 Ariz. 57, 29 P.2d 151 (1934); Atlantic Coast Line R.R. v. McDonald, 50 Ga. App. 856, 179 S.E. 185 (1935), cert. denied, 296 U.S. 621 (1935); Gardner v. Hobbs, 69 Idaho 288, 206 P.2d 539 (1949); Warders v. Union Pac. R.R., 106 Kan. 4, 181 Pac. 604 (1919); Schwer v. New York, C. & St. L.R.R., 161 Ohio St. 15, 117 N.E.2d 696 (1954). *Contra*, Daniels v. Ramirez, 209 S.W.2d 972 (Tex. Civ. App. 1947).

⁷ Alabama Great So. R.R. v. Taylor, 196 Ala. 37, 71 So. 676 (1916); Cervillo v. Manhattan Oil Co., 226 Mo. App. 1090, 49 S.W.2d 183 (1932); Benson v. Altoona & L.V.E. Ry., 228 Pa. 290, 77 Atl. 492 (1910).

that photographs are admissible to show the subject's age, health, and physical development.⁸ In one case the jury was permitted to determine a decedent's age and expectancy from evidence which showed the age of an older brother and from observing the decedent's wife who was a witness in the case but whose age was not shown.⁹ And, in another case, a wife's age and expectancy were determined from the proof of the ages of her husband and three children.¹⁰ A doctor's opinion concerning the expectancy of a patient has been held to be admissible.¹¹ The courts' leniency in this matter, however, is not unbounded. Some evidence of expectancy must be shown.¹²

There seems to be little question that mortality tables are admissible as evidence of the life expectancy of a person where such determination is in issue.¹³ A recent New York case has held, however, that it is not error to deny the admission of the tables since "they are only slight evidence of the expectancy of life of any particular person. . . ."¹⁴ In actions for damages for pain and suffering and for loss of earning capacity, life expectancy, and, therefore, the tables, are not pertinent unless it first be shown that the injury is permanent. Consequently, the adequacy of the proof that the injury was permanent becomes a litigated question.¹⁵ Where there is conflict in the testimony concerning the permanency of the injury, the tables are admissible although in such cases the jury must first find that the injury is permanent.¹⁶ Then the tables may be considered.

The tables are used so frequently that the courts take judicial notice of their validity and dispense with any authentication.¹⁷ Occasionally,

⁸ *Hackett v. Boston & M.R.R.*, 89 N.H. 514, 6 A.2d 139 (1938); *Taylor, B. & H. Ry. v. Warner*, 88 Tex. 642, 32 S.W. 868 (1895).

⁹ *Crabtree v. Kurn*, 351 Mo. 628, 173 S.W.2d 851 (1943).

¹⁰ *Filer v. Filer*, 301 Pa. 461, 152 Atl. 567 (1930).

¹¹ *Fournier v. Zinn*, 257 Mass. 575, 154 N.E. 268 (1926); *Glover v. Berger*, 72 Wyo. 221, 263 P.2d 498 (1953). *Contra*, *Baltimore & O.R.R. v. Whitacre*, 124 Md. 411, 92 Atl. 1060 (1915), *aff'd*, 242 U.S. 169 (1916); *Chicago, R.I. & T. Ry. v. Long*, 26 Tex. Civ. App. 601, 65 S.W. 882 (1901).

¹² *Alabama & V. Ry. v. Overstreet*, 85 Miss. 78, 37 So. 819 (1905); *Gulf States Util. Co. v. Moore*, 47 S.W.2d 488 (Tex. Civ. App. 1932).

¹³ *Annot.*, 50 A.L.R.2d 419 (1956).

¹⁴ *Barone v. Forgette*, 286 App. Div. 588, 146 N.Y.S.2d 63, 66 (3d Dep't 1955).

¹⁵ *E.g.*, *Macon v. Vaughn*, 83 Ga. App. 610, 64 S.E.2d 369 (1951); *Welstead v. Jim Ryan Constr. Co.*, 160 Neb. 87, 69 N.W.2d 308 (1955); *Hunt v. Wooten*, 238 N.C. 42, 76 S.E.2d 326 (1953); *Thompson v. Seattle*, 35 Wash. 2d 124, 211 P.2d 500 (1949).

¹⁶ *Riss & Co. v. Anderson*, 108 Colo. 78, 114 P.2d 278 (1941); *Swegel v. Chicago, B. & Q.R.R.*, 196 Iowa 413, 192 N.W. 894 (1923).

¹⁷ *Valente v. Sierra Ry.*, 151 Cal. 534, 91 Pac. 481 (1907); *Keast v. Santa Ysabel Gold Min. Co.*, 136 Cal. 256, 68 Pac. 771 (1902); *Western & A.R.R. v. Cox*, 115 Ga. 715, 42 S.E. 74 (1902); *Hann v. Brooks*, 331 Ill. App. 535, 73 N.E.2d 624 (1947); *Penley v. Teague & Harlow Co.*, 126 Me. 583, 140 Atl. 374 (1928); *Scheffler v. Minneapolis & St. L. Ry.*, 32 Minn. 518, 21 N.W. 711 (1884); *McNair v. Berber*, 92 Mont. 441, 15 P.2d 834 (1932). Where authentication is made, it is

however, a judge will refuse to admit a table without authentication if he is of the opinion that its validity is not apparent.¹⁸ Courts also permit counsel to refer to the tables although they have not been introduced into evidence.¹⁹ In some cases the judge has made reference to the tables in his charge to the jury even though no tables had been introduced.²⁰ Charts showing computations based upon these tables can be used to demonstrate to the jury methods of computation.²¹

Since the tables are used only as an aid in the determination of an individual's life expectancy, where that expectancy has been determined beyond doubt the introduction of the tables into evidence would be purposeless. The death of the party before suit or while it is pending would be such a situation. Thus, in a proceeding under a wrongful death act the tables have been held to be inadmissible as evidence of the expectancy of a beneficiary who died prior to the proffer of such tables.²² Similarly, the tables have been held to be inadmissible to show the life expectancy of the injured party where he died prior to judgment either from causes not connected with the injury²³ or as a result of the injury

not necessary that an actuary be called to testify. *Bennett v. Denver & R.G.W.R.R.*, 117 Utah 57, 213 P.2d 325 (1950). It may be done by an insurance agent. *St. Louis, S.F. & T.R.R. v. Taylor*, 134 S.W. 819 (Tex. Civ. App. 1911). In *Donaldson v. Mississippi & M.R.R.*, 18 Iowa 280 (1865), six months' experience was held not to be sufficient to qualify an insurance agent to testify. In *Miller v. Loy*, 101 Ohio App. 405, 140 N.E.2d 38 (1956), a deputy clerk of the Probate Court was called upon to testify concerning the life expectancy of the plaintiff. In some cases a physician using the tables has testified concerning the expectancy. *Kansas City So. Ry. v. Morris*, 80 Ark. 528, 98 S.W. 363 (1906); *McCue v. Borough of Knoxville*, 146 Pa. 580, 23 Atl. 439 (1892).

¹⁸ *Banks v. Braman*, 195 Mass. 97, 80 N.E. 799 (1907); *Notto v. Atlantic City R.R.*, 75 N.J.L. 826, 69 Atl. 968 (1908); *Galveston, H. & S.A. Ry. v. Arispe*, 81 Tex. 517, 17 S.W. 47 (1891).

¹⁹ *Culbertson v. Haynes*, 127 F. Supp. 837 (N.D. Ind. 1955); *Risley v. Lenwell*, 129 Cal. App. 2d 608, 277 P.2d 897 (1955).

²⁰ *Cox v. Polson Logging Co.*, 18 Wash. 2d 49, 138 P.2d 169 (1943); *Roalsen v. Stevedoring Co.*, 147 Wash. 672, 267 Pac. 433 (1928).

²¹ *Bennett v. Denver & R.G.W.R.R.*, 117 Utah 57, 213 P.2d 325 (1950); *Bruner v. McCarthy*, 105 Utah 399, 142 P.2d 649 (1943).

²² *Odlivak v. Elliott*, 82 F. Supp. 607 (D. Del. 1949); *The City of Rome*, 48 F.2d 333 (S.D.N.Y. 1930); *Dostie v. Lewiston Crushed Stone Co.*, 136 Me. 284, 8 A.2d 393 (1939); *Dibble v. Whipple*, 281 N.Y. 247, 22 N.E.2d 358 (1939); *Sider v. Gen. Elec. Co.*, 238 N.Y. 64, 143 N.E. 792 (1924); *In re Aronowitz' Estate*, 151 Misc. 746, 272 N.Y. Supp. 421 (Surr. Ct. 1934). In *Pitkin v. New York Cent. & H.R.R.*, 94 App. Div. 31, 87 N.Y. Supp. 906 (4th Dep't 1904), the court recognized a weakness in the statute as a result of such an interpretation. At page 911, the court said: "The statutes, in creating this new cause of action, have seen fit, as we read them, to limit the damages recoverable to those sustained by the next of kin at the time of the death. They have not seen fit to take into account the possibility that by the speedy death of such next of kin the damage recoverable might be made nominal, or that if, upon the other hand, the next of kin might be credited with a probable long life, he might recover large damages, which, through his estate, might be passed over to other relatives."

²³ *Atchison, T. & S.F.R.R. v. Chance*, 57 Kan. 40, 45 Pac. 60 (1896);

itself.²⁴ A similar problem is whether to use the age of the subject at the time of the injury or at the time of trial. Since part of his expectancy has already been established by his living until trial, it is usually held that the age at the time of trial should be used.²⁵

In most cases where the question has been raised, mortality and annuity tables have been considered together. There are some cases, however, which have held that annuity tables were admissible in their own right.²⁶ The wisdom of their use has been questioned²⁷ and in some instances they have been held to be inadmissible.²⁸ In these latter cases, however, the objection may go more to the use of these tables for showing the present value of lost earning capacity than to their use in showing life expectancy.²⁹ Because the plaintiff's earnings will vary during the remainder of his life these courts are of the opinion that the jury should not be permitted to use tables as an aid in determining the present value of the plaintiff's damages. However, courts have generally allowed juries to use discount tables to assist them in reducing to present value damages for loss of earning capacity.³⁰ These tables have been used even though the amount to be reduced to a present value could not be a definitely ascertained figure and even though the plaintiff would not be earning

Rogers v. Thompson, 364 Mo. 605, 265 S.W.2d 282 (1954); Adelsberger v. Sheehy, 336 Mo. 497, 79 S.W.2d 109 (1934).

²⁴ Allen v. Burdette, 139 Ohio St. 208, 39 N.E.2d 153 (1942). *Contra*, Proctor Coal Co. v. Beaver's Adm'r, 151 Ky. 839, 152 S.W. 965 (1913); West v. Boston & M.R.R., 81 N.H. 522, 129 Atl. 768 (1925).

²⁵ Renaldi v. New York, N.H. & H.R.R., 230 F.2d 841 (2d Cir. 1955); Northern Pac. Ry. v. Chervenak, 203 Fed. 884 (9th Cir. 1913); Scott v. Chicago, R.I. & P. Ry., 160 Iowa 306, 141 N.W. 1065 (1913). But see Lawrence v. Abrams, 121 Conn. 480, 185 Atl. 414 (1936) where it was held proper to use the plaintiff's age at the time of the injury.

²⁶ Coast S.S. Co. v. Brady, 8 F.2d 16 (5th Cir. 1925), *cert. denied*, 269 U.S. 578 (1925); Peters v. Kansas City Rys., 204 Mo. App. 197, 224 S.W. 25 (1920); Jones v. Chicago Great Western R.R., 97 Neb. 306, 149 N.W. 813 (1914); Bartlebaugh v. Pennsylvania R.R., 78 N.E.2d 410 (Ohio App. 1948), *appeal dismissed*, 149 Ohio St. 585, 79 N.E.2d 912 (1948); *modified*, 150 Ohio St. 587, 82 N.E.2d 853 (1948); Jones v. Eppler, 266 P.2d 451 (Okla. 1953); Mitchell v. Arrowhead Freight Lines, Ltd., 117 Utah 224, 214 P.2d 620 (1950).

²⁷ Rooney v. New York, N.H. & H.R.R., 173 Mass. 222, 53 N.E. 435 (1899).

²⁸ Hunt v. Wooten, 238 N.C. 42, 76 S.E.2d 326, 330 (1953) (dictum); Poe v. Raleigh & A. Air Line R.R., 141 N.C. 525, 54 S.E. 406 (1906); McCaffrey v. Schwartz, 285 Pa. 561, 132 Atl. 810 (1926); Kerrigan v. Pennsylvania R.R., 194 Pa. 98, 44 Atl. 1069 (1899).

²⁹ Poe v. Raleigh & A. Air Line R.R., *supra* note 28. In Faber v. Gimbel Bros., 264 Pa. 1, 107 Atl. 222 (1919), the Pennsylvania court recognized the appropriateness of using present value tables even though annuity tables were held inadmissible in other cases. It was the insurance and expectancy of life which was the objectionable feature of the annuity tables.

³⁰ *E.g.*, Hayes v. New York Cent. R.R., 328 Ill. App. 631, 67 N.E.2d 215 (1946); Caudle v. Southern Ry., 242 N.C. 466, 88 S.E.2d 138 (1955); Wentz v. T. E. Connolly, Inc., 45 Wash. 2d 127, 273 P.2d 485 (1954). See also Annot., 77 A.L.R. 1439 (1932); 154 A.L.R. 796 (1945).

the same monthly sum throughout his lifetime. Some courts have objected to the mechanical use of these tables under such circumstances.³¹ Valid objections can be leveled at the use which has been made of both the annuity and discount tables in reducing to present value the damages for loss of earning capacity and for damage claims in most wrongful death actions. To the extent that they are used to make calculations which purport to be mathematically correct these tables are being used incorrectly. It would seem that their value as evidence in these cases is very limited although they may be used legitimately in reducing to present value a sum which can be determined with mathematical accuracy.

Even though the annuity tables may be admissible for the purpose of showing life expectancy, it does not follow that the plaintiff should be permitted to introduce into evidence the cost of an annuity. The real question is the present value of the verdict. The jury should be permitted to determine for itself what kind of an investment the plaintiff could make. To allow evidence of the cost of an annuity is to single out one type of investment for the jury's consideration and may be placing too much emphasis on that form. However, the courts have not been confronted with this problem too frequently. The New York court has held that it is error to permit the proof of the cost of an annuity³² and the Ohio court has held that it was error to admit the cost of a refund annuity.³³ In the latter case there is the additional objection that the cost of a refund annuity guarantees the repayment of a sum certain to the plaintiff whereas we are concerned only with the present value of a sum. In a later case the Ohio court of appeals confined this decision to a refund annuity and held that evidence of the cost of a straight annuity was admissible.³⁴

Most of the questions regarding mortality and annuity tables have not involved their admissibility but rather the instructions or the lack of instructions concerning their use.³⁵ The courts have said that it is not error to fail to instruct on the use of tables where there has been no request for such instructions.³⁶ Nevertheless, where the jury may be confused by using the tables without them, the failure to give instructions, even though none had been requested, would be prejudicial error.³⁷

³¹ *Briggs v. Becker*, 101 Conn. 62, 124 Atl. 826 (1924); *Collins v. McPherson*, 91 Ga. App. 347, 86 S.E.2d 552 (1954); *Merchants' & Planters' Oil Co. v. Burns*, 96 Tex. 573, 74 S.W. 758 (1903).

³² *Hinsdale v. New York, N.H. & H.R.R.*, 81 App. Div. 617, 81 N.Y. Supp. 356 (1st Dep't 1903).

³³ *Bartlebaugh v. Pennsylvania R.R.*, 150 Ohio St. 387, 82 N.E.2d 853 (1948).

³⁴ *Spence v. Commercial Motor Freight, Inc.*, 99 Ohio App. 143, 127 N.E.2d 427 (1954).

³⁵ *Annot.*, 87 A.L.R. 910 (1933).

³⁶ *Johnson v. Fiske*, 125 Conn. 445, 6 A.2d 354 (1939); *Adskim v. Oregon-Washington R. & Nav. Co.*, 134 Ore. 574, 294 Pac. 605 (1930).

³⁷ *Avance v. Thompson*, 387 Ill. 77, 55 N.E.2d 57 (1944), *cert. denied*, 323 U.S. 753 (1944).

Courts frequently have had to condemn instructions which had given conclusive effect to the tables.³⁸ This error can be found even in some of the relatively recent cases.³⁹ Instructions to the effect that the verdict should be the cost of an annuity which would compensate the plaintiff for his damages are objectionable for the same reason.⁴⁰ They have the effect of making the annuity tables conclusive of the plaintiff's life expectancy. On the other hand, some few courts have said that if no other evidence is introduced to show the subject's life expectancy, the tables are conclusive evidence of the expectancy.⁴¹

The courts' biggest difficulty has been that the instructions concerning the use of the tables have been inadequate. The appellate courts have had to criticize frequently the trial judges' failure to caution the jury that the tables are only a part of the evidence. The juries should be told that they must consider the effect of other injuries, illnesses, lack of employment, etc., on the plaintiff's expectancy and his earning capacity.⁴² One court has stated:

When tables of this character are part of the evidence in a case, the court should carefully instruct concerning their use, and all the factors which tend to limit their application ought to be stressed. It is not enough for the trial judge to charge . . . that the tables are of some aid, but not conclusive in determining the probable life of the plaintiff. . . .

The charge must include a survey of such matters as sex, prior state of health, nature of daily employment, and its perils, if any, manner of living, personal habits, individual characteristics, and other facts concerning the injured party, which may affect the duration of his life.⁴³

The courts, however, have usually stated that omission of such instruc-

³⁸ *Vicksburg & M.R.R. v. Putnam*, 118 U.S. 545 (1886).

³⁹ *Starnes v. Tyson*, 226 N.C. 395, 38 S.E.2d 211 (1946); *Sebastian v. Horton Motor Lines*, 213 N.C. 770, 197 S.E. 539 (1938); *Wachovia Bank & Trust Co. v. Atl. Greyhound Lines*, 210 N.C. 293, 186 S.E. 320 (1936); *Snyder v. Portland Traction Co.*, 182 Ore. 344, 185 P.2d 563 (1947); *Frangos v. Edmunds*, 179 Ore. 577, 173 P.2d 596 (1946). But see, *Norris v. Greenville, S. & A. Ry.*, 111 S.C. 322, 97 S.E. 848 (1919), where it was held that if such an instruction was error it was harmless.

⁴⁰ *St. Louis, I.M. & S. Ry. v. Needham*, 52 Fed. 371 (8th Cir. 1892); *Cornell v. Great Northern Ry.*, 57 Mont. 177, 187 Pac. 902 (1920).

⁴¹ *Bettis v. Chicago, R.I. & P. Ry.*, 131 Iowa 46, 108 N.W. 103 (1906); *Little v. Bousfield & Co.*, 165 Mich. 654, 131 N.W. 63 (1911); *Nelson v. Lake Shore & M.S. Ry.*, 104 Mich. 582, 62 N.W. 993 (1895); *Collins v. Star Paper Mill Co.*, 143 Mo. App. 333, 127 S.W. 641 (1910).

⁴² *Western & A.R.R. v. Moore*, 94 Ga. 457, 20 S.E. 640 (1894); *Draper Canning Co. v. V. Q. Dempsey*, 91 Ga. App. 593, 86 S.E.2d 678 (1955); *Littman v. Bell Tel. Co.*, 315 Pa. 370, 172 Atl. 687 (1934); *DiPietro v. Great Atl. & Pac. Tea Co.*, 315 Pa. 209, 173 Atl. 164 (1934); *Herb v. Hallowell*, 304 Pa. 128, 154 Atl. 582 (1931); *McCaffrey v. Schwartz*, 285 Pa. 561, 132 Atl. 810 (1926).

⁴³ *McCaffrey v. Schwartz*, *supra*, note 42, 132 Atl. at 814.

tions is not reversible error unless the instructions were requested.⁴⁴ It is said that the jury is assumed to be aware of these ordinary facts of life and that it is not necessary to call them to their attention.⁴⁵

In spite of warnings and qualifications on the use of the tables there is a tendency on the part of courts and juries to use the tables as part of a mathematical computation of damages. It has been held to be error to give instructions which would lead a jury to believe that it is proper to make a mechanical application of the tables as a part of a mathematical formula.⁴⁶ On the other hand, it is permissible to show computations using the mortality, annuity and present value tables even though such examples do tend to lead the jury to believe that they may arrive at their verdict through some mathematical formula.⁴⁷ Care must be exercised, however, that the members of the jury are not led to believe that their computations must be based on the same figures which were used in the examples.⁴⁸

These required instructions and qualifications probably have little effect on the juries' use of the tables. This point can be demonstrated by observing the courts' use of the tables when they are called upon to decide a question involving damages which are dependent upon life expectancy. Here we find one of two approaches. In some cases they have made the same mechanical mathematical computations which have been condemned by the appellate courts.⁴⁹ In others the court makes an educated guess, a figure pulled out of the air after he has made mention of all the considerations expected of him.⁵⁰ The appellate courts have

⁴⁴ *Murphy v. Nat'l Ice Cream Co.*, 114 Cal. App. 482, 300 Pac. 91 (1931); *Mazziotte v. Bridgeport & Waterbury Passenger Serv., Inc.*, 116 Conn. 32, 163 Atl. 409 (1932); *Key West v. Baldwin*, 69 Fla. 136, 67 So. 808 (1915); *Western & A.R.R. v. Frazier*, 66 Ga. App. 275, 18 S.E.2d 45 (1941).

⁴⁵ *Rutkowski v. Connecticut Light & Power Co.*, 100 Conn. 54, 123 Atl. 25 (1923); *Haase v. Ryan*, 100 Ohio App. 285, 136 N.E.2d 406 (1955); *Jones v. Eppler*, 266 P.2d 451 (Okla. 1953).

⁴⁶ *Western & A.R.R. v. Clark*, 117 Ga. 548, 44 S.E. 1 (1903); *Avance v. Thompson*, 387 Ill. 77, 55 N.E.2d 57 (1944), *cert. denied*, 323 U.S. 753 (1944); *Watson v. Seaboard Air Line Ry.*, 133 N.C. 188, 45 S.E. 555 (1903); *Illinois Cent. R.R. v. Spence*, 93 Tenn. 173, 23 S.W. 211 (1893); *Crouse v. Chicago & N.W. Ry.*, 102 Wis. 196, 78 N.W. 446 (1899).

⁴⁷ *Southern Pac. Co. v. Klinge*, 65 F.2d 85 (10th Cir. 1933), *cert. denied*, 290 U.S. 675 (1933); *Rea v. Simowitz*, 226 N.C. 379, 38 S.E.2d 194 (1946); *Int'l Harvester Co. v. Sartain*, 32 Tenn. App. 425, 222 S.W.2d 854 (1948).

⁴⁸ *Wetherbee v. Elgin, J. & E. Ry.*, 191 F.2d 302 (7th Cir. 1951); *Allendorf v. Elgin, J. & E. Ry.*, 8 Ill. 2d 164, 133 N.E.2d 288 (1956).

⁴⁹ *Porello v. United States*, 153 F.2d 605 (2d Cir. 1946), *aff'd in part and rev'd in part on other grounds sub nom.*, *American Stevedores, Inc. v. Porello*, 330 U.S. 446 (1947); *O'Toole v. United States*, 140 F. Supp. 672 (D. Del. 1956); *Yates v. Dann*, 124 F. Supp. 125 (D. Del. 1954), *rev'd in part and vacated in part on other grounds*, 223 F.2d 64 (3d Cir. 1955); *Combs v. United States*, 73 F. Supp. 665 (S.D.N.Y. 1947); *Renuart Lumber Yards, Inc. v. Levine*, 49 So. 2d 97 (Fla. 1950).

⁵⁰ *Trotter v. United States*, 95 F. Supp. 645 (W.D. La. 1951); *Ells v.*

also made mathematical computations based on the tables. In doing so they have concluded that the verdict which had been rendered was reasonable under the circumstances,⁵¹ that it was unreasonable and therefore should be reversed,⁵² or that it was excessive and should be affirmed only if the plaintiff agreed to a remittitur.⁵³ The computations and the use of the tables in the first two instances are probably justified. It is a quick way for the courts to determine whether the verdicts are very far out of line. In the last instance, however, it would seem that the appellate courts are violating the very principles which they have been enjoining the lower courts to follow.

In New Hampshire it has been said that in wrongful death actions the court may require the jury to return a special verdict.⁵⁴ The jury's special findings would consist of (1) the probable earning capacity of the decedent, (2) his life expectancy, and (3) the proper rate of discount. The court then could apply a mathematical formula and arrive at the present value of the damages to be awarded. The court has said that the mathematical process would only tend to confuse the jury.

Since computation is a scientific process based on ascertained facts, there could be no constitutional objection to the finding of the facts by the jury, and the subsequent doing of the mathematics by the court or an accountant named by the court as commissioner.⁵⁵

It is doubtful if other courts would agree with this procedure. Nevertheless, the New Hampshire court is probably only stating what most courts and juries actually do when they are confronted with the problem. If the courts themselves give undue, and sometimes conclusive,

Scandrett, 28 F. Supp. 16 (N.D. Idaho 1938), *appeal dismissed*, 106 F.2d 1016 (9th Cir. 1939); The Dauntless, 121 Fed. 420 (C.C.N.D. Cal. 1903), *rev'd on other grounds*, 129 Fed. 715 (9th Cir. 1904).

⁵¹ *Briscoe v. United States*, 65 F.2d 404 (2d Cir. 1933); *Jones v. Atl. Refining Co.*, 55 F. Supp. 17 (E.D. Pa. 1944); *Hallada v. Great No. Ry.*, 244 Minn. 81, 69 N.W.2d 673 (1955), *cert. denied*, 350 U.S. 874 (1955); *Thoirs v. Pounsford*, 210 Minn. 462, 299 N.W. 16 (1941); *Jones v. Eppler*, 266 P.2d 451 (Okla. 1953); *Adskim v. Oregon-Washington R. & Nav. Co.*, 134 Ore. 574, 294 Pac. 605 (1930); *Borzea v. Anselmi*, 71 Wyo. 348, 258 P.2d 796 (1952).

⁵² *Swift & Co. v. Lawson*, 95 Ga. App. 35, 97 S.E.2d 168 (1957); *Louisville & N.R.R. v. Young's Adm'x*, 253 S.W.2d 585 (Ky. 1952); *Ahlstrom v. Minneapolis, St. P. & S. Ste. M.R.R.*, 244 Minn. 1, 68 N.W.2d 873 (1955); *Kellerher v. Porter*, 29 Wash. 2d 650, 189 P.2d 223 (1948).

⁵³ *Bos v. Gaudio*, 267 Mich. 517, 255 N.W. 349 (1934); *Hallada v. Great No. Ry.*, 244 Minn. 81, 69 N.W.2d 673 (1955), *cert. denied*, 350 U.S. 874 (1955); *Mares v. New Mexico Pub. Serv. Co.*, 42 N.M. 473, 82 P.2d 257 (1938); *Bartlebaugh v. Pennsylvania R.R.*, 150 Ohio St. 387, 82 N.E.2d 853 (1948); *Thirkell v. Equitable Gas Co.*, 307 Pa. 377, 161 Atl. 313 (1932).

⁵⁴ *Adams v. Severance*, 93 N.H. 289, 41 A.2d 233 (1945); *Thibeault v. Brown*, 92 N.H. 235, 29 A.2d 461 (1942); *Humphreys v. Ash*, 90 N.H. 223, 6 A.2d 436 (1939).

⁵⁵ *Thibeault v. Brown*, *supra* note 54, 29 A.2d at 462.

effect to the tables there can be little doubt that the juries do the same in spite of instructions to the contrary.

As has been said before, the tables are admissible only in those cases where the life expectancy of an individual is a pertinent area of investigation. Thus, where one is asking for damages for pain and suffering which he will have to endure for the rest of his life, mortality tables are some evidence of the period of time during which he may be expected to suffer from such injury. In determining damages for loss of future earning capacity, however, it is not just the life expectancy of the injured party which is in question. The more important period of time is that during which he can be expected to have earnings. Most people will have some earning capacity during their entire lifetime and therefore, life expectancy is an element of proof. Usually in question in these cases, however, is his capacity to earn money during his productive years. This in turn is dependent upon that part of his lifetime during which he will be regularly employed. This period has been designated in some instances as the period of "work expectancy" to distinguish it from life expectancy.⁵⁶ The same kind of distinction has to be made in many of the wrongful death actions. In these cases the amount of the beneficiaries' recovery is dependent upon what they could have expected to receive from the decedent during his lifetime. Again, the period involved is one of work expectancy rather than life expectancy. To a certain extent courts have been aware of this question when they have emphasized the necessity of considering the decrease of earning capacity in a man's declining years.⁵⁷ Some courts have clearly distinguished work expectancy from life expectancy.⁵⁸ In most cases, however, there has been no express distinction made between the two. In the trial of some of these cases the plaintiffs' attorneys have recognized the distinction. In demonstrating the computation of damages and in questioning their actuaries on the use of the tables, they have used age sixty-five, the supposed age of retirement, rather than the age the subject could have been expected to reach.⁵⁹

⁵⁶ See *Texas & Pac. Ry. v. Buckles*, 232 F.2d 257, 262 (5th Cir. 1956).

⁵⁷ See note 42 *supra*.

⁵⁸ *Wetherbee v. Elgin, J. & E. Ry.*, 191 F.2d 302 (7th Cir. 1951) at 309: "[A] man's future earnings should be calculated on the length of time he may expect to be employed, rather than on the time that he can be expected to live."; *Hallada v. Great No. Ry.*, 244 Minn. 81, 69 N.W.2d 673 (1955), *cert. denied*, 350 U.S. 874 (1955), at 685: "Life expectancy and earning expectancy are not synonymous"; *Littman v. Bell Tel. Co.*, 315 Pa. 370, 172 Atl. 687 (1934), at 690: "[L]ife expectancy and the duration of one's ability to earn money are not identical. . . ."

⁵⁹ *E.g.*, *Starck v. Chicago & N.W. Ry.*, 4 Ill. 2d 616, 123 N.E.2d 826 (1955). See also Pierson, *Instructions and Argument to the Jury: The Defense Point of View*, 39 A.B.A.J. 877, 879 (1953). Work expectancy has been proved by the stipulation of the parties. *Texas & Pac. Ry. v. Buckles*, 232 F.2d 257 (5th Cir. 1956). Experts have been called upon to testify from statistics prepared by

The distinction can be demonstrated statistically. Tables prepared by the Bureau of Labor Statistics indicate that in 1940 a twenty-year-old male could expect to remain in the labor force for an average of 41.1 years.⁶⁰ The *United States Population Tables* for that year show that the average remaining lifetime for males of that age was 46.8 years.⁶¹ The following table shows the same averages for the years 1947 and 1950 and the projected averages for the year 2000.⁶²

	life expectancy	work expectancy
1940 -----	46.8	41.0
1947 -----	48.0	42.8
1950 -----	48.9	43.2
2000 -----	53.8	45.1

It is interesting to note that the work expectancy does not increase as rapidly as the life expectancy. Thus, it will be more important to distinguish between the two in the future than it is today. Tables have also been constructed to show the working life of women.⁶³ The probability and the effect of marriage on their participation in the labor force is an additional factor to be considered in determining their work expectancy. Obviously the distinction between life expectancy and work expectancy is more important here than it is in the case of men.

It is not suggested that work expectancy tables should replace the mortality tables as acceptable evidence in the proof of damages for loss of earning capacity. Indiscriminate use of these tables would be just as improper as the like use of the mortality tables. The type of employment, geographical area of employment, local working conditions, possibility of change in the working force and employment opportunities are among the factors which have to be considered in addition to the tables. These statistics may be helpful, however, in placing the mortality tables in their proper perspective. The mortality tables do have a bearing on the question. Since a person can be expected to have income even after his regular employment has ceased, his life expectancy is still a factor in measuring damages. Mortality tables and statistics covering work expectancy can be used with studies concerning the amount of time an employee in a particular area could expect to lose because of illness, strikes, lay-offs, etc. All are of some value in helping the jury to determine what the plaintiff could have expected to earn in the future. None are con-

retirement boards. *Howard v. Gulf, M. & O.R.R.*, 13 Ill. App. 2d 482, 142 N.E.2d 825 (1957).

⁶⁰ U.S. BUREAU OF LABOR STATISTICS, DEPT. OF LABOR, BULL. NO. 1001, *Tables of Working Life, Length of Working Life for Men* 60 (1950).

⁶¹ *Ibid.*

⁶² Garfinkle, *Changes in Working Life of Men, 1900 to 2000*, 78 MONTHLY LABOR REV. 297, 299 (1955).

⁶³ U.S. BUREAU OF LABOR STATISTICS, DEPT. OF LABOR, BULL. NO. 1204, *Tables of Working Life for Women*, 1950, 32 (1956).

clusive and there is danger in giving an exaggerated importance to any of them.

Some injuries will have the effect of shortening the plaintiff's life expectancy. The question then arises whether to use his expectancy before or after the injury in the measurement of damages. It would seem that when damages for pain and suffering are to be ascertained the pertinent period is the expectancy determined by his condition after the injury. It is a question of how long the pain and suffering can be expected to last and not how long the plaintiff could have expected to live had he not been injured. The same period would seem to be involved where damages for loss of earning capacity are being measured. This is the period the Iowa courts have used.⁶⁴ Other courts when faced with this problem, however, have determined the plaintiff's expectancy from his physical condition prior to his injury.⁶⁵ The Pennsylvania court has echoed the feelings of these courts when it said:

[T]he injuries for which redress is sought cannot be considered as a factor in the jury's calculations as to longevity, as that would be permitting the defendant to benefit by its own wrong.⁶⁶

If the courts are granting damages for diminution of life expectancy rather than for loss of earning capacity, life expectancy before injury is the pertinent question. The American courts, however, have said that damages cannot be awarded for loss of life expectancy.⁶⁷ Consistency would seem to demand either damages for loss of earning capacity measured by the expectancy after injury or damages for loss of life expectancy measured by the expectancy before injury. The measuring of the plaintiff's expectancy by his condition after the injury is also inconsistent with the use of the plaintiff's death to determine his expectancy where he dies before judgment.⁶⁸ The attitude of the courts in these latter cases, however, may be explained by the availability of

⁶⁴ *Thordson v. McKeighan*, 235 Iowa 409, 16 N.W.2d 607 (1944); *Borough v. Minneapolis & St. L. Ry.*, 191 Iowa 1216, 184 N.W. 320 (1921); *Scott v. Chicago, R.I. & P. Ry.*, 160 Iowa 306, 141 N.W. 1065 (1913); *Hughes v. Chicago, R.I. & P. Ry.*, 150 Iowa 232, 129 N.W. 956 (1911); *Canfield v. Chicago, R.I. & P. Ry.*, 142 Iowa 658, 121 N.W. 186 (1909).

⁶⁵ *Prairie Creek Coal Mining Co. v. Kittrell*, 106 Ark 138, 153 S.W. 89 (1912); *Borcherding v. Eklund*, 156 Neb. 196, 55 N.W.2d 643 (1952); *Crecelius v. Gamble-Skogmo, Inc.*, 144 Neb. 394, 13 N.W.2d 627 (1944); *Webb v. Omaha & S.I. Ry.*, 101 Neb. 596, 164 N.W. 564 (1917); *Littman v. Bell Tel. Co.*, 315 Pa. 370, 172 Atl. 687 (1934); *Galveston, H. & S.A. Ry. v. Miller*, 191 S.W. 374 (Tex. Civ. App. 1917); *Richardson v. Spokane*, 67 Wash. 621, 122 Pac. 330 (1912).

⁶⁶ *Littman v. Bell Tel. Co.*, *supra* note 65, 172 Atl. at 690.

⁶⁷ The English courts have held that damages can be awarded for the diminution of life expectancy. For discussions of the problem see Comment, *The Measure of Damages for A Shortened Life*, 22 U. CHI. L. REV. 505 (1955); Comment, *Damages for Shortened Life*, 10 FORDHAM L. REV. 219 (1941); Note, *Damages for Loss of Life Expectancy*, 33 ILL. L. REV. 967 (1938-1939).

⁶⁸ See notes 22-24 *supra*.

wrongful death actions in some of them. In these actions, of course, the expectancy prior to the injury would be used.

In those cases where the damages are to be awarded for the loss of earning capacity, life expectancy is only one factor to be considered. While they are not directly connected with the use of the mortality tables, these other factors must be taken into consideration if the tables are to be used intelligently. For this reason we turn our attention for a moment to some of the other questions which arise in the proof of the loss of earning capacity.

In determining the plaintiff's loss of earning capacity it is necessary to know whether he is working at a job where there is a compulsory or voluntary retirement program. Whether he is covered by social security may be involved. As has been mentioned before, this is not to suggest that he will have no income after his retirement. His retirement will, however, affect his earning capacity. What he could have expected to earn after retirement is also an element in his damages.⁶⁹ It may be that because of his injury the plaintiff will be compelled to retire at an age earlier than would have been true had he not been injured. This too is an element of his proof of damages.⁷⁰ He may be deprived of a pension because of his inability to continue work for the required number of years. This factor should also be considered along with the mortality tables.⁷¹

The problem before the court is one of diminution of earning power rather than the loss of wages. The comparison is between what the plaintiff could have earned except for his injury and what he can expect to earn in spite of it. Obviously the determination of this problem is going to be largely in the realm of speculation. This is particularly apparent in those cases where the courts have permitted the juries to determine the loss of earning capacity of children who have never been employed.⁷² The Georgia courts have been more insistent than most on the proof of the loss of earning capacity. They have, however, made an interesting distinction between loss of capacity to labor and loss of earning capacity.⁷³ The former is classed as a species of pain and suffering. By

⁶⁹ *Gray v. Dieckmann*, 109 F.2d 382 (1st Cir. 1940); *Allendorf v. Elgin, J. & E. Ry.*, 8 Ill. 2d 164, 133 N.E.2d 288 (1956); *Burlington-Rock Island R.R. v. Davis*, 123 S.W.2d 1002 (Tex. Civ. App. 1939). But see *Starck v. Chicago & N.W. Ry.*, 4 Ill. 2d 616, 123 N.E.2d 826 (1955), where in the trial the actuary's figures were calculated only to the decedent's retirement age.

⁷⁰ *Winters v. Dorovitz*, 11 N.J. Misc. 616, 167 Atl. 220 (1933).

⁷¹ *Groat v. Walkup Drayage & Warehouse Co.*, 14 Cal. App. 2d 350, 58 P.2d 200 (1936).

⁷² *E.g.*, *Virginian Ry. v. Armentrout*, 166 F.2d 400 (4th Cir. 1948); *Collins v. McPherson*, 91 Ga. App. 347, 86 S.E.2d 552 (1954); *Vincent v. Philadelphia*, 348 Pa. 290, 35 A.2d 65 (1944); *Campbell v. Philadelphia*, 252 Pa. 387, 97 Atl. 456 (1916); *Riojas v. Riojas*, 289 S.W.2d 302 (Tex. Civ. App. 1956).

⁷³ *Central of Georgia Ry. v. Morgan*, 145 Ga. 656, 89 S.E. 760 (1916); *Atlanta & W.P.R.R. v. Haralson*, 133 Ga. 231, 65 S.E. 437 (1909); *Powell v.*

putting it in this category the courts have exempted it from the rigors of the proof they have required for the loss of future earning capacity.

The plaintiff's earnings at the time of his injury are not determinative of his damages although they are some evidence of what he could have expected to earn in the future. The plaintiff may show what he has earned in the past in various occupations even though he was not engaged in those occupations at the time of his injury.⁷⁴ Evidence of earnings too far in the past, however, may be rejected as being speculative.⁷⁵ The plaintiff's earning capacity may depend on his personal characteristics as well as upon his physical and mental qualifications. Thus, his reputation for industry, initiative, sobriety, thrift, and even chastity, may be elements of proof of his earning capacity.⁷⁶ Evidence of prospective employment has been held to be admissible.⁷⁷ Here again, however, the court may hold the evidence in a particular instance to be inadmissible because it is speculative.⁷⁸ Parties have been permitted to show that they were preparing themselves for an occupation or profession.⁷⁹ Opportunities for promotion and increase in pay have been held to be elements of proof of loss of earning capacity.⁸⁰ In particular

Augusta & A.R.R., 77 Ga. 192, 3 S.E. 757 (1887); Macon v. Vaughn, 83 Ga. App. 610, 64 S.E.2d 369 (1951); Atlantic Coast Line R.R. v. Ouzts, 82 Ga. App. 36, 60 S.E.2d 770 (1950); Am. Fidelity & Cas. Co. v. Farmer, 77 Ga. App. 187, 48 S.E.2d 137 (1948); City Council of Augusta v. Drawdy, 75 Ga. App. 543, 43 S.E.2d 569 (1947).

⁷⁴ *E.g.*, Kraft v. Acme Stevedore Co., 112 Cal. App. 653, 297 Pac. 585 (1931); Miller v. Pillow, 337 Mich. 262, 59 N.W.2d 283 (1953); Moore v. Pub. Serv. Coordinated Transp., 15 N.J. Super. 499, 83 A.2d 725 (1951); Kenmuir v. Pittsburgh, 347 Pa. 156, 31 A.2d 516 (1943); Galveston, H. & S.A.R.R. v. Contois, 279 S.W. 929 (Tex. Civ. App. 1925), *aff'd* 288 S.W. 154 (Tex. Comm'n App. 1926), *cert. denied*, 274 U.S. 747 (1927).

⁷⁵ Fox v. Asheville Army Store, Inc., 216 N.C. 468, 5 S.E.2d 436 (1939); Rooney v. Maczko, 315 Pa. 113, 172 Atl. 151 (1934); Frysinger v. Philadelphia Rapid Transit Co., 249 Pa. 555, 95 Atl. 257 (1915); Buck v. McKeesport, 223 Pa. 211, 72 Atl. 514 (1909).

⁷⁶ Allendorf v. Elgin, J. & E. Ry., 8 Ill. 2d 164, 133 N.E.2d 288 (1956); Buffalo Creek Coal Mining Co. v. Hodges, 30 Ky. L. Rep. 346, 98 S.W. 274 (1906); Holliefield v. So. Bell Tel. & Tel. Co., 172 N.C. 714, 90 S.E. 996 (1916), *writ of error dismissed*, 245 U.S. 680 (1918); Carolton v. St. Louis & Suburban Ry., 128 Mo. App. 451, 106 S.W. 1100 (1908).

⁷⁷ Hines v. Patterson, 146 Ark. 367, 225 S.W. 642 (1920); A. L. Clark Lumber Co. v. St. Coner, 97 Ark. 358, 133 S.W. 1132 (1911); Kalland v. Brainerd, 141 Minn. 119, 169 N.W. 475 (1918); Wiley v. Moyer, 339 Pa. 405, 15 A.2d 145 (1940); De Hass v. Pennsylvania R.R., 261 Pa. 499, 104 Atl. 733 (1918).

⁷⁸ Clary v. Breyer, 194 Miss. 612, 13 So. 2d 633 (1943).

⁷⁹ Adams v. Kaiser, 285 Pac. 751 (Cal. App. 1930); Penley v. Teague & Harlow Co., 126 Me. 583, 140 Atl. 374 (1928); Halloran v. New York, N.H. & H.R.R., 211 Mass. 132, 97 N.E. 631 (1912); Brink v. Kessler, 310 Pa. 506, 165 Atl. 836 (1933); Wichita Valley Ry. v. Williams, 6 S.W.2d 439 (Tex. Civ. App. 1928).

⁸⁰ Baker v. Southern Pac. Co., 184 Cal. 357, 193 Pac. 765 (1920); Jones v. St. Louis-San Francisco Ry., 333 Mo. 802, 63 S.W.2d 94 (1933); Busch v. Louisville & N.R.R., 322 Mo. 469, 17 S.W.2d 337 (1929), *cert. denied*, 280 U.S. 569 (1929); Hines v. Glasgow, 217 S.W. 1114 (Tex. Civ. App. 1920).

instances, however, these opportunities may be too remote, or the evidence of their probability may be too weak, to permit admission.⁸¹ Union contracts showing the effect of seniority and future employability are also factors to be considered.⁸² The jury should be permitted to consider that the plaintiff was not prepared for any other occupation.⁸³ But, it cannot be assumed that a person has no earning capacity just because he can no longer work in the field for which he was trained.⁸⁴ On the other hand, the possibility that he could prepare himself for another job should not deprive him of damages for loss of earning capacity.⁸⁵

It is apparent that these elements of proof are quite speculative and that much is left to the jury's discretion. Consideration of these factors should emphasize the care which must be taken with the use of mortality tables. Under these circumstances, an attempt to use the tables in a mathematical computation cannot be expected to increase the accuracy of the measurement of damages. On the contrary, an undue reliance on the tables will likely increase any error already present.

Many of the actuarial tables used today are those based upon selected lives—tables constructed from the experience of insurance companies with the mortality of those whom they have insured. Since these are the lives of people who have been able to pass physical examinations for insurance, their health can be expected to be better than the health of the average citizen. Consequently, the argument has been made that these tables are inadmissible to prove the expectancy of a person whose physical condition is such that he would not have fallen within the class covered by the tables. Most courts have rejected this argument and have held that the tables are admissible regardless of the health of the subject.⁸⁶ Testimony concerning the subject's health goes to the weight of the tables as evidence and not to their admissibility. On the other hand, there are a few courts which have held that the tables are inadmissible where

⁸¹ *Richmond & D.R.R. v. Elliott*, 149 U.S. 266 (1893); *Payne v. Lyon*, 154 Ga. 501, 114 S.E. 892 (1922); *Richmond & D.R.R. v. Allison*, 86 Ga. 145, 12 S.E. 352 (1890); *Fort Worth & D.C. Ry. v. Smithers*, 249 S.W. 286 (Tex. Civ. App. 1923).

⁸² *Lewis v. Pittsburgh Rys.*, 386 Pa. 490, 126 A.2d 454 (1956).

⁸³ *Brilliant Coal Co. v. Barton*, 205 Ala. 89, 87 So. 830 (1920); *Arkansas Power & Light Co. v. Toliver*, 181 Ark. 790, 27 S.W.2d 985 (1930); *Atlantic Coast Line R.R. v. Anderson*, 35 Ga. App. 292, 133 S.E. 63 (1926).

⁸⁴ *Greenway v. Taylor County*, 144 Iowa 332, 122 N.W. 943 (1909); *Stearns Coal & Lumber Co. v. Williams*, 164 Ky. 618, 176 S.W. 15 (1915); *St. Louis-San Francisco Ry. v. Bridges*, 159 Miss. 268, 131 So. 99 (1930), *cert. denied*, 283 U.S. 848 (1931).

⁸⁵ *Jakubec v. So. Bus Lines*, 31 So. 2d 282 (La. App. 1947); *Ostrander v. Lansing*, 115 Mich. 224, 73 N.W. 110 (1897).

⁸⁶ *Annot.*, 116 A.L.R. 416 (1938). The same objection has been raised with respect to the admission of population tables. *E.g.*, *Friend v. Ingersoll*, 39 Neb. 717, 58 N.W. 281 (1894); *Russell v. First Nat'l Stores, Inc.*, 96 N.H. 471, 79 A.2d 573 (1951); *Camden & A.R.R. v. Williams*, 61 N.J.L. 646, 40 Atl. 634 (1898).

the subject is not a "sound and healthy" person.⁸⁷ If there is a dispute concerning the health of the subject, however, the courts in this latter group will admit the tables.⁸⁸ It has also been held that the party seeking the admission of the tables must, as a part of his foundation, establish that the subject's health is such as to bring him within the class covered by the tables.⁸⁹ While in most cases the health of the person is only one of the factors to be considered in gauging his life expectancy, where it is clear that the subject is not going to live as long as the average person could expect to live, the court should, in its discretion, refuse to admit the mortality tables.⁹⁰ Where the subject is suffering from an incurable disease would be an example of such a situation. Consideration of the tables under such circumstances would not help the jury in any way and could lead them astray. It might not be too strong to say that in such a case the admission of the tables would be reversible error.⁹¹

At the other end of the spectrum is the question of admissibility of evidence that the subject enjoyed better than average health, and thus, that his life expectancy is greater than that shown in the tables. It would seem clear that such evidence should also be admissible. It becomes particularly important in those cases where the subject has reached old age and has prospects of living longer than the tables would indicate.⁹² Appellate courts have been impressed by the fact that the juries have had the subject before them and could observe his physical alertness and general appearance of health.⁹³ On the other hand, it has been held that there was error when the jury found an expectancy greater than the tables would indicate and there was no evidence to show a better than average state of health.⁹⁴

The habits of an individual may have an effect upon the duration

⁸⁷ *Mississippi Cotton Oil Co. v. Smith*, 95 Miss. 528, 48 So. 735 (1909); *Fortner v. Koch*, 272 Mich. 273, 261 N.W. 762 (1935); *Norris v. Detroit United Ry.*, 193 Mich. 578, 160 N.W. 574 (1916); *Denman v. Johnston*, 85 Mich. 387, 48 N.W. 565 (1891); *Colbert v. Rhode Island Co.*, 67 Atl. 446 (R.I. 1906).

⁸⁸ *Jenkins v. Canfield*, 282 Mich. 277, 276 N.W. 447 (1937); *Wilkins v. Flint*, 128 Mich. 262, 87 N.W. 195 (1901).

⁸⁹ *Deer v. Suckow Co.*, 60 Ind. App. 277, 110 N.E. 700 (1915); *Vicksburg R., Power & Mfg. Co. v. White*, 82 Miss. 468, 34 So. 331 (1903).

⁹⁰ See *McCaffrey v. Schwartz*, 285 Pa. 561, 132 Atl. 810 (1926).

⁹¹ *Paine v. Gamble Stores, Inc.*, 202 Minn. 462, 279 N.W. 257 (1938).

⁹² *Temple v. De Mirjian*, 51 Cal. App. 2d 449, 125 P.2d 544 (1942); *Hertz v. McDowell*, 203 S.W.2d 500 (Mo. App. 1947), *aff'd*, 358 Mo. 383, 214 S.W.2d 546 (1948); *Bright v. Thacher*, 202 Mo. App. 301, 215 S.W. 788 (1919); *Tate v. Barry*, 144 Neb. 517, 13 N.W.2d 879 (1944); *Schultz v. Winston & Newell Co.*, 68 N.D. 674, 283 N.W. 69 (1938).

⁹³ *Hertz v. McDowell*, *supra* note 92; *Bright v. Thacher*, *supra* note 92; *Schultz v. Winston & Newell Co.*, *supra* note 92.

⁹⁴ *Ure v. Maggio Bros. Co.*, 24 Cal. App. 2d 490, 75 P.2d 534 (1938). See also those cases which hold the tables to be conclusive absent contrary evidence, note 41 *supra*.

of his life. For example, it can be shown that the subject is a drunkard.⁹⁵ This fact would have a bearing upon his probable length of life. It would seem that anything which might affect the health of the subject, his proneness to accident, or which might accelerate his death, would be admissible as evidence of his expectancy.

Because of the danger of an untimely death through accident, it would seem apparent that the average expectancy of a person employed in a hazardous occupation would be shorter than that of one whose life is not subject to such dangers. Insurance companies have recognized this fact. In some instances they have refused to insure those engaged in certain hazardous occupations. In other cases they have charged these persons higher premiums than those charged individuals of the same age employed in safer positions. As in the case of disease and injury, the courts for the most part have held that the actuarial tables are admissible even though the subject is engaged in a hazardous occupation.⁹⁶ Likewise, evidence of the hazards of the occupation is admissible to show that the subject may not have as great an expectancy as that shown by the tables.⁹⁷ It has been held that evidence of a hazardous occupation is admissible even though the subject is no longer engaged in that occupation.⁹⁸ On the other hand, it has been held to be error for the court to instruct the jury to consider that because the subject was engaged in a hazardous occupation he might have a shorter expectancy than that shown in the tables.⁹⁹ The objection is that there is no showing that the subject would have continued in such occupation for the rest of his life. Similarly, it has been held that the court, in his discretion, can refuse to give tendered instructions concerning the prospect that a hazardous occupation will diminish a person's life expectancy.¹⁰⁰ It is said that such a factor is within the knowledge of the jury and therefore they need not be instructed concerning it.

⁹⁵ *Townsend v. Briggs*, 99 Cal. 481, 34 Pac. 116 (1893); *Peterson v. Brackey*, 143 Iowa 75, 119 N.W. 967 (1909).

⁹⁶ *United Verde Extension Mining Co. v. Koso*, 273 Fed. 369 (9th Cir. 1921); *Birmingham Mineral R.R. v. Wilmer*, 97 Ala. 165, 11 So. 886 (1892); *Louisville & N.R.R. v. McMillen*, 119 S.W. 220 (Ky. 1909); *Galveston, H. & S.A. Ry. v. Johnson*, 24 Tex. Civ. App. 180, 58 S.W. 622 (1900); *Culp v. Virginian Ry.* 77 W. Va. 125, 87 S.E. 187 (1915).

⁹⁷ *Mobile & O.R.R. v. Williams*, 221 Ala. 402, 129 So. 60 (1930); *Allendorf v. Elgin, J. & E. Ry.*, 8 Ill. 2d. 164, 133 N.E.2d 288 (1956); *Louisville & N.R.R. v. Young's Adm's*, 253 S.W.2d 585 (Ky. 1952); *Jones v. Terminal R.R. Ass'n*, 363 Mo. 1210, 258 S.W.2d 643 (1953).

⁹⁸ *Missouri-Kansas-Texas R.R. v. Webb*, 229 S.W.2d 204 (Tex. Civ. App. 1950).

⁹⁹ *Louisville & N.R.R. v. Irby*, 141 Ky. 145, 132 S.W. 393 (1910), *modified on other grounds*, 142 Ky. 273, 134 S.W. 139 (1911); *Louisville & N.R.R. v. Gordon*, 52, Ky. L. Rep. 1819, 72 S.W. 311 (1903). *Cf.* *Allendorf v. Elgin, J. & E. Ry.*, 8 Ill. 2d 164, 133 N.E.2d 288 (1956); *Jones v. Terminal R.R. Ass'n*, 363 Mo. 1210, 258 S.W.2d 643 (1953).

¹⁰⁰ *Louisville & N.R.R. v. Botts*, 173 F.2d 164 (8th Cir. 1949).

In insuring people engaged in hazardous occupations insurance companies have sometimes charged the insured a premium which is comparable to that charged an ordinary individual older than he. It is interesting to note that some courts have applied this fact to their use of mortality tables where the subject was engaged in a hazardous occupation. They have said, for example, that since an insurance company would add eight years to a person's age in figuring the premium, the court and jury would do the same before using the mortality tables in determining his life expectancy.¹⁰¹ The fact that the insurance companies consider such person a bigger than ordinary risk and the fact that they have measured the additional risk in the manner they have, would seem to be valid evidence in a case. But, to use this information as these courts have done is entirely too mechanical a use of the tables and gives them an effect which was never intended.

Most people whose lives have been insured have been members of the Caucasian race. Consequently most of the insurance tables reflect the experience the companies have had with the mortality of members of the white race. The population tables have also segregated the races for statistical purposes.¹⁰² Under these circumstances it is apparent that the subject's race is a factor to be considered in the use of the tables. Again, the courts have said that the subject's race does not affect the admissibility of the tables but goes to the weight to be given to them.¹⁰³ Because of the number of studies available showing the higher mortality rate of Negroes, however, it would seem that one should have little difficulty in challenging the reliability of the usual mortality table when it is applied to the life of a Negro.¹⁰⁴

This is not to suggest that it is the race rather than the social and economic background of the specimens which is important. Much could be done to show a lower life expectancy because the subject is in a lower income bracket, because he lives in a substandard area, because he lives in a city, because he lives in an unhealthy climate, etc. All of these factors would seem to have the same kind of bearing as race upon the effect to be given to the mortality tables. Or, more likely, it is these factors rather than race, which cause the difference in the life expectancy between whites and non-whites.

A similar problem arises with respect to the sex of the person. Experience has shown women tend to live longer than men. As has been mentioned before, the insurance tables have been constructed largely

¹⁰¹ *Simmons v. Louisiana Ry. & Nav. Co.*, 153 La. 405, 96 So. 12 (1923); *Jones v. Kansas City So. Ry.*, 143 La. 307, 78 So. 568 (1918); *Sibert v. Litchfield & M. Ry.*, 159 S.W.2d 612 (Mo. 1942).

¹⁰² *E.g.*, the 1951 population tables classify white and non-white.

¹⁰³ *Babcock v. Gray*, 165 Ore. 398, 107 P.2d 846 (1940) (Indian); *Beaumont Traction Co. v. Dilworthy*, 94 S.W. 352 (Tex. Civ. App. 1906) (Negro); *Suell v. Jones*, 49 Wash. 582, 96 Pac. 4 (1908) (Negro).

¹⁰⁴ See *The Saginaw and the Hamilton*, 139 Fed. 906 (C.C.S.D.N.Y. 1905).

from the experience with male lives. Nevertheless, the insurance companies have ordinarily charged the same premiums for women as for men of the same age and for this purpose have not considered the difference in their life expectancies. The difference in expectancy, however, is considered to be important in the fixing of premiums for annuities. For example, in figuring the cost of an annuity for a female under the *Combined Annuity* and *1937 Standard Annuity* tables, the age of a male five years younger than she is used. Separate tables for males and females have been constructed in the A1949 tables. With all these factors in mind it is surprising that the question of the sex of the subject has seldom been raised when the tables have been introduced. Again, however, it has been said that the sex of the subject goes to the weight of the tables and not to their admissibility.¹⁰⁵ Of course, there is no reason why a party interested in showing a different expectancy from that indicated in the tables cannot introduce other tables or studies to show the importance of sex on expectancy. It is also possible that counsel might be interested in introducing statistics to show that the subject has a lower life expectancy because he is not married.

It is frequently said that the tendency for longevity is inherited. It is not surprising, therefore, to find some attempts to introduce into evidence the fact that parents, grandparents, and other ancestors have lived to ripe old ages. The purpose of such evidence, of course, is to show that the subject is likely to live longer than the actuarial tables would indicate. Such testimony is usually admissible¹⁰⁶ although the trial judge can refuse to admit it if he believes it to be too remote.¹⁰⁷ There are some courts, however, which have held that testimony of this character is too speculative and therefore is inadmissible under all circumstances.¹⁰⁸ No case was found which indicated that it would be permissible to introduce testimony that his ancestors were short-lived in order to establish the probability that the subject would not live as long as the tables would indicate. There is no apparent reason why this testimony would not be just as admissible as that showing long-lived ancestors.

From the foregoing it would appear that the solution to the problem is not to deny admission to mortality tables in suits for tort damages. They can be valuable evidence in those cases where the life expectancy of an individual is important. The weakness of the tables lies in their

¹⁰⁵ *Croft v. Chicago, R.I. & P. Ry.*, 134 Iowa 411, 109 N.W. 723 (1906).

¹⁰⁶ *Rincicotti v. John J. O'Brien Contracting Co.*, 77 Conn. 617, 60 Atl. 115 (1905); *Chattanooga, R. & C.R.R. v. Clowdis*, 90 Ga. 258, 17 S.E. 88 (1892); *Haynes v. Waterville & O. St. Ry.*, 101 Me. 335, 64 Atl. 614 (1906); *Love v. Detroit, J. & C.R.R.*, 170 Mich. 1, 135 N.W. 963 (1912); *Sterling v. Union Carbide Co.*, 142 Mich. 284, 105 N.W. 755 (1905).

¹⁰⁷ *Rincicotti v. John J. O'Brien Contracting Co.*, *supra* note 106.

¹⁰⁸ *Hinsdale v. New York, N.H. & H.R.R.*, 81 App. Div. 617, 81 N.Y. Supp. 356 (1st Dep't 1903); *Serdan v. Falk Co.*, 153 Wis. 169, 140 N.W. 1035 (1913).

improper use. Most people are prone to treat all tables, figures and statistics as established facts. Thus, they give them an importance which was never intended. They are also likely to apply them for purposes for which they never were intended. Lawyers and judges are just as susceptible as jurors to this weakness.

The Pennsylvania court in deciding for the first time that mortality tables were admissible in the proof of tort damages said:

[W]e are unable to see why the tables referred to were not competent evidence. Being intended for general use, and based upon average results, they cannot be conclusive in a given case. That is not the question here. It is whether they are not some evidence, competent to be considered by a jury. Their value, where applied to a particular case, will depend very much upon other matters, such as the state of health of the person, his habits of life, his social surroundings, and other circumstances which might be mentioned. While we are unable to see how such evidence is to be excluded, I must be allowed to express the fear that it may prove a dangerous element in this class of cases, unless the attention of the juries is pointedly called to the other questions which affect it.¹⁰⁹

Referring to this decision in a later case, the same court said:

Experience has demonstrated, however, that what was merely apprehended by Chief Justice Paxson has since been realized. Courts and juries, as a rule, give far more weight to this testimony than it is entitled to. They are apt to supply the place of proof of the particular life by generalization from life tables. This is going further than was intended, or than is warranted. Therefore a halt is called on the manifest tendency to give them undue weight.¹¹⁰

In many cases undue weight has been given to the tables because counsel has failed to present other evidence bearing on life expectancy. The jury has to be shown the limitations of the tables. More and better evidence of the weakness of the tables can be used. To counteract the impressiveness of the mortality tables as statistics, the defendants' attorneys can use statistics of their own. More use can be made of studies which are already available and efforts can be directed to areas which are not yet covered. It may be argued that the use of additional statistics will only tend to add to the confusion of the jury and court. And this may be the case. This approach, however, is more likely to meet with success than would an attempt to abolish the use of mortality tables in these cases. There may be hope for progress in convincing the courts that certain tables (e.g., the annuity tables) should be inadmissible. It is also possible that in some situations the courts can be persuaded to refuse the

¹⁰⁹ *Steinbrunner v. Pittsburgh & W.R.R.*, 146 Pa. 504, 23 Atl. 239, 241 (1892).

¹¹⁰ *Kerrigan v. Pennsylvania R.R.*, 194 Pa. 98, 44 Atl. 1069, 1071 (1899).

admission of any mortality table. This should be the case where the subject is seriously ill and the tables will have little weight in determining his expectancy.

In spite of their cries that the use of the tables is leading to excessive verdicts, it is unlikely that defense attorneys are going to succeed in preventing the use of the tables. Whenever they are used there is the danger that they will be used improperly. The problem is one of seeing to it that they will be used as accurately as possible. This is the challenge confronting defense counsels. To meet it they must bring forth evidence and argument to place the tables in their proper perspective. They must exercise more care in framing cautionary instructions to govern the jury in their use of the tables.