

MONETARY FUNCTIONS ON *Ga*-1951 TABLE
PROJECTED TO 1960—ACTUARIAL NOTE

GORDON J. MUNRO

THIS note gives functions based on the *Ga*-1951 (Male) Table projected to 1960 by Projection Scale C given by Ray Peterson in *TSA* IV, 272. Peterson gives values for every fifth age from 70 to 90 and intermediate values have been obtained by linear interpolation. These are set out in Table 1. The projected table is a static table.

Values of q_x given in Table 2 are derived from the formula $q_x^{1960} = q_x^{1951}(1 - .01r_x)^9$, where r_x takes the values given in Table 1. The other functions tabulated are as follows:

Table 3 } Table 4 } Table 5 }	} D_x, N_x, C_x, M_x, a_x	} @3% } @3½% } @3½%
Table 6 } Table 7 } Table 8 }	} Net single premiums for life } annuity of \$10.00 a month with } period certain up to 10 years	} @3% } @3½% } @3½%

TABLE 1

x	r_x	x	r_x
70 and under.....	1.25	80.....	.667
71.....	1.20	81.....	.600
72.....	1.15	82.....	.533
73.....	1.10	83.....	.467
74.....	1.05	84.....	.400
75.....	1.00	85.....	.333
76.....	.933	86.....	.267
77.....	.867	87.....	.200
78.....	.800	88.....	.133
79.....	.733	89.....	.067
		90 and up.....	zero

TABLE 2
VALUES OF q_x ON THE Ga-1951 TABLE PROJECTED TO 1960 (MALES)

x	q_x	x	q_x	x	q_x
5	.000499	40	.001786	75	.057028
6	.000463	41	.001957	76	.062818
7	.000441	42	.002188	77	.069469
8	.000430	43	.002473	78	.076920
9	.000425	44	.002810	79	.085119
10	.000426	45	.003197	80	.093853
11	.000434	46	.003630	81	.102975
12	.000443	47	.004107	82	.112439
13	.000452	48	.004626	83	.122180
14	.000462	49	.005185	84	.132217
15	.000473	50	.005782	85	.142510
16	.000486	51	.006418	86	.153108
17	.000500	52	.007088	87	.164135
18	.000515	53	.007796	88	.175670
19	.000531	54	.008539	89	.187784
20	.000550	55	.009319	90	.200594
21	.000571	56	.010132	91	.212555
22	.000595	57	.010982	92	.225161
23	.000619	58	.011878	93	.238524
24	.000647	59	.012840	94	.252765
25	.000677	60	.013890	95	.268025
26	.000711	61	.015061	96	.284455
27	.000748	62	.016388	97	.302223
28	.000790	63	.017920	98	.321515
29	.000835	64	.019705	99	.342526
30	.000885	65	.021804	100	.365462
31	.000941	66	.024282	101	.390538
32	.001002	67	.026889	102	.417979
33	.001070	68	.029455	103	.450096
34	.001144	69	.032096	104	.489201
35	.001227	70	.035096	105	.537605
36	.001317	71	.038737	106	.597619
37	.001417	72	.042783	107	.671554
38	.001528	73	.047149	108	.761722
39	.001651	74	.051904	109	.870434
				110	.999999

TABLE 3
Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3%

x	D_x	N_x	C_x	M_x	a_x
5....	99,999,999	2,947,649,425	48,446	14,146,080	28.477
6....	97,038,931	2,847,649,426	43,621	14,097,634	28.345
7....	94,168,933	2,750,610,495	40,319	14,054,013	28.209
8....	91,385,829	2,656,441,562	38,151	14,013,694	28.068
9....	88,685,954	2,565,055,733	36,593	13,975,543	27.923
10....	86,066,274	2,476,369,779	35,597	13,938,950	27.773
11....	83,523,892	2,390,303,505	35,194	13,903,353	27.618
12....	81,055,963	2,306,779,613	34,862	13,868,159	27.459
13....	78,660,247	2,225,723,650	34,519	13,833,297	27.295
14....	76,334,652	2,147,063,403	34,239	13,798,778	27.127
15....	74,077,073	2,070,728,751	34,018	13,764,539	26.954
16....	71,885,470	1,996,651,678	33,919	13,730,521	26.775
17....	69,757,799	1,924,766,208	33,863	13,696,602	26.592
18....	67,692,155	1,855,008,409	33,846	13,662,739	26.404
19....	65,686,692	1,787,316,254	33,864	13,628,893	26.210
20....	63,739,623	1,721,629,562	34,036	13,595,029	26.010
21....	61,849,093	1,657,889,939	34,288	13,560,993	25.805
22....	60,013,375	1,596,040,846	34,668	13,526,705	25.595
23....	58,230,744	1,536,027,471	34,995	13,492,037	25.378
24....	56,499,707	1,477,796,727	35,491	13,457,042	25.156
25....	54,818,593	1,421,297,020	36,031	13,421,551	24.927
26....	53,185,903	1,366,478,427	36,714	13,385,520	24.693
27....	51,600,085	1,313,292,524	37,472	13,348,806	24.451
28....	50,059,697	1,261,692,439	38,395	13,311,334	24.204
29....	48,563,252	1,211,632,742	39,369	13,272,939	23.950
30....	47,109,419	1,163,069,490	40,477	13,233,570	23.689
31....	45,696,822	1,115,960,071	41,748	13,193,093	23.421
32....	44,324,098	1,070,263,249	43,119	13,151,345	23.146
33....	42,989,985	1,025,939,151	44,659	13,108,226	22.865
34....	41,693,190	982,949,166	46,308	13,063,567	22.576
35....	40,432,517	941,255,976	48,165	13,017,259	22.280
36....	39,206,705	900,823,459	50,132	12,969,094	21.976
37....	38,014,630	861,616,754	52,298	12,918,962	21.665
38....	36,855,109	823,602,124	54,675	12,866,664	21.347
39....	35,726,984	786,747,015	57,268	12,811,989	21.021
40....	34,629,124	751,020,031	60,046	12,754,721	20.688
41....	33,560,462	716,390,907	63,765	12,694,675	20.346
42....	32,519,207	682,830,445	69,080	12,630,910	19.998
43....	31,502,965	650,311,238	75,637	12,561,830	19.643
44....	30,509,765	618,808,273	83,236	12,486,193	19.282

TABLE 3—Continued
 GA-1951 TABLE PROJECTED TO 1960 (MALES)—3%

x	D _x	N _x	C _x	M _x	a _x
45....	29,537,895	588,298,508	91,682	12,402,957	18.917
46....	28,585,885	558,760,613	100,745	12,311,275	18.547
47....	27,652,541	530,174,728	110,261	12,210,530	18.173
48....	26,736,866	502,522,187	120,082	12,100,269	17.795
49....	25,838,040	475,785,321	130,068	11,980,187	17.414
50....	24,955,407	449,947,281	140,089	11,850,119	17.030
51....	24,088,461	424,991,874	150,097	11,710,030	16.643
52....	23,236,758	400,903,413	159,905	11,559,933	16.253
53....	22,400,054	377,666,655	169,545	11,400,028	15.860
54....	21,578,080	355,266,601	178,889	11,230,483	15.464
55....	20,770,703	333,688,521	187,925	11,051,594	15.065
56....	19,977,806	312,917,818	196,520	10,863,669	14.663
57....	19,199,408	292,940,012	204,706	10,667,149	14.258
58....	18,435,495	273,740,604	212,599	10,462,443	13.849
59....	17,685,939	255,305,109	220,473	10,249,844	13.435
60....	16,950,341	237,619,170	228,583	10,029,371	13.019
61....	16,228,058	220,668,829	237,292	9,800,788	12.598
62....	15,518,104	204,440,771	246,904	9,563,496	12.174
63....	14,819,216	188,922,667	257,826	9,316,592	11.749
64....	14,129,762	174,103,451	270,317	9,058,766	11.322
65....	13,447,898	159,973,689	284,677	8,788,449	10.896
66....	12,771,534	146,525,791	301,086	8,503,772	10.473
67....	12,098,461	133,754,257	315,840	8,202,686	10.055
68....	11,430,238	121,655,796	326,872	7,886,846	9.643
69....	10,770,446	110,225,558	335,619	7,559,974	9.234
70....	10,121,124	99,455,112	344,865	7,224,355	8.826
71....	9,481,468	89,333,988	356,586	6,879,490	8.422
72....	8,848,722	79,852,520	367,549	6,522,904	8.024
73....	8,223,443	71,003,798	376,434	6,155,355	7.634
74....	7,607,491	62,780,355	383,358	5,778,921	7.252
75....	7,002,555	55,172,864	387,711	5,395,563	6.879
76....	6,410,886	48,170,309	390,990	5,007,852	6.514
77....	5,833,171	41,759,423	393,422	4,616,862	6.159
78....	5,269,850	35,926,252	393,551	4,223,440	5.817
79....	4,722,808	30,656,402	390,292	3,829,889	5.491
80....	4,194,958	25,933,594	382,242	3,439,597	5.182
81....	3,690,532	21,738,636	368,963	3,057,355	4.890
82....	3,214,077	18,048,104	350,862	2,688,392	4.615
83....	2,769,601	14,834,027	328,534	2,337,530	4.356
84....	2,360,399	12,064,426	302,995	2,008,996	4.111

TABLE 3—Continued
 Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3%

x	D_x	N_x	C_x	M_x	a_x
85....	1,988,654	9,704,027	275,149	1,706,001	3.880
86....	1,655,583	7,715,373	246,100	1,430,852	3.660
87....	1,361,262	6,059,790	216,923	1,184,752	3.452
88....	1,104,690	4,698,528	188,409	967,829	3.253
89....	884,105	3,593,838	161,185	779,420	3.065
90....	697,169	2,709,733	135,775	618,235	2.887
91....	541,088	2,012,564	111,661	482,460	2.720
92....	413,667	1,471,476	90,429	370,799	2.557
93....	311,189	1,057,809	72,064	280,370	2.399
94....	230,061	746,620	56,458	208,306	2.245
95....	166,902	516,559	43,431	151,848	2.095
96....	118,609	349,657	32,756	108,417	1.948
97....	82,398	231,048	24,178	75,661	1.804
98....	55,820	148,650	17,425	51,483	1.663
99....	36,769	92,830	12,228	34,058	1.525
100....	23,470	56,061	8,328	21,830	1.389
101....	14,458	32,591	5,482	13,502	1.255
102....	8,554	18,133	3,471	8,020	1.120
103....	4,833	9,579	2,112	4,549	.983
104....	2,580	4,746	1,225	2,437	.840
105....	1,279	2,166	667	1,212	.695
106....	574	887	333	545	.548
107....	224	313	146	212	.402
108....	71	89	52	66	.260
109....	16	18	13	14	.126
110....	2	2	1	1	0

TABLE 4
Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3¼%

x	D _x	N _x	C _x	M _x	a _x
5....	99,999,999	2,789,635,623	48,330	12,190,596	26.896
6....	96,803,969	2,689,635,624	43,409	12,142,266	26.784
7....	93,713,461	2,592,831,655	40,027	12,098,857	26.668
8....	90,723,615	2,499,118,194	37,783	12,058,830	26.547
9....	87,830,124	2,408,394,579	36,153	12,021,047	26.421
10....	85,029,342	2,320,564,455	35,082	11,984,894	26.291
11....	82,317,791	2,235,535,113	34,602	11,949,812	26.157
12....	79,692,072	2,153,217,322	34,192	11,915,210	26.019
13....	77,149,412	2,073,525,250	33,774	11,881,018	25.877
14....	74,687,206	1,996,375,838	33,419	11,847,244	25.730
15....	72,302,857	1,921,688,632	33,123	11,813,825	25.578
16....	69,993,857	1,849,385,775	32,946	11,780,702	25.422
17....	67,757,714	1,779,391,918	32,812	11,747,756	25.261
18....	65,592,092	1,711,634,204	32,716	11,714,944	25.095
19....	63,494,733	1,646,042,112	32,654	11,682,228	24.924
20....	61,463,455	1,582,547,379	32,740	11,649,574	24.748
21....	59,496,029	1,521,083,924	32,903	11,616,834	24.566
22....	57,590,369	1,461,587,895	33,188	11,583,931	24.379
23....	55,744,409	1,403,997,526	33,420	11,550,743	24.186
24....	53,956,322	1,348,253,117	33,810	11,517,323	23.988
25....	52,224,128	1,294,296,795	34,243	11,483,513	23.784
26....	50,546,026	1,242,072,667	34,807	11,449,270	23.573
27....	48,920,181	1,191,526,641	35,440	11,414,463	23.357
28....	47,344,880	1,142,606,460	36,225	11,379,023	23.134
29....	45,818,380	1,095,261,580	37,054	11,342,798	22.904
30....	44,339,100	1,049,443,200	38,005	11,305,744	22.669
31....	42,905,433	1,005,104,100	39,103	11,267,739	22.426
32....	41,515,795	962,198,667	40,289	11,228,636	22.177
33....	40,168,713	920,682,872	41,628	11,188,347	21.920
34....	38,862,694	880,514,159	43,060	11,146,719	21.657
35....	37,596,353	841,651,465	44,678	11,103,659	21.387
36....	36,368,254	804,055,112	46,389	11,058,981	21.109
37....	35,177,101	767,686,858	48,277	11,012,592	20.823
38....	34,021,554	732,509,757	50,348	10,964,315	20.531
39....	32,900,309	698,488,203	52,609	10,913,967	20.230
40....	31,812,097	665,587,894	55,028	10,861,358	19.922
41....	30,755,719	633,775,797	58,295	10,806,330	19.607
42....	29,729,326	603,020,078	63,001	10,748,035	19.284
43....	28,730,535	573,290,752	68,815	10,685,034	18.954
44....	27,757,369	544,560,217	75,543	10,616,219	18.619

TABLE 4—Continued
Ga-1951 TABLE PROJECTED TO 1960 (MALES)—31%

<i>x</i>	<i>D_x</i>	<i>N_x</i>	<i>C_x</i>	<i>M_x</i>	<i>a_x</i>
45....	26,808,107	516,802,848	83,008	10,540,676	18.278
46....	25,881,260	489,994,741	90,992	10,457,668	17.932
47....	24,975,603	464,113,481	99,347	10,366,676	17.583
48....	24,090,099	439,137,878	107,933	10,267,329	17.229
49....	23,223,882	415,047,779	116,625	10,159,396	16.872
50....	22,376,238	391,823,897	125,307	10,042,771	16.511
51....	21,546,594	369,447,659	133,933	9,917,464	16.146
52....	20,734,438	347,901,065	142,340	9,783,531	15.779
53....	19,939,440	327,166,627	150,555	9,641,191	15.408
54....	19,161,251	307,227,187	158,468	9,490,636	15.034
55....	18,399,644	288,065,936	166,069	9,332,168	14.656
56....	17,654,409	269,666,292	173,244	9,166,099	14.275
57....	16,925,457	252,011,883	180,025	8,992,855	13.890
58....	16,212,669	235,086,426	186,512	8,812,830	13.500
59....	15,515,830	218,873,757	192,953	8,626,318	13.106
60....	14,834,485	203,357,927	199,565	8,433,365	12.708
61....	14,167,974	188,523,442	206,667	8,233,800	12.306
62....	13,515,341	174,355,468	214,517	8,027,133	11.901
63....	12,875,401	160,840,127	223,465	7,812,616	11.492
64....	12,246,657	147,964,726	233,725	7,589,151	11.082
65....	11,627,444	135,718,069	245,544	7,355,426	10.672
66....	11,015,902	124,090,625	259,068	7,109,882	10.265
67....	10,410,086	113,074,723	271,106	6,850,814	9.862
68....	9,811,301	102,664,637	279,895	6,579,708	9.464
69....	9,222,575	92,853,336	286,691	6,299,813	9.068
70....	8,645,585	83,630,761	293,874	6,013,122	8.673
71....	8,079,573	74,985,176	303,127	5,719,248	8.281
72....	7,522,125	66,905,603	311,690	5,416,121	7.895
73....	6,973,661	59,383,478	318,452	5,104,431	7.515
74....	6,435,699	52,409,817	323,524	4,785,979	7.144
75....	5,909,598	45,974,118	326,404	4,462,455	6.780
76....	5,397,177	40,064,520	328,368	4,136,051	6.423
77....	4,898,922	34,667,343	329,611	3,807,683	6.077
78....	4,415,107	29,768,421	328,920	3,478,072	5.742
79....	3,947,212	25,353,314	325,407	3,149,152	5.423
80....	3,497,558	21,406,102	317,924	2,823,745	5.120
81....	3,069,541	17,908,544	306,137	2,505,821	4.834
82....	2,666,784	14,839,003	290,412	2,199,684	4.564
83....	2,292,429	12,172,219	271,273	1,909,272	4.310
84....	1,948,997	9,879,790	249,579	1,637,999	4.069

TABLE 4—Continued
 Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3½%

x	D_x	N_x	C_x	M_x	a_x
85....	1,638,069	7,930,793	226,093	1,388,420	3.842
86....	1,360,414	6,292,724	201,734	1,162,327	3.626
87....	1,115,858	4,932,310	177,387	960,593	3.420
88....	903,347	3,816,452	153,696	783,206	3.225
89....	721,216	2,913,105	131,170	629,510	3.039
90....	567,344	2,191,889	110,223	498,340	2.863
91....	439,262	1,624,545	90,429	388,117	2.698
92....	335,006	1,185,283	73,056	297,688	2.538
93....	251,405	850,277	58,079	224,632	2.382
94....	185,412	598,872	45,390	166,553	2.230
95....	134,185	413,460	34,833	121,163	2.081
96....	95,128	279,275	26,208	86,330	1.936
97....	65,925	184,147	19,297	60,122	1.794
98....	44,552	118,222	13,873	40,825	1.654
99....	29,276	73,670	9,712	26,952	1.517
100....	18,642	44,394	6,599	17,240	1.382
101....	11,456	25,752	4,333	10,641	1.249
102....	6,762	14,296	2,738	6,308	1.115
103....	3,811	7,534	1,662	3,570	.979
104....	2,029	3,723	962	1,908	.837
105....	1,003	1,694	522	946	.692
106....	449	691	260	424	.546
107....	174	242	113	164	.401
108....	55	68	41	51	.260
109....	12	13	10	10	.125
110....	1	1	0	0	0

TABLE 5

Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3½%

x	D_x	N_x	C_x	M_x	a_x
5....	99,999,999	2,645,681,663	48,213	10,532,451	25.457
6....	96,570,143	2,545,681,664	43,199	10,484,238	25.361
7....	93,261,286	2,449,111,521	39,737	10,441,039	25.261
8....	90,067,785	2,355,850,235	37,419	10,401,302	25.156
9....	86,984,595	2,265,782,450	35,718	10,363,883	25.048
10....	84,007,368	2,178,797,855	34,577	10,328,165	24.936
11....	81,131,962	2,094,790,487	34,021	10,293,588	24.820
12....	78,354,348	2,013,658,525	33,538	10,259,567	24.699
13....	75,671,146	1,935,304,177	33,047	10,226,029	24.575
14....	73,079,171	1,859,633,031	32,621	10,192,982	24.447
15....	70,575,273	1,786,553,860	32,253	10,160,361	24.314
16....	68,156,416	1,715,978,587	32,004	10,128,108	24.177
17....	65,819,605	1,647,822,171	31,797	10,096,104	24.035
18....	63,562,024	1,582,002,566	31,627	10,064,307	23.889
19....	61,380,956	1,518,440,542	31,491	10,032,680	23.738
20....	59,273,780	1,457,059,586	31,498	10,001,189	23.582
21....	57,237,854	1,397,785,806	31,578	9,969,691	23.421
22....	55,270,696	1,340,547,952	31,774	9,938,113	23.254
23....	53,369,864	1,285,277,256	31,918	9,906,339	23.082
24....	51,533,167	1,231,907,392	32,214	9,874,421	22.905
25....	49,758,285	1,180,374,225	32,547	9,842,207	22.722
26....	48,043,090	1,130,615,940	33,004	9,809,660	22.533
27....	46,385,440	1,082,572,850	33,523	9,776,656	22.339
28....	44,783,327	1,036,187,410	34,182	9,743,133	22.138
29....	43,234,732	991,404,083	34,880	9,708,951	21.931
30....	41,737,807	948,169,351	35,689	9,674,071	21.717
31....	40,290,694	906,431,544	36,631	9,638,382	21.497
32....	38,891,575	866,140,850	37,651	9,601,751	21.271
33....	37,538,749	827,249,275	38,808	9,564,100	21.037
34....	36,230,514	789,710,526	40,046	9,525,292	20.797
35....	34,965,281	753,480,012	41,452	9,485,246	20.549
36....	33,741,428	718,514,731	42,935	9,443,794	20.295
37....	32,557,478	684,773,303	44,574	9,400,859	20.033
38....	31,411,926	652,215,825	46,374	9,356,285	19.763
39....	30,303,312	620,803,899	48,339	9,309,911	19.486
40....	29,230,223	590,500,587	50,440	9,261,572	19.202
41....	28,191,321	561,270,364	53,305	9,211,132	18.909
42....	27,184,686	533,079,043	57,469	9,157,827	18.610
43....	26,207,928	505,894,357	62,620	9,100,358	18.303
44....	25,259,049	479,686,429	68,578	9,037,738	17.991

TABLE 5—Continued
Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3½%

x	D _x	N _x	C _x	M _x	a _x
45....	24,336,300	454,427,380	75,172	8,969,160	17.673
46....	23,438,161	430,091,080	82,204	8,893,988	17.350
47....	22,563,362	406,652,919	89,534	8,811,784	17.023
48....	21,710,815	384,089,557	97,038	8,722,250	16.691
49....	20,879,594	362,378,742	104,599	8,625,212	16.356
50....	20,068,921	341,499,148	112,114	8,520,613	16.016
51....	19,278,147	321,430,227	119,543	8,408,499	15.673
52....	18,506,685	302,152,080	126,740	8,288,956	15.327
53....	17,754,115	283,645,395	133,731	8,162,216	14.976
54....	17,020,003	265,891,280	140,419	8,028,485	14.622
55....	16,304,028	248,871,277	146,800	7,888,066	14.264
56....	15,605,884	232,567,249	152,772	7,741,266	13.903
57....	14,925,376	216,961,365	158,368	7,588,494	13.536
58....	14,262,285	202,035,989	163,679	7,430,126	13.166
59....	13,616,306	187,773,704	168,921	7,266,447	12.790
60....	12,986,930	174,157,398	174,288	7,097,526	12.410
61....	12,373,470	161,170,468	180,055	6,923,238	12.025
62....	11,774,988	148,796,998	186,442	6,743,183	11.637
63....	11,190,357	137,022,010	193,750	6,556,741	11.245
64....	10,618,189	125,831,653	202,156	6,362,991	10.851
65....	10,056,963	115,213,464	211,867	6,160,835	10.456
66....	9,505,005	105,156,501	222,995	5,948,968	10.063
67....	8,960,584	95,651,496	232,794	5,725,973	9.675
68....	8,424,775	86,690,912	239,760	5,493,179	9.290
69....	7,900,119	78,266,137	244,988	5,253,419	8.907
70....	7,387,977	70,366,018	250,521	5,008,431	8.524
71....	6,887,621	62,978,041	257,784	4,757,910	8.144
72....	6,396,922	56,090,420	264,424	4,500,126	7.768
73....	5,916,176	49,693,498	269,509	4,235,702	7.400
74....	5,446,603	43,777,322	273,141	3,966,193	7.038
75....	4,989,277	38,330,719	274,907	3,693,052	6.683
76....	4,545,650	33,341,442	275,893	3,418,145	6.335
77....	4,116,039	28,795,792	276,268	3,142,252	5.996
78....	3,700,581	24,679,753	275,023	2,865,984	5.669
79....	3,300,417	20,979,172	271,428	2,590,961	5.357
80....	2,917,380	17,678,755	264,546	2,319,533	5.060
81....	2,554,178	14,761,375	254,122	2,054,987	4.779
82....	2,213,682	12,207,197	240,487	1,800,865	4.514
83....	1,898,336	9,993,515	224,096	1,560,378	4.264
84....	1,610,045	8,095,179	205,677	1,336,282	4.028

TABLE 5—Continued
 Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3½%

x	D_x	N_x	C_x	M_x	a_x
85....	1,349,922	6,485,134	185,872	1,130,605	3.804
86....	1,118,400	5,135,212	165,445	944,733	3.592
87....	915,134	4,016,812	145,126	779,288	3.389
88....	739,061	3,101,678	125,440	634,162	3.197
89....	588,628	2,362,617	106,797	508,722	3.014
90....	461,925	1,773,989	89,526	401,925	2.840
91....	356,778	1,312,064	73,271	312,399	2.678
92....	271,442	955,286	59,051	239,128	2.519
93....	203,211	683,844	46,832	180,077	2.365
94....	149,507	480,633	36,513	133,245	2.215
95....	107,938	331,126	27,951	96,732	2.068
96....	76,336	223,188	20,980	68,781	1.924
97....	52,774	146,852	15,410	47,801	1.783
98....	35,579	94,078	11,052	32,391	1.645
99....	23,323	58,499	7,719	21,339	1.509
100....	14,815	35,176	5,232	13,620	1.375
101....	9,082	20,361	3,427	8,388	1.243
102....	5,347	11,279	2,160	4,961	1.110
103....	3,006	5,932	1,307	2,801	.975
104....	1,597	2,926	754	1,494	.834
105....	788	1,329	409	740	.690
106....	352	541	204	331	.544
107....	136	189	88	127	.400
108....	43	53	32	39	.259
109....	9	10	7	7	.125
110....	1	1	0	0	0

TABLE 6

VALUES OF $120a_{x:T}^{(12)}$ ON THE Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3%
(Rounded to high integer)

x	$t=0$	1	2	3	4	5	6	7	8	9	10
50...	2109	2109	2110	2112	2115	2118	2122	2127	2132	2139	2146
51...	2063	2063	2064	2066	2069	2072	2077	2082	2088	2095	2103
52...	2016	2016	2017	2020	2022	2026	2031	2037	2043	2051	2060
53...	1969	1969	1970	1973	1976	1980	1985	1992	1999	2007	2016
54...	1921	1922	1923	1926	1929	1934	1939	1946	1954	1963	1973
55...	1873	1874	1875	1878	1882	1887	1893	1900	1909	1918	1929
56...	1825	1826	1827	1830	1834	1840	1846	1854	1863	1874	1886
57...	1776	1777	1779	1782	1787	1792	1799	1808	1818	1829	1842
58...	1727	1728	1730	1733	1738	1744	1752	1761	1772	1784	1798
59...	1678	1678	1681	1684	1690	1696	1705	1715	1726	1740	1755
60...	1628	1628	1631	1635	1640	1648	1657	1668	1681	1695	1712
61...	1577	1578	1581	1585	1591	1599	1609	1621	1635	1651	1669
62...	1526	1527	1530	1535	1542	1550	1561	1574	1590	1607	1627
63...	1475	1476	1479	1485	1492	1502	1514	1528	1545	1564	1585
64...	1424	1425	1429	1434	1442	1453	1466	1482	1500	1521	1544
65...	1373	1374	1378	1384	1393	1405	1419	1437	1456	1479	1504
66...	1322	1324	1328	1335	1345	1357	1373	1392	1414	1438	1466
67...	1272	1274	1278	1286	1297	1311	1328	1348	1372	1399	1428
68...	1223	1224	1229	1238	1250	1265	1284	1306	1331	1360	1392
69...	1174	1175	1181	1190	1203	1220	1240	1264	1292	1323	1358
70...	1125	1127	1133	1143	1157	1175	1197	1224	1254	1288	1325
71...	1076	1078	1085	1096	1111	1131	1156	1184	1217	1254	1294
72...	1028	1031	1038	1050	1067	1089	1116	1147	1182	1222	1265
73...	982	984	992	1005	1024	1048	1077	1111	1149	1192	1239
74...	936	939	947	962	982	1008	1040	1076	1118	1164	1214
75...	891	894	904	920	942	970	1005	1044	1089	1138	1191
76...	847	851	861	879	903	934	971	1014	1062	1115	1171
77...	805	808	820	839	866	900	940	986	1037	1093	1153
78...	764	768	781	802	831	868	911	960	1015	1074	1136
79...	724	729	743	767	798	838	884	937	995	1056	1122
80...	687	692	708	733	768	810	860	916	976	1041	1109
81...	652	658	675	703	740	785	838	897	960	1028	1098
82...	619	625	644	674	713	762	818	879	946	1016	1089
83...	588	595	615	647	689	741	799	864	933	1005	1080
84...	559	566	587	622	667	721	783	850	922	996	1073

TABLE 7

VALUES OF $120a_{x+t}^{(12)}$ ON THE Ga-1951 TABLE PROJECTED TO 1960 (MALES)—3¼%
(Rounded to high integer)

x	$t=0$	1	2	3	4	5	6	7	8	9	10
50...	2047	2047	2048	2050	2052	2055	2059	2064	2070	2076	2083
51...	2003	2003	2004	2006	2009	2013	2017	2022	2028	2035	2043
52...	1959	1959	1961	1963	1966	1969	1974	1980	1986	1994	2002
53...	1914	1915	1916	1918	1922	1926	1931	1937	1944	1952	1961
54...	1870	1870	1871	1874	1877	1882	1887	1894	1902	1911	1920
55...	1824	1825	1826	1829	1833	1838	1844	1851	1859	1869	1879
56...	1778	1779	1781	1784	1788	1793	1800	1807	1816	1826	1838
57...	1732	1733	1735	1738	1742	1748	1755	1763	1773	1784	1797
58...	1686	1686	1688	1692	1696	1703	1710	1719	1730	1742	1755
59...	1638	1639	1641	1645	1650	1657	1665	1675	1686	1699	1714
60...	1591	1591	1594	1598	1603	1610	1619	1630	1643	1657	1673
61...	1542	1543	1546	1550	1556	1564	1574	1586	1599	1615	1633
62...	1494	1494	1497	1502	1509	1517	1528	1541	1556	1573	1592
63...	1445	1445	1449	1454	1461	1471	1483	1497	1513	1532	1553
64...	1395	1396	1400	1405	1414	1424	1437	1453	1470	1491	1514
65...	1346	1347	1351	1357	1366	1378	1392	1409	1429	1451	1475
66...	1297	1299	1303	1310	1320	1332	1348	1366	1387	1412	1438
67...	1249	1250	1255	1263	1273	1287	1304	1324	1347	1374	1403
68...	1201	1203	1208	1216	1228	1243	1261	1283	1308	1337	1368
69...	1154	1155	1161	1170	1183	1199	1219	1243	1271	1301	1335
70...	1106	1108	1114	1124	1138	1156	1178	1204	1234	1267	1304
71...	1059	1061	1068	1079	1094	1114	1138	1166	1198	1234	1274
72...	1013	1015	1022	1034	1051	1073	1099	1130	1165	1203	1246
73...	967	970	978	991	1010	1033	1062	1095	1133	1175	1220
74...	923	925	934	949	969	995	1026	1062	1103	1148	1196
75...	879	882	892	908	930	958	992	1031	1074	1123	1175
76...	836	840	850	868	892	923	959	1001	1048	1100	1155
77...	795	798	810	829	856	889	929	974	1025	1079	1137
78...	755	759	772	793	822	858	901	949	1003	1060	1121
79...	716	721	735	758	790	829	875	926	983	1044	1107
80...	680	685	700	726	760	802	851	906	965	1029	1095
81...	646	651	668	696	732	777	829	887	950	1016	1085
82...	613	619	638	667	707	755	810	870	936	1004	1075
83...	583	589	609	641	683	734	792	855	923	994	1067
84...	554	561	582	616	661	715	775	842	912	985	1061

TABLE 8

VALUES OF $120z_{x+1}^{(12)}$ ON THE Ga-1951 TABLE PROJECTED TO 1960 (MALES)— $3\frac{1}{2}\%$
(Rounded to high integer)

x	$t=0$	1	2	3	4	5	6	7	8	9	10
50...	1987	1988	1989	1990	1993	1996	2000	2004	2010	2016	2023
51...	1946	1947	1948	1950	1952	1956	1960	1965	1971	1978	1985
52...	1905	1905	1906	1908	1911	1915	1920	1925	1932	1939	1947
53...	1863	1863	1864	1867	1870	1874	1879	1885	1892	1900	1909
54...	1820	1821	1822	1824	1828	1832	1838	1844	1852	1861	1870
55...	1777	1778	1779	1782	1786	1791	1796	1804	1812	1821	1831
56...	1734	1734	1736	1739	1743	1748	1755	1762	1771	1781	1792
57...	1690	1690	1692	1695	1700	1705	1712	1721	1730	1741	1753
58...	1645	1646	1648	1651	1656	1662	1670	1679	1689	1701	1714
59...	1600	1601	1603	1607	1612	1619	1627	1636	1648	1661	1675
60...	1555	1555	1558	1562	1567	1575	1583	1594	1606	1620	1636
61...	1509	1509	1512	1516	1522	1530	1540	1551	1565	1580	1597
62...	1462	1463	1466	1470	1477	1485	1496	1509	1524	1540	1559
63...	1415	1416	1419	1424	1431	1441	1452	1466	1482	1501	1521
64...	1368	1369	1372	1378	1386	1396	1409	1424	1442	1462	1484
65...	1320	1321	1325	1331	1340	1352	1366	1382	1402	1423	1447
66...	1273	1274	1278	1285	1295	1308	1323	1341	1362	1386	1412
67...	1226	1228	1232	1240	1251	1264	1281	1301	1324	1349	1378
68...	1180	1182	1187	1195	1207	1222	1240	1261	1286	1314	1345
69...	1134	1136	1141	1150	1163	1180	1199	1223	1250	1280	1313
70...	1088	1090	1096	1106	1120	1138	1160	1185	1214	1247	1283
71...	1043	1045	1051	1062	1078	1097	1121	1149	1180	1215	1254
72...	998	1000	1007	1019	1036	1057	1083	1113	1147	1186	1227
73...	953	956	964	977	995	1019	1047	1080	1117	1158	1202
74...	910	913	921	936	956	981	1012	1048	1088	1132	1179
75...	867	870	880	896	918	946	979	1017	1060	1108	1158
76...	826	829	840	857	881	911	947	989	1035	1086	1139
77...	785	789	800	819	846	879	918	963	1012	1065	1122
78...	746	750	763	784	813	848	891	938	991	1047	1107
79...	708	713	727	750	781	820	865	916	972	1031	1093
80...	673	678	693	718	752	794	842	896	955	1017	1082
81...	526	547	578	619	667	722	782	846	914	985	1056
82...	607	613	632	661	700	748	802	862	926	993	1062
83...	577	584	604	635	677	727	784	847	914	983	1055
84...	549	556	577	611	656	709	768	834	903	975	1048

ERRATA

1960 WESTERN SPRING MEETING NUMBER (NO. 33) AND VOLUME XII (1960)

Page 366, Table 8, "Values of $120\ddot{a}_{x:\overline{12}|}$ on the *Ga*-1951 Table Projected to 1960 (Males)— $3\frac{1}{2}\%$ ": Delete horizontal line of values fourth line from bottom ($x = 81$) and substitute the following values:

Period											
Certain (<i>t</i>)...	0	1	2	3	4	5	6	7	8	9	10
Maturity											
Value	639	644	661	689	725	770	821	878	939	1004	1071

DISCUSSION OF PRECEDING PAPER

BARNET N. BERIN:

Of those who discussed Mr. Peterson's fine paper, "Group Annuity Mortality," many were concerned with the practical application of the projection scales. Currently, most companies employ some projection scale approach. However, in order to identify projection types, some definitions must be available so that bases are uniquely described. The following is a list of three projection methods in use. It is hoped that some standard nomenclature may be adopted so that these projection types are clearly determined.

(1) A direct projection of $Ga-51$ mortality rates for n years by multiplying each rate by a scale C projection factor raised to the n th power. (Mr. Munro uses $n = 9$ resulting in a 1960 table. His clear development of projection techniques is a distinct addition to the literature on this subject.)

(2) A complete generation approach with a separate table for each age by bringing an initial age forward n years, to a selected base year, and then following this generation to terminal age. Mortality rates are determined by assuming the age at purchase is the attained age in the base year $1951 + n$ for the proper generation table.

(3) A modified generation approach where (1) is followed to an age $x - 1$ and the remaining mortality rates are those of the generation born in $1951 + n - x$.

Methods (1) and (3) result in one mortality table while (2) produces individual tables for each generation age. The three approaches may be illustrated as follows:

$$\begin{array}{l}
 \cdot \\
 \cdot \\
 \cdot \\
 q_x^{1951} \rightarrow q_x^{1951+n} \\
 q_{x+1}^{1951} \rightarrow q_{x+1}^{1951+n} \rightarrow q_{x+1}^{1951+(n+1)} \\
 q_{x+2}^{1951} \rightarrow q_{x+2}^{1951+n} \rightarrow q_{x+2}^{1951+(n+1)} \rightarrow q_{x+2}^{1951+(n+2)} \\
 \cdot \\
 \cdot \\
 \cdot
 \end{array}$$