New Mortality Experience. H^{MF}, *&c.*—(continued).

Age.	Unadjusted.		Adjusted.			Probability of Dying in a Year	
	Number-living.	Decrement.	Number-living.	Decrement.	Expectation	Partial Experience Adjusted.	Total Experience Adjusted.
77	19687	2113	19728	2257	5·811	·11441	·11322
78	17574	2302	17471	2131	5·497	·12197	·12110
79	15272	2017	15340	2001	5·191	·13044	·12938
80	13255	1776	13339	1863	4·895	·13966	·13868
81	11479	1762	11476	1710	4·609	·14901	·14907
82	9717	1432	9766	1568	4·328	·16055	·16068
83	8285	1536	8198	1426	4·060	·17394	·17426
84	6749	1214	6772	1270	3·810	·18753	·18857
85	5535	1211	5502	1115	3 574	·20265	·20267
86	4324	952	4387	955	3 355	·21768	·21732
87	3372	751	3432	805	3·150	·23455	·23248
88	2621	691	2627	651	2·962	·24781	·24581
89	1930	454	1976	520	2·773	·26316	·25923
90	1476	394	1456	411	2·585	·28228	·27778
91	1082	309	1045	319	2·405	·30526	·29708
92	773	304	726	233	2·242	·32093	·31069
93	469	235	493	168	2·066	·34077	·33029
94	234	0	325	124	1·875	·38154	·35694
95	234	26	201	79	1·724	·38806	·36441
96	208	130	122	48	1·516	·39837	·37334
97	78	39	74	36	1·207	·48648	·46809
98	39	0	38	26	·815	·68420	·65999
99	0	0	12	12	·500	1·00000	1·00000
100	0	0	0	0			

ON HERR LAZARUS'S PAPER ON THE THEORY OF PROBABILITIES.

To the Editor of the Journal of the Institute of Actuaries.

Sir,—In the July number of the *Journal* you inserted a letter from me, having for its object the elucidation of a passage in Herr Lazarus's paper "On some problems in the Theory of Probabilities." I have since received a very courteous communication from Herr Lazarus in reference to the subject of my letter; and I beg to send you the substance of that communication out of fairness to Herr Lazarus, at the same time feeling confident that it will greatly interest some of your readers.

He says, in explanation of the passage upon which my remarks were based, "The simplest way to find the sum $\Omega_0+\Omega_1+\Omega_2$ would be to extend "one of the equations (28) or (29), so as to include Ω_0. I think it is self-"evident from (28) that

$$\text{“}\ \Omega_0+\Omega_1=\frac{\int_0^p x^{m-1}(1-x)^n dx}{\int_0^1 x^{m-1}(1-x)^n dx}-\frac{\int_0^p x^{m+z}(1-x)^{n-z-1}dx}{\int_0^1 x^{m+z}(1-x)^{n-z-1}dx}$$

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" and as by (29) $\Omega_2 = \frac{\int_0^p x^{m-z-1}(1-x)^{n+z}dx}{\int_0^1 x^{m-z-1}(1-x)^{n+z}dx} - \frac{\int_0^p x^{m-1}(1-x)^n dx}{\int_0^1 x^{m-1}(1-x)^n dx}$;

" it follows directly by mere addition that

$$\text{“ } \Omega_0+\Omega_1+\Omega_2 = \frac{\int_0^p x^{m-z-1}(1-x)^{n+z}dx}{\int_0^1 x^{m-z-1}(1-x)^{n+z}dx} - \frac{\int_0^p x^{m+z}(1-x)^{n-z-1}dx}{\int_0^1 x^{m+z}(1-x)^{n-z-1}dx}$$

" and from this equation I derive

$$\text{“ } \Omega_0+\Omega_1+\Omega_2 = \frac{1}{\sqrt{\pi}}\int_0^{k_2} \varepsilon^{-t^2}dt + \frac{1}{\sqrt{\pi}}\int_0^{k_3} \varepsilon^{-t^2}dt + \frac{B_2}{A_2\sqrt{\pi}}\varepsilon^{-k_2^2} - \frac{B_3}{A_3\sqrt{\pi}}\varepsilon^{-k_3^2} \quad . \quad (50)$$

With regard to the signs of the first two terms in this expression, Herr Lazarus says, "On page 246, at the bottom, we found the inequalities

$$\text{“ } m < p(\mu+1), \qquad m > p(\mu+1)-1.$$

" It follows that

$$\text{“ } \frac{m}{\mu+1} < p, \qquad \frac{m+1}{\mu+1} > p;$$

" and in consequence thereof,

" $\frac{m+z}{\mu-1} > p$, the + sign of the first term is fixed;

" $\frac{m-z-1}{\mu-1} < p$, the + sign of the second term is fixed."

There is thus, then, no necessity for the double sign which I prefixed to these terms. At the same time I think it would have been as well had this step in the demonstration been inserted in Herr Lazarus's paper.

Herr Lazarus kindly points out a misprint in my letter. In the expression for $\Omega_0+\Omega_1+\Omega_2$, on page 454, the factor $\frac{1}{\sqrt{\pi}}$ has been omitted from the first two terms.

I am, Sir,
Your obedient servant,

Dec. 1, 1870, WILLIAM SUTTON.
18, *Lincoln's Inn Fields.*

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