

CORRESPONDENCE

NOTE ON BLOOD-PRESSURES

(To the Editors of the Journal of the Institute of Actuaries)

SIRS,

It has been the practice of this Company for many years to record blood-pressure readings in connection with applications for assurance. An analysis of blood-pressures has recently been made which would seem to establish that significant differences exist between blood-pressures of assured lives living in the British Isles and those of assured lives living in the United States. I am not aware that tables of diastolic blood-pressures, which some authorities consider of more importance than systolic blood-pressures, and blood-pressures of female lives, based upon assured lives resident in the British Isles, have previously been published. I am submitting the complete results, therefore, in the hope that you will consider them of sufficient value for publication in the *Journal*.

The results are based upon blood-pressure readings for 6377 male lives and 2116 female lives taken in the three years 1930-32, in cases in which the assurance was issued at standard rates and in which the first premium was paid. The data included corresponds therefore with the data on which Dr Hunter's blood-pressures were based with regard to type of business, and since the Company issues instructions to its medical examiners under which the diastolic pressure must be taken at the beginning of the 5th phase, it follows that the average readings for both systolic and diastolic pressures now submitted may be compared with Dr Hunter's readings (*J.I.A.* Vol. LVII). The differences produced may indicate real differences between the blood-pressures in this country and those in the United States. There are, however, other factors which might vitiate any conclusions, e.g. Dr Hunter's readings were taken during the years 1906 to 1920, whereas those now submitted were taken during 1930, 1931 and 1932; underwriting rules might have been different, etc., but allowance cannot be made for these.

It will be seen that Dr Hunter's systolic pressures are 3-4 mm. lower than those now submitted and his diastolic pressures are 1-2 mm. lower, the differences remaining about the same at all ages between 20 and 60 and also the same for male and female lives.

When considering differences between the new systolic pressures and Mr Orr's (*T.F.A.* Vol. XIII, p. 181) and Mr Recknell's (*J.I.A.* Vol. LXIII, p. 549), variations in the data included and the method of taking the blood-pressure must be kept in mind. Apparently Mr Orr included

Table of blood-pressures obtained from the standard paid-for business of the Sun Life Assurance Company of Canada issued in the British Isles in the years 1930-32.

Age	Males		Females		Age	Males		Females	
	Syst.	Diast.	Syst.	Diast.		Syst.	Diast.	Syst.	Diast.
20	123	81	120	80	40	129	84	127	84
1	123	81	120	80	1	129	85	128	84
2	124	82	121	80	2	130	85	128	84
3	124	82	121	80	3	130	85	129	84
4	125	82	121	80	4	130	85	129	85
25	125	82	122	80	45	131	85	130	85
6	125	83	122	81	6	131	85	130	85
7	126	83	122	81	7	131	86	131	85
8	126	83	123	81	8	132	86	131	86
9	126	83	123	81	9	132	86	132	86
30	126	83	123	81	50	133	86	132	86
1	127	83	124	82	1	133	86	133	86
2	127	83	124	82	2	134	86	134	87
3	127	84	124	82	3	134	87	134	87
4	127	84	125	82	4	135	87	135	87
35	128	84	125	82	55	135	87	135	87
6	128	84	126	83	6	135	87	136	88
7	128	84	126	83	7	136	87	136	88
8	129	84	127	83	8	136	87	137	88
9	129	84	127	83	9	137	88	138	89
					60	137	88	138	89

Comparison of figures in foregoing table with those previously published.

Age	Sun Life of Canada (business in British Isles 1930-32)				Hunter				Orr	Recknell
	Males		Females		Males		Females		Males	Males and females
	Syst.	Diast.	Syst.	Diast.	Syst.	Diast.	Syst.	Diast.	Syst.	Syst.
20	123	81	120	80	120	79	116	77	124	122
25	125	82	122	80	121	80	118	78	125	123
30	126	83	123	81	123	81	119	79	126	124
35	128	84	125	82	124	82	120	80	127	126
40	129	84	127	84	125	83	124	82	129	127
45	131	85	130	85	127	84	127	84	130	130
50	133	86	132	86	129	85	130	85	133	133
55	135	87	135	87	131	86	132	87	135	136
60	137	88	138	89	134	87	134	87	138	140

standard male lives only, whereas Mr Recknell included all cases applied for. Also some of the readings in Mr Recknell's cases were taken by palpation which gives lower pressures than those given by auscultation, the method used for all cases in the other three analyses. It is not surprising, therefore, to find a very close agreement between Mr Orr's figures and those now submitted. The inclusion by Mr Recknell of declined, postponed and cases accepted upon special terms would probably not affect the pressures materially at ages under 40, as there are relatively few substandard cases with high blood-pressures at these ages, but would have the effect of increasing the pressures by an amount increasing as the age increases at ages over 40. It must be remembered, however, that there are two factors both tending to reduce Mr Recknell's pressures at all ages, viz. the palpation method of taking some of the readings and the inclusion of female lives. Accordingly it is not surprising to find that Mr Recknell's pressures are lower than those now submitted at the young ages and are not higher until age 51.

It will be seen that both systolic and diastolic pressures are lower for female lives than for male lives at the young ages, but that the difference decreases as the age increases until the pressures become approximately the same for ages over 50. The same tendencies will be observed in Dr Hunter's readings for female lives.

This analysis has been made by Mr A. B. Chiles, A.I.A., of the Mortality Department of the Company's London Administrative Office.

I am, Sirs, etc.

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