ON THE CONSTRUCTION AND USE OF LIFE-TABLES FROM A PUBLIC HEALTH POINT OF VIEW.

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(*Concluded.*)

It was not possible to complete the considerable amount of work necessary for the following Addendum in time for inclusion with the article which appeared in the last number of this *Journal.*

In order to submit the method explained in the last number of the *Journal of Hygiene* for graphically constructing the curve of log p_x values to as exact a test as possible, in the first place the data of the Life-Table for England and Wales for 1881-90 (males) have been taken, and a *complete series of log p_x values* calculated from them according to the methods of interpolation previously described (see the Articles in the two preceding numbers of the *Journal of Hygiene*), and then in the next place the values obtained by the graphic method have been taken and compared one by one with the values obtained by exact calculation. In order to save space there will only be given below the *differences of the measured from the calculated values.*

Please note that the value given for age 5 expresses the difference of the measurement of the ordinate $5\frac{1}{2}$ from the calculated value of log p_5, &c.,

Age	Differences	Age	Differences	Age	Differences	Age	Differences	Age	Differences
5	+ ·00007	25	± ·00000	45	+ ·00002	65	+ ·00004	85	− ·00015
6	+ ·00011	26	− ·00004	46	± ·00000	66	+ ·00005	86	− ·00032
7	+ ·00005	27	− ·00005	47	+ ·00002	67	− ·00001	87	− ·00001
8	+ ·00003	28	− ·00005	48	+ ·00001	68	+ ·00002	88	− ·00004
9	+ ·00001	29	− ·00003	49	± ·00000	69	+ ·00003	89	+ ·00002
10	+ ·00003	30	+ ·00002	50	+ ·00001	70	+ ·00002	90	− ·00012
11	+ ·00001	31	+ ·00004	51	− ·00003	71	+ ·00001	91	+ ·00001
12	− ·00005	32	+ ·00006	52	− ·00003	72	+ ·00003	92	− ·00005
13	− ·00006	33	+ ·00003	53	− ·00002	73	+ ·00008	93	− ·00001
14	− ·00002	34	+ ·00002	54	− ·00004	74	+ ·00006	94	+ ·00008
15	− ·00001	35	+ ·00001	55	− ·00004	75	− ·00002	95	+ ·00016
16	+ ·00003	36	− ·00001	56	− ·00007	76	− ·00004	96	± ·00000
17	+ ·00003	37	− ·00001	57	− ·00009	77	− ·00001	97	+ ·00004
18	± ·00000	38	+ ·00001	58	− ·00008	78	− ·00014	98	+ ·00013
19	+ ·00002	39	− ·00003	59	− ·00004	79	− ·00009	99	− ·00016
20	− ·00002	40	± ·00000	60	+ ·00002	80	− ·00005	100	− ·00007
21	− ·00003	41	± ·00000	61	+ ·00005	81	− ·00007	101	+ ·00005
22	− ·00001	42	+ ·00001	62	+ ·00009	82	− ·00003	102	+ ·00006
23	− ·00004	43	± ·00000	63	+ ·00007	83	± ·00000	103	− ·00047
24	− ·00003	44	− ·00001	64	+ ·00004	84	+ ·00013		

[A somewhat similar comparison, almost equally exact, has also been made from the data of the Life-Table for Selected Healthy Districts (males)].

The actual work of drawing and measuring the curves has been done for the writer by a mining surveyor who had no knowledge of what the calculated values were, and who had given to him as data the log p_x values $4\frac{1}{2}$, 5, 10, 15, 20, 25, 30...105, and also $67\frac{1}{2}$, $72\frac{1}{2}$, $77\frac{1}{2}$ $82\frac{1}{2}$, $87\frac{1}{2}$, $92\frac{1}{2}$, $97\frac{1}{2}$, $102\frac{1}{2}$, obtained by calculations as described in the Articles already alluded to.

The curve has been drawn in three sections :—

Section I, from $4\frac{1}{2}$ to 75. Vertical scale $\frac{1}{8}'' = \cdot00050$, horizontal scale $\frac{1}{8}'' = \frac{1}{2}$ year. This has been used for measuring from $5\frac{1}{2}$ to $64\frac{1}{2}$ inclusive.

Section II, from 55 to 95. Vertical scale $\frac{1}{8}'' = \cdot00100$, horizontal scale, $\frac{1}{8}'' = \frac{1}{4}$ year. This has been used for measuring from $65\frac{1}{2}$ to $89\frac{1}{2}$ inclusive.

Section III, from 85 to 105. Vertical scale $\frac{1}{8}'' = \cdot00250$, horizontal scale, $\frac{1}{8}'' = \frac{1}{8}$ year. This has been used for measuring from $90\frac{1}{2}$ to $103\frac{1}{2}$ inclusive.

The measured values have been taken as returned to the writer *without revision.*

A complete Life-Table worked out from them would not differ very sensibly from one constructed from the calculated series of log p_x values.

Even the largest differences are insignificant compared with the differences which may be obtained between the results of different systems of analytical interpolation.

Occasion may be taken to note:

(1) The formula which has been given for log p'_{20} (or u_{20}), see the last number of this *Journal*, p. 211, has inadvertently not been reduced to its lowest terms; as all the co-efficients are divisible by 3, it should be

$$u_{20} = \frac{(35u_5 + 420u_{15} + 210u_{25} + 3u_{45}) - (192u_{10} + 28u_{35})}{448}.$$

(2) A more accurate formula for log p'_{30} (or u_{30}) is

$$u_{30} = \frac{(320u_{10} + 1050u_{25} + 630u_{35} + 7u_{55}) - (63u_5 + 525u_{15} + 75u_{45})}{1344}.$$