History of Life Assurance in the United Kingdom. By
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(Continued from p. 271.)

3.—PERIOD OF SCIENTIFIC EXACTITUDE.

WE commence our third epoch with the year 1721, and with the fact that there was at that period but one Life Assurance Office in existence in Great Britain—the *Amicable,* founded 1706. That too, so far as we have the means of knowing, was the only Life Assurance Association in the world. It was very defective in its mode of working, at the best; but it stood alone. The Society had at this date an accumulated fund of about £50,000; it had distributed in death claims £118,000. Thus it had obtained a solid hold upon public confidence, but I suspect its business suffered considerably from the general shock to public credit. The days of Mutual Contribution Life Assurance Associations, as such, were gone for ever in England. This Society had to take steps to mitigate the element of uncertainty, or it would most probably have died out. Solidity was now the one thing sought for.

This solitary survivor was not long to remain in undisturbed possession of the field. In the June of the preceding year there had been founded under very special circumstances,[*] two powerful Corporations for the transaction of Marine Insurance business—the *London Assurance Corporation,* and the *Royal Exchange Assurance Corporation.* On the 29th April, this year (1721), they each obtained additional legal powers, whereby they were enabled to accept Life Assurance risks, on the ground that it had been found advantageous for persons having offices and employments, to effect assurances on their own lives and those of others.

Each of these corporations, under the powers of their additional Charters, commenced to issue Life policies. Here are the details of the first five issued by the *London Assurance,* as it was then usually designated.

"1721. June 7th.—William, Lord Bishop of Sarum, on
  " Cheverton Hartop, Esqre., of Quarendon,
  " County Leicester, aged about 31 years, for one
  " year at 5 per-cent—£200.
"July 20.—Henry Baynes, Esqre., of the City of
  " York, on the Life of Henry Baynes, of Clifford's
  " Inn, aged about 26 years, for one year at 5
  " per-cent—£500.

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[*] I do not recount the circumstances here; they are so widely known.

" August 8th.—Elizabeth Bookey, of St. Andrew's,
" Holborn, on the Life of William Bristowe, of
" the Six Clerk's Office, aged about 25 years, for
" one year at 5 per-cent—£300.

" August 10th.—Robert Allen, of the Inner Temple,
" on the Life of William Humphrey, of the
" Twelfth Division, London Brewery Exciseman,
" aged about 28 years, for one year at 5 per-
" cent—£70.

" Sept. 25th.—Kingsmill Eyres, Esqre., on the life of
" Captn. Edward Murray, on the half-pay list,
" aged 55, for one year at £6. 5s. 0d. per-cent."

These policies were all effected, obviously, for business purposes; not one as a family provision in the form now understood. The rates in the earlier cases were very high, in the latter not so. The equalized annual premium for the last case would now be about £5. 2s. per-cent without profits; 10s. more with. But in these early days the office deducted 2 per-cent from the sum insured, as the early Life Underwriters had done.

The Form of Contract (Policy) then in use indicated but little, if any, advance upon those I have already given (see 1583 and 1699). It was still upon the model of the Contract of Marine Insurance, and was what would then be understood as a " Valued Policy", which signifies that the sum insured was the agreed value of the interest the person effecting the insurance had in the life of the insured, and hence, the insurers could not raise any question thereon. There was a proviso of forfeiture in case of " voluntary" breach of the conditions of insurance. The age of the insured is not stated in the contract; nor was it of such direct consequence where the premium (£5. 5s. 0d.) was not progressive with age, and was frequently three times greater than the actual risk demanded.

A full copy of this policy (No. 12, Government Stamp 3s. 10d.) is given in this *Journal* (xxii, 248), and hence, it seems hardly necessary to reproduce it here.

With regard to the rate of premium, the *Amicable* Society was at this date charging an "entry fee" of £3. 15s. 0d., in addition to £4. 4s. 0d. premium—the death shares had averaged less than £100 at this date. Real Life Assurance was still, therefore, an expensive luxury. It will be remembered that Mr. Babbage, at a later period, endeavoured to discover the circumstances which led to the fixing of 5 per-cent premiums, and came to the conclusion that it

probably arose from its appearing, that the annual number of deaths in London was nearly one in 20 of the population. I confess to thinking that the rate had not even this basis of calculation to support it; the underwriters were accustomed to charge £5 per-cent for the ship, and so named £5, the same rate, for the captain's life. This rate became traditional.

Life Assurance as a domestic institution, if not actually killed by the events of 1720, was thrown back at least one full generation. By what processes it became revived, it will be our next purpose to trace.

In 1725 De Moivre published his work, *Annuities upon Lives : or the Valuation of Annuities upon any number of Lives, as also of Reversions. To which is added an Appendix concerning the Expectation of Life, and Probabilities of Survivorship.* In this work he propounded a method of calculating annuity values on a much simpler process than that which Halley had adopted. This proposal afterwards became developed into what is known to actuaries as " De Moivre's Hypothesis " : consisting of the assumption that any specified number of persons born would be subsequently decreased from age to age, by some uniform number of deaths. From this it was evident that as the number of deaths was supposed to be invariable, so such number would annually be in greater proportion to the diminishing number of survivors, and thus consistently represent at successive ages, a yearly decrease in the probabilities of life.

In 1726 John Smart published the large edition of his well known *Interest Tables,* to which he appended a few remarks on Annuities upon Lives.

A small edition of Smart's Tables had been published as early as 1707. Herein he gave what may be termed a Hypothetical Table of Mortality for London—the first of its kind.

In 1727 Richard Hayes published *A New Method of Valuing Annuities on Lives.* It has been previously noted, that to him appears to be due the origination of the " whole-term " assurance principle. He puts for solution the case " To provide for a " family: A clergyman or layman, aged 47 years, holding a " benefice or place during life, and having a family, would " willingly make some certain provision for them; but finding " that his income will let him lay up about £46 a year, and that " upon no better security than his own uncertain life, therefore " chooses to sell the surplusage of his income—what is it worth?"

In 1730 there was published: The Gentleman's Steward and

Tenants of Manors Instructed, &c.   *The Tables for valuing Estates on Lives being founded on Dr. Halley's Hypothesis, and calculated by the method laid down by Mr. Abr. De Moivre to* 4, 5, 6, 7 *and* 8 *per-cent, &c.,* by John Richards.   This author, although no mathematician, had the acuteness to perceive that the true method of valuing Leases for Lives was really dependent upon specific calculation, and that the imaginary estimates currently adopted frequently proved entirely fallacious.   He accordingly gave, in popular form, a series of Tables, calculated upon the principles laid down by Halley and De Moivre, and which were of great practical utility.

Mr. Lawrence, Mr. Gael Morris, and Mr. Weyman Lee, all published works upon Leases and Annuities about the same period; and each (except the latter, who fell into a misapprehension of an untenable character) conferred benefit in promulgating correct views upon these questions.

In 1740 Mr. Thomas Simpson published *The Nature and Laws of Chance,* &c., &c., a work which was, to a very considerable extent, an abridgment of De Moivre's; and which, being published at a much smaller cost, obtained a considerable circulation.   And being thus known, he published in 1742 : *The Doctrine of Annuities and Reversions deduced from general and evident principles, with useful Tables, shewing the values of Single and Joint Lives,* &c.   He seems to have foreseen that the Doctrine of Life Contingencies was destined to be extensively employed at a future time, and that consequently more real utility would result from endeavouring to discover general demonstrations applicable to *all* Tables of Observations that might be produced from time to time, than from inventing particular hypotheses, which, however interpretative of contemporary data, might cease to be useful if new data should arise.   He expressed a view which, no doubt, had been generally felt and acted upon, namely, that Breslau, "a place where the generality of the people live to a " greater age than at London (as appears by comparing the Bills " of Mortality here with those observations) *can be no just* " measure of the probability of Life in this place" [London].   He accordingly prepared a *Mortality Table for London,* showing what he believed to be the true rate of mortality for this City, which differed from that produced by Smart in 1726.

Other works followed of a similar character, such as Hodgson's *Calculation of Annuities on Lives deduced from the London Bills of Mortality,* &c., and Corbyn Morris's *Essay towards Illustrating*

the Science of Assurance (1747*), and Short's New Observations,*
&c. (1750), and other editions of the works already noted; but
the main result desired had been accomplished.   Mortality Tables
had been constructed on English data, and the essential principles
of Life measurement were now generally understood in England.