

## Obituary.

DR. JOHANNES KARUP (*Corresponding Member*).

By Dr. Karl Samwer (Manager of the Gotha Life Assurance Co)

ON 17 March 1927 Johannes Karup died quite unexpectedly at Georgenthal in Thuringia, of heart failure during an attack of influenza. Born in Copenhagen on 9 May 1854, Dr. Karup was the youngest son of Professor W. Karup, who later held the agency of a French life assurance company in Dresden. Here the boy soon learnt German and from 1862-65 he passed through three forms of a preparatory school and all except the highest of the classical forms of the Krause Institute; but Latin and Greek did not satisfy him, and he left the Institute in 1869 and devoted himself, with his father's help, to his favourite subjects—mathematics, natural science and philosophy. At the same time Johannes aided his father in his business and literary work, and took such an interest in it that he decided to make his father's profession his own. After his father's death in 1870, as a boy of 16, he edited his father's paper, "Allgemeiner Deutscher Versicherungskorrespondent" alone. But he had soon to go back to Copenhagen with his mother, where Johannes Karup continued his favourite studies without any teacher and devoted himself especially to differential and integral calculus,

Assessor Meinung, then in the War Department, undertaking the supervision of his studies. In order to earn his livelihood Karup gave private lessons, till he accepted an uncle's invitation to visit him in England, where he hoped soon to pass the Institute examinations and to obtain work to his taste. Three years would have been necessary to reach his goal. His uncle could not supply the means for such a long period, nor could his nephew earn them, as no employment was to be found. He was received everywhere with kindness, but his quest was fruitless. Karup did not lose heart, however, and in November 1870 he wrote the eighth chapter of the third part of his father's uncompleted "Theoretical Handbook of Life Assurance" on "The Premium Reserve and other Funds of Life Assurance", which the manager of the Gotha Life Office, Gustav Hopf, praised for the enunciation of sound business principles. A series of essays followed in "Masius' Rundschau", and an article in the *Insurance Record* of 26 May 1871 on the exact valuation of life policies. Soon afterwards Hopf, who had appreciated the high character of Karup's father, offered his son—then 17 years of age—provisional employment in the Gotha Life Office with an annual salary of 300 Thaler (£45). Karup gladly accepted this post and entered into the Company's service on 1 September 1871. Hopf died on 6 October 1872 and, as the Gotha Life Office had no other mathematician, Karup became, at the age of 18, the real head of the actuarial department, filling this post with the greatest distinction under Hopf's successors. He had only one weakness: he was so scrupulous in his investigations, wishing to prove every result by inquiries in all directions, that he often hesitated for a very long time before concluding a task.

Karup worked about ten years at each of his two great books, "The Reform of the Basis of Calculation of the Gotha Life Office" (2 vols., Jena 1903) and "New Forms of Assurance of the Gotha Life Office" (completed 1914 with Albert Andrae). The Gotha government conferred upon him the title of "Professor" in 1891 and four years later the degree of Doctor *honoris causa* was granted by the Faculty of Arts of the University of Jena.

In addition Karup's publications included "Extracts from the Business and Mortality Statistics of the Gotha Life Office for the years 1829-78" (Weimar 1880). His investigations of the mortality of physicians, clergy and teachers, as well as of the causes of death amongst assured lives in the Gotha Life Office from the years 1829-78 were published, and were also reprinted in the work, "From the Practice of the Gotha Life Office" (Jena 1902).

In Karup's above mentioned work entitled "The Reform of the Basis of Calculation" (Jena 1903), the strong influence which Professor Dr. Florschütz, appointed in 1893 chief medical referee in the Gotha Life Office, exercised on his mind is apparent. He laid down new lines for the Gotha Life Office in the Select Mortality Table, which bears his name, as well as in the improvement of methods of distribution of surplus.

The work, brought to completion in 1914 with Andrae's help,

treats in particular of Insurance against Invalidity, Annuity Contracts, Capital Redemption Assurance and additional Benefit of Survivorship. In the Jubilee work, "One hundred years of the Gotha Life Office, 1827-1927", page 119, &c. (Gotha 1927), Andrae now publishes "The Gotha Fundamental Probability Tables for Insurance against Invalidity and for Life Annuities."

Of Karup's other writings, the report on "The Technical Foundations for the Staff Pension Institute of the Insurance Association (Assekuranzverein) of Austrian Sugar Factories in Prague" (1881), the book "The Reform of the Staff Pension Institute of the Assekuranzverein" and so on (Prague 1898) and the report on "The Financial Situation of the Gotha Society for Widows of Civil Servants on 31 December 1890" (Dresden 1893) deserve note. In them the actuary finds ample material and valuable suggestions for the valuation of pension funds.

Karup took a lively interest in the International Actuarial Congresses and acted as German Vice-President on the Executive Council of the Permanent Committee from the beginning of the Congresses till 1900. In 1898 he attended the Second Congress in London and was pleased to make the personal acquaintance of colleagues who were long known to him through their writings. His treatise "On a New Mechanical Method of Graduation" (Transactions of the Second International Actuarial Congress, London 1899, p. 31, &c.) was well received. He contributed to the Sixth Congress in Vienna in 1909 a paper on "The Probabilities of Invalidity as a function of the duration of occupation and of the years of service" (Reports, Memoirs and Proceedings of the Sixth International Congress of Actuaries, &c., Vienna 1909, vol. ii, p. 725, &c.).

Karup remained faithful to the Gotha Life Office. When he was 25 years old, the Concordia tempted him to leave, but Emminghaus, recognizing in him the head of his profession, persuaded him to remain. It is true, he considered him very young, but—as Emminghaus wrote at that time—"it is well known that almost all mathematicians attain fame if at all, in their youth."

The great confidence which the Company placed in Karup was well founded. By means of his rich gifts and enormous diligence, he created for it new foundations and increased its fame. In this great work he did not spare his health, naturally good, and later in life he suffered from nervous breakdown and fits of depression. He would hardly have recovered so often if his wife Karoline (née Hess) had not provided for him in his comfortable home the absolute rest which was so necessary for him. Karup possessed a healthy ambition. That the actuary in the Gotha Life Office had not the same standing as the medical referee, was owing to the fact that originally one of the highest officials, the famous cartographer, Adolf Stieler, and after him the manager, Gustav Hopf, did the actuarial work, so to speak, as an accessory function. When however Karup undertook the work as his main duty, the raising of his position to that of equality with that of the medical referee was inevitable and took place on 1 January 1904. He continued in

office for eleven years after that ; then he retired exhausted by his continuous work, but was always ready to give the Life Office his advice, whenever solicited. In Dr. Albert Andrae, a successor was found who had become familiar with his thoughts and working methods through many years of co-operation.

Karup left Gotha for Weimar in the autumn of 1916, because the air there was supposed to be better for his wife, who suffered from asthma. After her death he took up residence in the summer of 1920, in Georgenthal in the Thuringian Forest, seeking rest there for his overstrung nerves. Here he suffered with so many others connected with the Gotha Life Office from the consequences of the catastrophic depreciation of the mark ; but he lived to see better times which dawned with the end of the year 1923. The Jubilee work of the one hundredth anniversary of the Gotha Life Office produces a portrait of Dr. Johannes Karup taken in the summer of 1917 : in it is seen a man powerful and judicious in thought, to whom the science of assurance owes much.

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