peroxides lies in their ability to liberate alkyl rather than hydroxyl radicals.

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OBITUARIES

Prof. Harald Bohr

No doubt the reason why the death of Prof. Harald Bohr, of Copenhagen, was reported in English newspapers was that he was the brother of Niels Bohr, the famous atomic physicist. Actually he was a great man in his own right, one of the leading figures in the generation of mathematicians which also contained Hardy, Landau and Littlewood. His fame will rest chiefly on his invention of the theory of almost periodic functions. Incidentally, he was perhaps the only front-rank mathematician who was also an international footballer, as he had played football for Denmark.

Harald Bohr's early work was mainly on the theory of the Riemann zeta-function,

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s} = \sum_{n=1}^{\infty} \frac{1}{n^{\sigma+it}}.$$

The sort of problem which he considered was this. Suppose that we take a fixed value of σ, greater than 1, and consider the behaviour of the function as $t \to \infty$. The nth term of the series is periodic, with period $2\pi/\log n$, but the function as a whole is not periodic. Nevertheless, Bohr showed that it imitates to a certain extent the behaviour of a periodic function. It has oscillations which never die out as $t \to \infty$, and these oscillations are very large when σ is very near to 1. Thus $\zeta(s)$ is unbounded, as $t \to \infty$, in the neighbourhood of the line $\sigma = 1$. Bohr constructed many beautiful proofs of this and other theorems in the same order of ideas.

It was no doubt his work on the quasi-periodic properties of the Riemann zeta-function that led Bohr to the idea of an almost periodic function. The function $f(x) = \cos x$ is periodic, with the period 2π, that is, $f(x + 2\pi) = f(x)$ for all values of x; so is $f(x) = \cos\frac{1}{2}x + \cos\frac{1}{3}x$, its period being 12π. It is known from the theory of Fourier series that any periodic function can be expressed as a sum of such trigonometrical functions. But the sum of two periodic functions is not necessarily periodic, as is shown by the example $f(x) = \cos x + \cos(x\sqrt{2})$. The problem which Bohr set himself was to find a property analogous to periodicity which characterizes all such functions. His result is as follows. A number y is called a translation number of a function $f(x)$, belonging to a number ε, if $|f(x+y) - f(x)|$ never exceeds ε, for any x; and $f(x)$ is said to be almost periodic if the translation numbers corresponding to any ε, however small, are relatively dense, that is, if there exists a number l such that any interval of length l contains at least one such number. Bohr showed that any almost periodic function can, in some sense, be expressed as a trigonometrical series of the form $\Sigma A_n \exp i\Lambda_n x$. His theory thus amounts to a wide generalization of the theory of Fourier series.

E. C. Titchmarsh

Prof. G. T. R. Evans

Gwilym Thomas Richard Evans, professor of physics in the University of the Witwatersrand, Johannesburg, died on December 20, 1950, after a short illness. He was sixty years of age. He was a native of Cardiganshire, Wales, born at Talybont near Aberystwyth. He became a student of the University College of Wales, Aberystwyth, taking his B.Sc. degree with honours in physics in 1913. He was immediately appointed to the physics staff of that College. But for a break of several years spent at a munitions factory in South Wales during the First World War, he remained at Aberystwyth until 1920, when he left to take up an appointment in South Africa as lecturer in physics at what was then the Johannesburg University College. He soon became a senior lecturer in the newly constituted University of the Witwatersrand. He was appointed to the chair of physics in 1947 and became dean of the Faculty of Science in 1950. He was a Fellow of the Institute of Physics.

Prof. Evans carried out research on electrolytic conduction and on the preparation and coagulation of colloids both in Aberystwyth and in Johannesburg, and published several papers on these topics. He was an excellent teacher and administrator. During