the intrinsic probability is settled, the steady state of maximum probability can be found by the familiar methods.

We have seen that the Fermi principle can be used for electrons not attached to particular atoms, and Fermi in his original paper (l.c.) showed that it gave what is probably the true equation of state for a monatomic gas at low temperatures, while Einstein's application of Bose's statistics to gases led to curious results not confirmed by experiment.

DR. F. RASCHIG.

DR. FRIEDRICH RASCHIG, whose numerous scientific investigations in the domain of chemical technology covered a remarkably wide range and whose interests were not restricted to purely technical problems but were devoted to public welfare, passed away on Feb. 4 at the comparatively early age of sixty-four years.

We are indebted to the Chemiker-Zeitung for some points in Dr. Raschig's life. Born on June 8, 1863, at Brandenburg, Raschig's interest in scientific work was awakened while still at the Realgymnasium, where he came under the influence of Prof. Müller, director of the Zeitschrift für physikalischen und chemischen Unterricht. After studying at the Universities of Berlin and Heidelberg, he became assistant in the University chemical laboratories in Berlin and was afterwards appointed chemist to the Badische Anilin und Soda Fabrik. During this period many publications, dealing chiefly with compounds of nitrogen and sulphur, appeared under his name. In 1891 he started a factory for the manufacture of phenol, but soon afterwards he resumed his studies of the reactions involved in the lead-chamber process for the production of sulphuric The lengthy controversies aroused by this acid. work no doubt did much to stimulate further research in this important field. He also devoted much attention to the reactions of sulphurous anhydride and the sulphites.

Dr. Raschig discovered a technical method of preparing hydroxylamine, and his investigation of chloramine led to his well-known process for the manufacture of hydrazine, a compound of considerable interest, which had previously been discovered by Curtius, whose death occurred only a few days after that of Raschig. The latter also elaborated many useful volumetric methods of analysis and was an authority on the manufacture of synthetic phenol and the distillation of coal-tar. Dr. Raschig took an active part in municipal and political life, and in 1924 was elected a member of the Reichstag.

THE issue of the Physikalische Zeitschrift for Dec. 15 contains a photograph and a short account of the life and work of the late Prof. A. Gockel, of Freiberge, Switzerland. Gockel was born in November 1860 at Stockach in Baden, where his father was a secretary in the Post Office. After attending the Gymnasium at Constance he was in turn a

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It seems, therefore, that Bose's original application of his statistical principle to quanta is the only permissible one. Why quanta indistinguishable in every respect should be capable of coexisting when electrons are not is by no means obvious. Quanta seem to be much more indifferent to each other's existence than material particles, which perhaps has something to do with their own indifference to life, or rather their readiness to undergo metempsychosis.

Obituary.

student at the Universities of Freiburg in Baden, Würtzburg, Carlsruhe, and Heidelberg. He graduated in 1885 and held teaching posts in secondary schools for ten years. In 1895 he became assistant to Prof. Kowalsky at the University of Freiberge, Switzerland, and in 1901 was appointed lecturer, two years later extra professor, and in 1910 ordinary professor of cosmical physics. In 1921-22 he acted as Rector of the University. He died on Mar. 4 of last year. He married in 1902 the daughter of his colleague Baumhauer, professor of mineralogy. The whole of his scientific publications deal with atmospheric phenomena such as thunderstorms, radiation, and electromagnetic waves, and his work carried him to the shores of the Mediterranean and into the Sahara. His papers are characterised by the carefulness of their deductions.

WE regret to announce the following deaths:

Prof. W. Steadman Aldis, formerly professor of mathematics and principal of the College of Science, Newcastle-on-Tyne, and later of Auckland College, New Zealand, on Mar. 7, aged eighty-nine years. Mr. W. B. Croft, who taught mathematics at

Winchester College for many years, and was widely known for his interest in early work on radio-telegraphy and in optics, on Mar. 23, aged seventysix years.

Prof. W. W. H. Gee, formerly professor of pure and applied physics at the College of Technology, Manchester, and author of papers and text-books on physics and electro-chemistry, on Mar. 3, aged

br. F. S. Luther, emeritus president and formerly professor of mathematics of Trinity College, Con-

necticut, on Jan. 4, aged seventy-seven years. Mr. E. W. Maunder, for many years Superintendent of the Solar Department of the Royal Observatory, Greenwich, on Mar. 21, aged seventy-six years.

Dr. Richard Pribram, emeritus professor of chemistry in the University of Prague, whose work on the optical rotation of organic substances and on the relationship between physical properties and chemical constitution is well known, aged eighty years.

Prof. Herbert M. Richards, professor of botany in Barnard College, Columbia University, and scientific director of the New York Botanical Garden, on Jan. 9, aged fifty-six years.

Mr. A. Shoolbred, author of "The Flora of Chepstow" (1920), a well-known local botanist and horticulturist, on Jan. 25, aged seventy-five years.

Prof. Eilhard Wiedemann, well known for his writings on the history of physics and formerly professor at the University of Erlangen, at the age of seventy-six years.