

## Modern Physics—*Cont'd*

or are contrary to other experiments devised to check the theory.

The Third Period, 1800-1890, is characterized by the development of what is now called "classical physics." The experiments of Count Rumford (about 1798) led ultimately to our present kinetic theory of heat. The observations of Thomas Young (1802) and his proposal of the principle of interference (of two beams of light) resulted ultimately in the triumph of Huyghen's Wave Theory of Light over the corpuscular theory, as supported by Newton. And the researches of Faraday gave Maxwell the material for the crowning achievement of this period, namely, the electromagnetic theory.

So profound were there, and many other, developments, that, by 1880, not a few physicists of note believed that all the important laws of physics had been discovered and that, henceforth, research would be concerned with clearing up minor problems and, particularly, with improvements of methods of measurement so as "to investigate the next decimal place." They could not have foreseen that the world of physics was on the eve of a series of epoch-making discoveries, destined, on the one hand, to stimulate research as never before and, on the other, to usher in an era of the application of physics to industry on a scale previously unknown.

The Fourth Period dates quite definitely from the discovery of the photoelectric effect, in 1887. In rapid succession, followed the discovery of X-rays, in 1895; of radioactivity, in 1896; of the electron, in 1897; and the beginning of the quantum theory, in 1900.

So varied and extensive have been the developments in both pure and applied physics from that time to the present that it is difficult to characterize this period by a single appellation. Hence, perhaps one may use the pleonasm "modern physics." Only the historian of a century hence can properly evaluate the growth of physics during the first part of the twentieth century. We, of the present, are too close to it to grasp its full significance.

*Science News-Letter, February 9, 1929*

Five cities in the United States are officially credited with more than a million population: New York, Chicago, Philadelphia, Detroit and Cleveland.

## Life Not Limited

*Medicine*

DR. EUGENE LYMAN FISK, at the meeting of the American Association for the Advancement of Science:

"I believe I am safe in saying that the average point of view, especially among medical men, is contrary to the thesis of this paper. Even among those who admit offhand that the life cycles of living organisms are not fixed, there is a subconscious conviction that in a practical sense this is so and that it is more or less futile to attempt to interfere with the course of nature or the plans of the deity, depending on the religious or philosophical views of the individual. . . .

"Inasmuch as the body is not an inanimate machine but a physiological mechanism covering waste, maintenance and repair, the fixation of a limit to its existence by other than natural causes more or less under scientific control implies supernatural agencies acting in an arbitrary way.

"Has it been decreed somewhere, somehow, by somebody that the tissues of the human body, or of any other living organism, shall become lifeless within a certain length of time? With those who hold such a view purely as a matter of religious conviction I have no quarrel, but as a scientific proposition it is untenable.

"At once we see the implied and essential fundamentalism of such a view which actually is quite as crude in its aspect as the concept that all existing organisms are descended from those that came out of the Ark. Whether we use the term 'nature' or 'creator,' there is involved in such a concept the inevitable thesis that life cycles of living organisms have been fixed by edict and not through evolution or reaction to conditions in the universe. . . .

"I am able to say, from a fairly broad experience in this field, that one of the greatest obstacles to prolonging human life lies in the acceptance, at least tacitly and subconsciously, of the thesis that such effort is more or less futile, that the years of man are three-score-and-ten, and that it is more important for him to study ways and means of having a good time during that period than in attempting the impossible in endeavoring to work against nature—whatever that may mean—in attempting any emphatic prolongation of the human life cycle."

*Science News-Letter, February 9, 1929*

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