

New Language Needed for Electricity

Physics—Electricity

Engineer Predicts Surpassing Einstein's "Ultimate"

TELLING "what electricity is not," and claiming that a new language is needed to tell what electricity is, Prof. Vladimir Karapetoff, one of America's foremost electrical engineers, predicted the further division of the electron and the finding of a wave motion with a velocity greater than that of light. He addressed the New York Electrical Society and the local section of the American Institute of Electrical Engineers.

Recent experiments are disturbing the apparently "ultimate" velocity of 186,000 miles per second of Einstein, declared the Cornell University professor and consulting engineer. According to theories of the proponent of relativity, material particles cannot move at a velocity greater than that of light, which travels at the rate of approximately 186,000 miles a second.

But Prof. Karapetoff said that some recently observed phenomena make it necessary to assume that electrons and positive carriers of electricity partake both of the nature of matter and of waves, and that the phase of these waves is propagated at a velocity greater than that of light.

"The comforting statement that these waves are not material, and therefore not hindered by material things in their enormous velocities," Prof. Karapetoff explained, "only brings us to the deeply philosophical problem of how these immaterial waves can manifest themselves by affecting the behavior of material particles."

Destruction of the popular conception of matter is found in Prof. Karapetoff's assertion that in all probability the infinitesimal and theoretical electron, hundreds of millions of which would not fill a space the size of an ordinary pin head, is still further divisible.

"We have been accustomed to call the electron the smallest particle of all matter and to say it was indivisible," he explained, "as we did with the

atom until that was divided into electrons. Yet we endow the electron with physical properties . . . such as radius, mass, axis of spin, electric and magnetic fields, accompanying waves, etc.; and as soon as we do this, allowing it some structure, this structure must be divisible, and those parts must have their structure, ad infinitum.

"So the explanation of the electron shifts the difficulty one step further along an infinite ladder, and seems to accentuate the inevitable necessity for a so far inconceivable mode of expression." This future language, it was pointed out, must transcend present limited modes of expression—mathematics, speech or pictures—by means of which scientists are attempting in vain to present a concept of

physical forces mechanically or by analogy.

"Only some super-human being could speak this unknown language at present," said Prof. Karapetoff; "and were he able to attempt an explanation of electricity we could not understand him.

"Electricity is analogous to nothing else in the world that we know anything about," he went on. "According to our present idea, it is really comprised of three apparent independent entities—negatively charged particles, or electrons; positively charged particles such as alpha rays, protons, clusters, etc.; and various types of electro-magnetic radiations, as gamma rays, X-rays, and cosmic rays.

"From some recent experiments we have been led to the belief that under certain conditions the particles behave somewhat like electro-magnetic pulses; and conversely, there is some evidence to indicate that electro-magnetic radiations may display properties of the discrete particles.

"In other words, all three manifestations of electricity seem to be endowed simultaneously with inertia and charge, to be found in material objects, and with some wave properties such as frequency and wave length, as ascribed to ethereal or non-material oscillations. So electricity becomes neither flesh, fowl, nor good red herring, but something entirely apart. It is for this reason that a new terminology is needed."

Calling attention to the fact that during the last 2,000 years man has become more and more proficient in pointing out what matter is not and what the mind cannot comprehend, Prof. Karapetoff said that the knowledge of what electricity is not, overwhelmingly exceeds any inkling man may have of what it is.

During a ten minute intermission, the scientist, who is also a talented musician, gave a brief piano recital.

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