PHYSICS

Experiments With Sound In Gases Brings $1000 Prize

Professor Knudsen Finds New Technique For Molecular Physics in Absorption of Atmosphere

SPECTACULAR experiments with sound in gases, that promise to affect design of auditorium and sound signalling as well as to aid study of the antics of molecules, won for Prof. Vern O. Knudsen of the University of California at Los Angeles the $1000 prize of the meeting of the American Association for the Advancement of Science at Pittsburgh.

Some of the practical results of Prof. Knudsen's research are:

If we lived in an atmosphere of oxygen the consonants of high frequency in our speech sounds could scarcely be heard across an ordinary street.

The absorption of such high frequency sounds in a room is more influenced by the humidity and temperature of the air than it is by the walls, draperies, the audience and other sound absorbing things in the room.

It will be possible to calculate the acoustic transparency of the air at any temperature and humidity.

Sound signalling in air will be aided by the new information.

Ally of Quantum Theory

Less vivid but even more important is the aid that Prof. Knudsen's work will be to molecular physics. It furnishes a new technique for investigating not only the nature of molecular collisions but also the nature of molecular forces involved. Prof. Knudsen said:

"Acoustics has become a potent ally of the quantum theory."

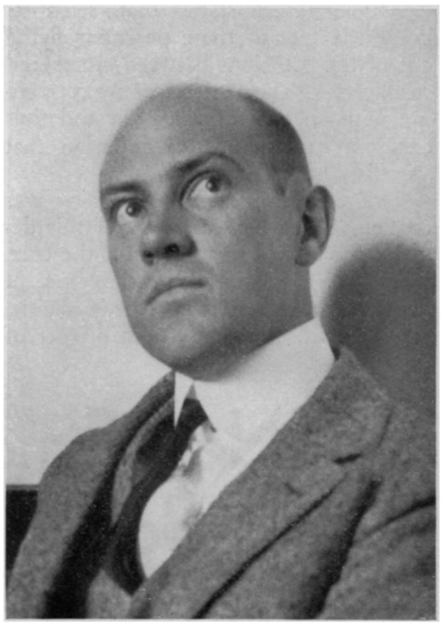
Scientists have a new mode of attack on the age-old mystery of molecular composition and the behavior of objects too small to be seen individually.

The prize researches have been in progress for a number of years (*SNL, May* 13, 1933, *p.* 291).

Prof. Knudsen's research may give an impetus to the new art of air-conditioning in public buildings, because in a symphony concert when the humidity is about medium, the message of the piccolo for instance gets lost before it gets to the rear of the hall.

As president of the Acoustical Society of America, Prof. Knudsen presided over the recent meetings of those scientists who study sound and his prize paper was on a joint program of that society and the American Physical Society.

Science News Letter, January 5, 1935



DR. VERN O. KNUDSEN

PHYSICS

Millikan Frames Platform On Cosmic Ray Truths

DR. Robert A. Millikan, of California Institute of Technology, told teachers at the American Association for the Advancement of Science at Pittsburgh just what can be believed about cosmic rays, which he called "the energy-bullets" with which the superbandits of the universe are shooting up our earth."

He made it clear that he had abandoned an earlier belief that all of the cosmic rays are "birth cries" or signals of atom-building or matter creation in the far depths of the universe. Scientists as yet can not suggest how the higher energy cosmic rays are created.

For the benefit of teachers who should "instruct and develop rather than to excite or mislead their pupils" Dr. Millikan wrote a platform for the cosmic ray "party."

You may believe about cosmic rays:

Article one states that the penetrating power of cosmic rays coming in to earth from beyond the Milky Way is six to a hundred times that of the gamma rays of radium so useful in cancer treatment and industry.

Article two states that the cosmic rays come from beyond the Milky Way, the part of the universe in which we live. Dr. Millikan ridiculed the idea that they originate in the stratosphere "which has apparently become to the public a solvent of all riddles, a kind of cosmic Houdini in the performance of the miraculous."

Article three states that the energies of cosmic ray charged particles rise to the very large energies of at least six billion and probably more than ten billion electron volts, which is "one of the most amazing facts of modern physics." This is some four thousand times the energy of the most powerful radiation from radium here on earth.

Article four says we can speculate on how the cosmic rays are formed in the depths of space but that we should as yet believe nothing.

Article five says that at present believe nothing about just what is the composition of the cosmic ray bullets. All scientists admit that at least part of the bullets are electrically charged particles. The big question is whether there are also in the incoming rays some photons or gobs of superlight.

Article six states that both the long known negative electrons and the newly discovered positive electrons, named positrons, are shot off when the heart of an atom is hit by the great energy of cosmic rays. (*Turn to Next Page*)