

PHYSICS

Strange Light Emitted By Over-Speed Electrons

Peculiar Phenomenon of Electrons Moving Faster Than Light Seems To Controvert Einstein Theory But Doesn't

A STRANGE glowing light can be caused by swift-moving electrons shot into a pure liquid. This light can only be accounted for if it is assumed that the moving atomic "bullets" are traveling faster than could light rays in the same medium.

This strange happening, which might seem at first glance to controvert Einstein's theory of relativity but does not, is reported by the Russian scientist P. A. Cerenkov (*The Physical Review*, Aug. 15).

In a rough way the new phenomena are similar to the creation of sound waves by a bullet. Almost everyone knows that the "zip" of a bullet comes along after the bullet has passed; that is, the speed of the bullet is greater than the speed of the sound waves which it creates.

Not Sound

In the Russian experiments, just reported, the "zip" of the electron bullets is not sound but light; very faint but real.

The atomic electron bullets used in

the experiments were obtained either from disintegrating radium as the so-called beta rays, or as the Compton recoil electrons created when gamma radiation impacted the pure liquids under study. Both kinds of electron bullets produced the light.

Strange Distribution

Queerest characteristic of the new kind of light is its distribution in space. It does not come out, from the liquid being studied, equally in all directions. Rather it tends to issue forward along the line in which the electrons are traveling. In the photographic records obtained of the light, it appears as something like a headlight beam coming out from the swift-moving, but invisible, electron beam.

A basic postulate of Einstein's theory of relativity is that in a vacuum the speed of light would be constant and the "fastest" thing in the universe. In liquids and other mediums of light propagation, however, the speed of light, as is well known, is less than the ideal postulate of Einstein. Thus it is

strange, but not necessarily unreasonable that the only explanation of the new found light which completely explains the phenomenon, consists of assuming that the electrons race through the pure liquids faster than could light rays.

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METEOROLOGY

Anakatabats—Know 'Em? They're Always in the Air

ANAKATABATS—are you acquainted with them? There's likely to be one in the air in your vicinity right now. So without much question you know anakatabats in a general sort of way at least, though probably not by that name.

Anakatabat is a newish word, not used much yet even in the profession for which it was invented, which is meteorology, the weather man's "ology." But because it rather neatly expresses a scientific idea and a material reality, anakatabat is likely to become more familiar in time—perhaps even to become street English.

Good Greek

Despite its Eskimoid appearance and sound, anakatabat is good Greek—indeed, very simple Greek. Put into equivalent simple English, it is "up-down-go."

The idea of an anakatabat is built on the ancient truism that what goes up must come down, or at any rate that if something goes up its equivalent must come down. We see this simply exemplified in the ordinary passenger elevator, where the weight of the cage is offset by the heavy counterweights that slide down the sides of the shaft when the cage goes up, and up when the cage comes down.

The same kind of thing happens in the air. When a strong current of air rises very fast, as it does when thunderhead clouds are piling up on the horizon, somewhere else an equivalent vertical wind is blowing the same amount of air downward, thus preserving atmospheric equilibrium. Such an up-down-going of air constitutes an anakatabat. Very simple, isn't it?

An anakatabat can be very dangerous to aircraft. Planes avoid them. They have wrecked three fine airships for the U. S. Navy: Shenandoah, Akron, Macon. When you're up among the clouds, it's decidedly not a good thing to meet an anakatabat.

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ANAKATABATS AT WORK HERE