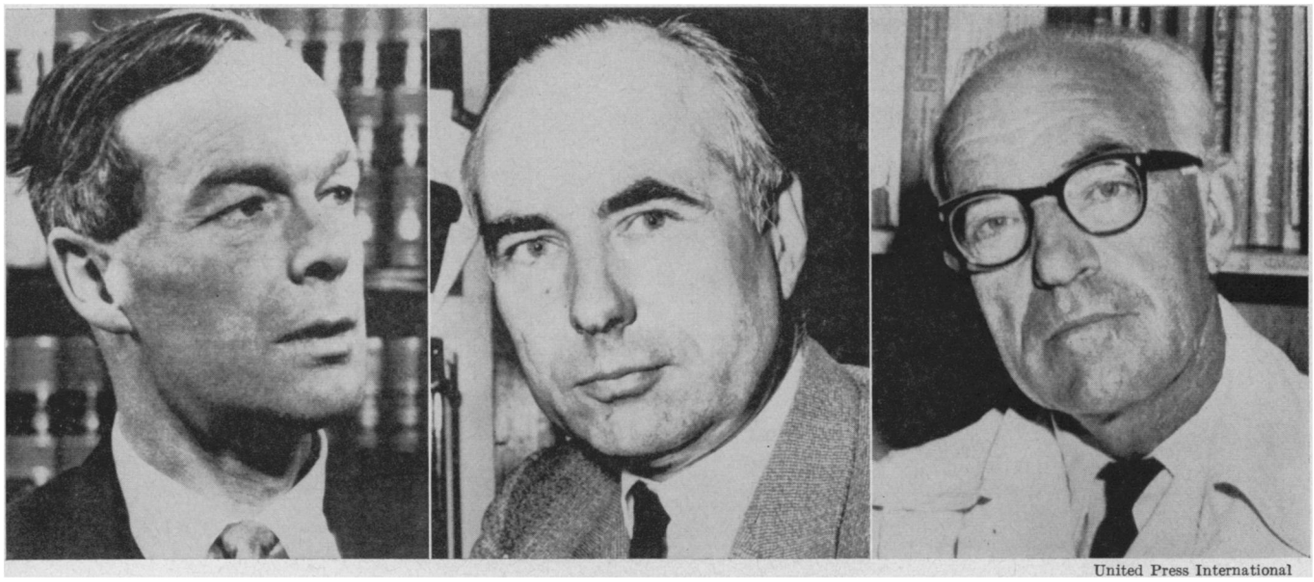

United Press International

DR. ALAN LLOYD HODGKIN *DR. ANDREW FIELDING HUXLEY* *SIR JOHN CAREW ECCLES*

MEDICINE

Nobel Medical Awards

The 1963 Nobel Prize in Medicine was awarded to two British researchers and an Australian scientist for their discoveries on how nerve cells operate.

➤SIR JOHN CAREW ECCLES of Canberra, Australia, and two Cambridge University English researchers, Drs. Alan Lloyd Hodgkin and Andrew Fielding Huxley, won the 1963 Nobel Prize in Medicine for their studies on how nerve cells operate. Dr. Huxley is half-brother of the writer, Aldous Huxley.

The work of Dr. Hodgkin, 49, and Dr. Huxley, 45, concerned the physical and chemical nature of nerve impulses.

Normal nerve fibers operate somewhat like the transmission system in an automobile and can run down like a tired battery. They are kept going by a built-in recharger, an "ionic" pump that starts a tired nerve fiber on its way to recovery.

The huge nerve fibers of squid, a ten-armed relative of the octopus, have furnished material for most of the research. In poisoned or fatigued isolated squid nerve, the needed recharge comes in the form of energy-rich, phosphate chemicals—arginine phosphate and ATP, adenosine triphosphate.

The 45-member committee announcing the award in Stockholm said Dr. Eccles was cited for his research on the fundamental transmission of nerve impulses. It said he had solved what has long been one of the main riddles in the physiology of the central nervous system. This was done by establishing a connection between inhibition of nerve cells and the repolarization of the cell's membrane.

Dr. Eccles, 60, is professor of physiology at Australian National University. In his book, "The Physiology of Nerve Cells," published by The Johns Hopkins Press, Dr. Eccles said:

"It is not unreasonable to maintain that nerve cells are more interesting and important than any other cells, being, as they are, the unitary constituents of the nervous system and the functional units responsible for all its multifarious activities including the amazing performance of the human brain; yet until recently the nerve cell in itself has been understood too little to warrant a monograph."

•Science News Letter, 84:259 Oct. 26, 1963

PHYSICS

Entirely New Kind of Nuclear Particle Found

➤ A WHOLLY NEW KIND of nuclear particle has been discovered by scientists working with one of the world's largest atom smashers at CERN, the European center for nuclear research near Geneva.

The particle is called a "W" particle because it is found only in weak interactions, which are one of the four fundamental forces of nature. The others are gravity, magnetism and the strong interaction of nuclear particles exemplified by the pi meson, also known as the "nuclear glue."

The "W" particle is not one of the so-called strange particles that have been found to be inhabitants of the nucleus when it is shattered by bombardment with bits of atoms. These nuclear particles play some role in holding the nucleus together and are, therefore, strongly interacting.

Scientists at CERN and at Brookhaven National Laboratory, Upton, N. Y., have been in a campaign to detect the "W" particle, which cannot be seen itself but must be found through statistical analysis of its decay products, one combination of which is a mu meson and a neutrino.

Nuclear physicists have for some time believed that such a particle should exist, but since its lifetime is less than one-tenth of a millionth of a millionth of a second, detecting it required special techniques as well as a powerful beam of protons.

The protons were accelerated to energies of 24.8 billion electron volts, then quickly diverted from the machine's "race track" and fired at a metal target. The nuclear fragments from this target were funneled by a magnetic horn through 82 feet of air, allowing time for them to decay into neutrinos and other particles.

An 82-foot steel wall then stopped all particles but neutrinos, which are so elusive they can pass through the entire earth without reacting. The neutrino beam next passed through a series of detectors, in which a sufficient number of them smacked directly into nuclei so that the decay products could be detected and analyzed.

The detectors included, in order, a bubble chamber containing one ton of liquid freon, another shield, a spark chamber weighing 18 tons, a magnetic analyzer and another, 30-ton spark chamber.

Detection of the "W" particle was based on statistical analysis of the tracks of nuclear fragments photographed mostly in spark chambers. The known probability of known events was compared to the actual occurrences. The extra events were attributed to the "W" particle.

The mass of the "W" particle is believed to be about one and a half times that of the proton.

The experiments also confirmed the discovery last year at Brookhaven that there are two kinds of neutrinos, one resulting from the decay of pi mesons and the other from the spontaneous disintegration of radioactive atoms.

•Science News Letter, 84:259 Oct. 26, 1963

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *The Science News-Letter.* www.jstor.org