

3rd 6-Weeks
2010-2011

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Physics Honors

Period 7

Nobel Prize Winner

Gabriel Lippmann 1908

Gabriel Lippmann was a while known Nobel Prize winner. He is a multi-talented researcher. Gabriel is also while known for his contributions to optics and electricity. He made a textbook on thermodynamics "the physics of heat in relation to other energy forms" this was the standard reference in France. Lippmann invented many things like the capillary electrometer, that measured small differences in voltage and which is used in early electrocardiographs. Lippmann also invented the coelostat, which is a new astronomical tool that compensated for the earth's rotation and allowed a region of the sky to be photographed without apparent movement. He did lots of research in piezoelectricity and seismology furthered developments.

Gabriel Lippmann was born August 16, 1845 in Hollerich, Luxembourg of French parents. As a young child Gabriel moved to Paris. While living in Paris he received his education at home before many of children of his age. Gabriel entered the Lycée Napole in 1858. Many years later he was admitted to the Ecole Normale. The career that Gabriel wanted in school was not successful at first. He only concentrated only on the work

which interested him and neglected that which did not appeal to his taste. Lippmann failed the examination which would have made him a teacher. Gabriel was appointed to a Government scientific mission visiting Germany to study methods for teaching science in 1873. While he was there he worked with Kühne and Kirchhoff in Heidelberg and with Helmholtz in Berlin.

Gabriel joined the Faculty of Science in Paris in 1878. Several years later in 1883 he was appointed Professor of Mathematical Physics and three years later Gabriel became Professor of Experimental Physics. Lippmann made many different branches of physics like especially electricity, thermodynamics, optics and photochemistry. Gabriel worked hard to work in his important studies of piezoelectricity and of induction in resistance less, or superconductive, circuits

While Gabriel was in Heidelberg he studied the relationship between electrical and capillary phenomena. With all of his work he was led to the development, amongst other instruments, of his extraordinarily sensitive capillary electrometer. In 1886 Lippmann became a member of the Academy of Sciences. In 1912 Gabriel served as the Academy of Sciences President. In 1886 Lippmann had the general theory of his process for the photographic reproduction of color. All in all the practical execution presented great difficulties. 1891 Gabriel was able to communicate the process to the Academy of Sciences, although the photographs were defective due to the varying sensitivity of the photographic film.

Lippmann revealed a revolutionary color-photography process in 1891. Then later they called the Lippmann process. The Lippmann process utilized the natural colors

of light wavelengths instead of using dyes and pigments. Gabriel placed a reflecting coat of mercury behind the emulsion of a panchromatic plate. From mercury during the project, he notices how the mercury reflected light rays back through the emulsion to interfere with the incident rays. From all of the activities is started forming a latent image that varied in depth according to each ray's color. Looking at the development process then reproduced this image. As the result, while he was watching the process, there was brilliantly accurate. From this direct method of color photography was slow and tedious. This is because of necessarily long exposure times. Also there was no copies of the original could be made. This was good in many ways. This whole creation, it never achieved popularity. All together this was an important step in the development of color photography.

In 1893, he was able to present to the Academy photographs taken by A. and L. Lumière in which the colors were produced with perfect ortho-chromatism. He published the complete theory in 1894. In 1888 Lippmann got married to the daughter of the writer V. Cherbuliez, member of the French Academy. In 1895, Lippmann evolved a method of eliminating the personal equation in measurements of time, using photographic registration, and he studied the eradication of irregularities of pendulum clocks, devising a method of comparing the times of oscillation of two pendulums of nearly equal period. He contributed to astronomy with his invention of the coelostat, a device which immobilizes the image of a star and its surrounding stars so that a photograph may be taken.

He was also responsible for many more ingenious devices and improvements to standard instruments to the benefit of many branches of physics. His work is mainly recorded in communications to the Paris Academy of Sciences. The Paris Academy is where his papers are while noted for their conciseness and originality. Gabriel did great work for people to come and visit to see what all he has done.

Gabriel Lippmann great method of reproducing colors in photography, based on the interference phenomenon, gained him the Nobel Prize for Physics on December 14, 1908. After receiving the award years past and Lippmann was still made several important contributions to many branches of physics. Professor Lippmann became a member of the Academy of Sciences in 1886 and served as its President in 1912. He was a member of the Board of the Bureau des Longitudes and a Foreign Member of the Royal Society of London. During this return from a Journey to North America as a member of a mission headed by Marshal Fayolle, he died July 13, 1921.

Work Cited

"Gabriel Lippmann - Biography." *Nobelprize.org*. Web. 25 Jan. 2011.
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