CHEMISTRY

Nobel Prize in Chemistry Is Awarded Dr. Langmuir

Gas Filled Lamps, "tron" Tubes and Atomic Welding Are Merely By-Products of His Experiments in Pure Science

See Front Cover

THE AWARD of the 1932 Nobel prize in chemistry to Dr. Irving Langmuir, the General Electric Research Laboratory chemist, adds laurels to a system of investigation of nature's secrets as it recognizes a great scientist.

Langmuir has never been a mere inventor or applier of knowledge to pressing technical problems. He is a searcher after scientific truth. His fruitful technical developments, such as the gas-filled lamp, the "tron" tribe of vacuum tubes, and atomic hydrogen welding have been by-products of his "pure science" experiments. He aimed at understanding the stuff that matter is made of. One practical result alone, gas-filled incandescent lamps, is estimated to save America a million dollars a night on its light bill of over a billion dollars a year.

This tackling of fundamental problems in science and letting the results fall where they may is a notable and effective method of research that finds particular expression in great American industrial research laboratories. To Dr. Willis R. Whitney, who retired as director of the General Electric Research Laboratory a few days since and who picked Dr. Langmuir for his staff over twenty years ago, to Dr. W. D. Coolidge, a great physicist whose name is familiar on X-ray tubes and who is now director of the G. E. Laboratories, the award to Dr. Langmuir will give nearly as much satisfaction as though they had received it themselves.

Both Chemistry and Physics

If the Nobel prize award to Dr. Langmuir had been in physics instead of chemistry it would have occasioned little surprise, for although he is a chemist by terminology his work is in that borderland that is both physics and chemistry.

All of his achievements have resulted from his study of the fundamental nature of electricity, of atomic hydrogen, and of atomic structure.

Those more efficient electric lamps filled with nitrogen and argon gas instead of vacuum that we all use every day came nearly as a direct result of Langmuir's experiments made for the purpose of studying atomic hydrogen. It was for that reason that he first heated tungsten filaments in the gases at atmospheric pressure.

Atomic hydrogen welding, which produces the hottest industrial temperatures, came as the harvest of fifteen years of theoretical research on the dissociation of the hydrogen molecule.

Most Perfect Vacuum Pump

The electron tubes fathered by Dr. Langmuir and known by the names of pliotron, kenotron, magnetron, thyratron, dynatron, etc., were greatly aided by his development of the most perfect vacuum pump in existence. In the front cover illustration Dr. Langmuir is holding an historical experimental electron tube used in 1914 for radio telephone conversations between Schenectady, N. Y., and Pittsfield, Mass.

No book on physics or physical chemistry is complete without reference to Dr. Langmuir's work on atom structure, the adsorption of gases, the orientation of molecules, valence and isomorphism.

Since Dr. Langmuir is only 51 years old his pure science achievements will multiply. New industrial achievements will also continue to result from his older industrially unoriented experiments.

Dr. Langmuir is the seventh American scientist to be honored with a Nobel prize. Only one other American, the late Prof. T. W. Richards of Harvard, has been awarded the chemistry (1914) laureate.

The late Prof. A. A. Michelson, University of Chicago physicist, was the first American recipient of a Nobel award in science, when in 1907 he was honored for his work. The other American Nobelists, all living, are: Dr. Alexis Carrel of the Rockefeller Institute for Medical Research, medicine, 1912; Dr. R. A. Millikan, of the California Institute of Technology, physics, 1923; Dr. Arthur H. Compton of the University of Chicago, physics, 1927; Dr. Karl Landsteiner of the Rockefeller Institute for Medical Research, medicine, 1930.

Science News Letter, November 19, 1932

CHEMISTRY

New Laureate Explains His Present Work

By DR. IRVING LANGMUIR, winner of the Nobel prize in chemistry for 1932, in a special statement to Science Service.

EVERY scientific research man, to reach the greatest achievement, must have a deep curiosity and an intense enthusiasm for discovering new important facts or new relations between known phenomena. During the course of his work he derives great pleasure from the progress he makes in these directions. His greatest satisfaction, however, is to see that his results are willingly used by others and is derived particularly from the recognition that his work receives from his fellow investigators.

My own work has been in the field of both chemistry and physics. I have been especially interested in the mechanism of chemical reactions which take place on solid surfaces.

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GENERAL SCIENCE

Award Should Stimulate Industry to Foster Science

By DR. W. D. COOLIDGE, director of the General Electric Research Laboratory, in a special statement to Science Service.

THE FOUNDERS of the research laboratory of the General Electric Company had seen a new industry grow up around the fundamental scientific work of Faraday and others, and, men of vision that they were, they saw that they should not be content merely to apply the principles discovered by others, but should themselves support such fundamental research and so aid in the discovery of new principles for the further development of the art.

This led to the establishment by Dr. W. R. Whitney of a new type of industrial research laboratory, devoted largely to fundamental research. From the beginning Dr. Whitney insisted that each research worker should be free to publish his results in (*Turn to Page* 331)

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his own name so that each would be assured of such scientific recognition as his work merited.

The Nobel Prize award in chemistry to Dr. Irving Langmuir proves that important fundamental research can thrive in an industrial laboratory and that it is possible for a man connected with such a laboratory to receive the highest public recognition.

The scientific world is familiar with the many important contributions to science that Langmuir has made, and the general public, knowing of the major applications of the results of his researches, has clear evidence that fundamental research may be made to pay.

But only those in our laboratory can properly appreciate the value of another phase of Dr. Langmuir's work. While through his own researches he has been making large contributions to the growth of fundamental knowledge, he has been constantly helpful to others, not only in our own organization but also outside of it.

While most of his own efforts have been directed to fundamental research in physics and chemistry he has always been interested in the application of scientific knowledge to human needs, and the same brilliancy in analysis, in reasoning, and in scientific imagination which has enabled him to achieve so much in basic research, has always been applied generously and helpfully to the multifarious practical problems of his associates in the laboratory.

Langmuir's work shows that a man can serve science greatly and at the same time serve industry both by broadening the basis on which that industry rests and by the application of fundamental scientific methods to practical problems.

The Nobel award to Langmuir should be helpful to both science and industry. It should stimulate industry to seek for scientific workers of the highest ability and to support their efforts, and it should reassure scientists that by accepting such support they are not precluding themselves from that recognition they most value, the recognition of merit in their work by fellow scientists.

Science News Letter, November 19, 1932

A white leghorn pullet, owned in New York State, has laid 355 eggs weighing 27½ ounces to the dozen, thus breaking the world's record for egg weight and coming within two eggs of tying the record for the number of eggs.