

GENERAL SCIENCE

# Nobel Prizes Are Awarded In Physics, Chemistry, Medicine

One American, Dr. C. J. Davisson, Among Those Who Are Honored; Others Are English, Swiss, Hungarian

See Front Cover

A DECADE ago two physicists, one an American, Dr. C. J. Davisson of Bell Telephone Laboratories, the other Prof. G. P. Thomson of Imperial College, London, discovered that electrons, the basic and smallest particles of matter, act like waves of light or X-rays.

They showed that crystals scatter them. They confirmed experimentally the theory of wave mechanics that won for Prince Louis Victor de Broglie the Nobel laureate in physics in 1929.

This year's Nobel prize in physics is shared by Davisson and Thomson, a world acclaimed honor worth to each of them about \$20,000 in cash and much more in prestige.

Today this diffraction of electrons is being put to practical use. As a tool of science it compares, in its field, with X-ray analysis. X-ray diffractions by crystals are powerful tools to probe the depths of metals and other crystals. The special merit of electron diffraction is the analysis of the surface of crystals and the structure of very thin films of materials. X-rays are useless for such surface and thin film studies. They are so piercing that they go right through the sample without disclosing sought-for information. Electrons—far less piercing—are stopped, scattered and reflected by crystal surfaces and thin films and thus are vitally useful for this type of research.

Only a few weeks ago it was suggested that the methods of electron diffraction might well be used as a potent tool for biological research in studying the very thin films which separate cells of the animal and human body.

Quite independently the two new Nobelists made the same discovery in 1927. Dr. Davisson, who worked jointly with Dr. L. H. Germer, found high speed electrons were scattered by a crystal of nickel. Prof. Thomson, then at the University of Aberdeen, shot low-speed electrons through a screen composed of a film of pure gold, far thinner than the sheerest gold leaf. Drs. Davisson and Germer published first. Drs. Davisson and Germer are shown on the front cover.

Prof. Thomson is son of Sir J. J. Thomson, famous dean of British physicists who in 1906 won the Nobel prize in physics, and who in 1897, just 30 years before his son showed the electron was wave-like, discovered the electron itself, one of the greatest discoveries of all time.

Prof. Thomson was only 35 years old and Dr. Davisson was 46 when they made their discoveries in 1927.

Interviewed over long-distance telephone, Dr. Davisson with scientific caution said that he really should "wait until official notification" before commenting on his honor. He hoped the press would make mention of Dr. Germer's participation in the discovery. And he emphasized the practical application today of what a decade ago was just the demonstration of an interesting phenomenon.

*Science News Letter, November 20, 1937*

CHEMISTRY

## Chemistry Award Goes To Karrer and Haworth

THE 1937 Nobel award in chemistry is shared by Prof. Paul Karrer of the University of Zurich, Switzerland, and Prof. W. N. Haworth of Birmingham University in England.

Prof. Karrer worked out the chemical formula for vitamin A, the growth vitamin found in cod liver oil, butter, carrots and other yellow-colored foods. This vitamin, Prof. Karrer subsequently discovered, is closely related to ionone, the basic material of all violet perfumes. Turning his attention to the next vitamin in the alphabet, Prof. Karrer worked out the formula for vitamin B<sub>2</sub>, sometimes called the appetite vitamin because of its appetite-stimulating quality. Under Prof. Karrer's direction a pharmaceutical supply house was able to make synthetic vitamin B<sub>2</sub>. American physicians had a chance to see the sixty grains of brownish crystals which then constituted the entire world's supply of this synthetic vitamin at the 1935 meeting of the American Medical Association.

Research on vitamin C, the scurvy-



PROF. PAUL KARRER

One of those honored with Nobel Prize in Chemistry.

preventive, and on the class of chemicals known as carbohydrates, which comprise sugars and starches, was the basis for Prof. Haworth's sharing the Nobel Prize award. A chain of glucose units, arranged as rings, he discovered, make up the cellulose molecule. Cellulose is the principal constituent of wood, cotton, flax and other textiles.

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MEDICINE

## Medical Nobelist Found Anti-Diabetes Chemical

THE 1937 Nobel prize in physiology and medicine award to Prof. Albert Szent-Gyorgyi, noted biochemist of Francis Joseph University, Szeged, Hungary, will undoubtedly win wide approval in scientific circles because he had been at the forefront of research upon the chemical constitution of the vitamins and other organic chemicals concerned in health and disease.

The award was made "for his discovery of the biological processes of oxidation with special regard to vitamin C and the fumaric acid catalyses."

He was the first to obtain vitamin C or ascorbic acid, as it is known chemically, in crystalline form. Vitamin C is the preventive of scurvy. Only this year he reported the discovery of a new vitamin, christened with the letter P, which is closely related to vitamin C and, like it, is found in lemons and paprika.

A new way of treating diabetes may result from another of Prof. Szent-Gy-

oergyi's researches announced only four months ago. This may allow treatment of the disease by mouth instead of by injection. He found that a long known drug, succinic acid, has the power to combat the acidosis condition which is the dangerous end result of diabetes. The new drug promises to aid diabetics

who do not respond completely to the now standard insulin treatment.

Fumaric acid mentioned in the official citation for the Nobel award is used in making the succinic acid.

The award to Prof. Szent-Gyorgyi is a cash prize of some \$40,000, which will be presented in December.

*Science News Letter, November 20, 1937*

MEDICINE

## Anti-Pneumonia Vaccine Being Distributed to C.C.C. Camps

A VACCINE for preventing pneumonia, being prepared at the Army Medical School, Washington, D. C., is now being distributed to C.C.C. camps throughout the country. Young men at the camps will be given shots of the vaccine, which it is believed will protect them during the coming winter against the disease which ranks third as a cause of death among all diseases.

The vaccine, originally developed by Dr. Lloyd Felton of the Johns Hopkins University, will not be available to the public for probably two or three years. It will take at least that long to determine, by experience with it in the C.C.C. camps and elsewhere, whether or not it is an effective preventive.

Final decision will be based on comparison between the number of cases of pneumonia, if any, that develop among the vaccinated men with the number of cases developing among the unvaccinated. Since the number in the latter group may be small anyway, it will be necessary to wait until figures on thousands of cases in each group are available for comparison. Last year 25,000 men at C.C.C. camps were vaccinated, but that is considered too small a number for drawing conclusions.

Best method of protection against pneumonia now available to the general public is to avoid colds and influenza. Four-fifths of all cases of pneumonia start from a cold or influenza, experienced physicians estimate. Although it may not be possible to avoid colds and influenza, they can in many cases be kept from ending with pneumonia if proper care is taken.

Another important point in pneumonia prevention is the isolation of pneumonia patients as early as possible, so their germs cannot spread to well persons. For this reason and for the protection of the patient himself, a doctor

should be called at the first suspicion of pneumonia.

The usual autumn rise in influenza cases has already started, reports to the U. S. Public Health Service show. The increase, however, has not yet reached the stage of suggesting that there will be an epidemic. It does show that it is time to take precautions against colds, influenza and pneumonia.

Pneumonia is caused by a tiny germ called the pneumococcus. There are 32 types of these germs, each causing a separate type of disease. Fortunately there are curative serums available for at least five of these pneumonias—Types I, II, V, VII and VIII. If universally and reasonably adequate applications of serum treatment were made, nearly half the deaths from pneumonia could be prevented.

Dr. Felton's vaccine protects against Type I and Type II pneumonia and perhaps against other types as well. Preparation of it is a very tedious task. At the Army Medical School pneumonia germs for vaccine production are being grown in 50-gallon batches. From each such batch about one-sixth to one-third of an ounce of vaccine is produced. The amount required for a shot of vaccine—and only one shot need be given for protection—is not very large. From one gram of vaccine, which is less than a thirtieth of an ounce by weight, 1,000 men can be vaccinated.

If the vaccine becomes available generally, it will probably be possible to obtain it for about \$1 a shot.

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About 25 million elm trees shade the streets, yards and houses of America's villages and cities.

Houses built in Czechoslovakia are now required to have bomb-proof shelters provided in their cellars.



### ARTISTIC SOUND

*In artistic curls made visible by the addition of a small amount of smoke the eddies from an organ pipe swirl out. An illustration from the new book "Science and Music," by Sir James Jeans.*

CHEMISTRY

## Chemicals Added to Coal Fail To Aid Its Burning

CHEMICALS added to coal to make coal burn better have little effect on the combustion of fuel, the U. S. Bureau of Mines revealed at the conclusion of exhaustive tests.

Spurred by continual inquiries about alleged "fuel savers," the Bureau investigated, both alone and in mixtures, all the chemicals known to have been marketed for this purpose, and many others, including water and chlorine. None, it was stated, were found to produce the effects claimed for them.

Results of the experiments are contained in a bulletin by P. Nicholls, W. E. Rice, B. A. Landry and W. T. Reid.

*Science News Letter, November 20, 1937*