

GENERAL SCIENCE

# Chemical Promises to Reduce Pneumonia Deaths to Half

## This and Other Discoveries Reported by Notables at Opening Rites of Mellon Institute's New Building

See Front Cover

**S**UCCESSFUL chemical warfare against pneumonia, one of the major diseases of mankind, by which there seems a good chance to reduce deaths to about half, was made public by Dr. William W. G. Maclachlan, physician-in-chief at Pittsburgh's Mercy Hospital, speaking at the opening of the Mellon Institute's new building in Pittsburgh.

The chemical used is hydroxyethylapocupreine. It is one of 76 chemical preparations based on quinine which were synthesized by a Mellon Institute laboratory staff under direction of Dr. L. H. Cretcher, and then tested on mice, rabbits and dogs to determine whether they should be tried on human cases.

For two winters Dr. Maclachlan and his associates have used as much of the new chemical as could be produced in treating severe cases of pneumonia. For 100 cases treated this past winter, the mortality was 27 per cent. compared with a normal mortality of about 45 per cent. for 100 non-specifically treated cases in Pittsburgh hospitals.

With due scientific caution, Dr. Maclachlan said:

"We can safely say that in hydroxyethylapocupreine we have developed a quinine derivative which is devoid of any visual disturbance and which appears to have power in affecting a certain number of pneumonia cases in man. Its exact clinical status will have to wait until a larger number of cases have been studied by others and by us."

### Simple To Take

Extremely simple is the administration of the new chemical. The patient simply swallows it in capsules as though it were quinine. Gigantic doses are given, 400 to 800 grains or even higher during a week's time. The usual daily dose for adults is 120 grains.

The chemical is also effective on the kinds of pneumonias for which there is no serum, such as type three.

The beginnings of this new attack on the pneumococcus germ and the disease it produces go back to a German obser-

vation in 1911 that the quinine derivative, ethylhydrocupreine or optochin, had strong power to destroy the germ. But when it was tried on patients it produced temporary blindness in some cases.

In Germany, Japan and at the Mellon Institute research was pushed to produce a similar effective chemical but without the blindness hazard. Some 20,000 white mice were used in Mellon Institute experiments over the last four years until the present chemical was developed.

The chemists have succeeded in increasing the amount of the chemical produced and there is now prospect that supplies will be available for issue to other hospitals for wide-spread clinical trials.

"This chemical is compatible so far as we know with the use of any form of

serum which may be given in certain types of pneumonia," said Dr. Maclachlan, "and further the ease of administration will make it very available for the general practitioner of medicine to use early in pneumococcal disease of the lung."

Hydroxyethylapocupreine is also useful in treating empyema, a common complication of severe pneumonia infections. A weak solution of it injected into the pleural cavity speeds healing, experience showed. Dr. Maclachlan warned, however, that it has no beneficial action on influenza or streptococcus infection.

### Start on Third Day

One striking observation in the clinical tests on pneumonia was that better results were obtained when the treatment with the chemical began on the third day of the attack, instead of the first or second day. The experimenters are now attempting to discover the reason for this. It may have great practical importance as the mortality in cases where treatment was delayed until the third day was less than five per cent., compared with 27 per cent. for the first day and 34 per cent. for the second day.



### FROM THE AIR

*A good idea of the general plan of Mellon Institute's beautiful new building is obtained from this bird's-eye-view. Detail of the monolith columns is shown in the illustration on the front cover. Those columns, which are without the distracting horizontal lines of pillars which are not in one piece, were turned on huge lathes, and only three workmen at the quarry had the skill to make them. They measure six feet in diameter and 42 feet high, yet no column varies more than an eighth inch in any dimension.*

### Use Science

Labor, politics, government, agriculture would pursue different tactics under present conditions if we were really highly civilized and intelligent, Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, charged in addressing the dinner in connection with the dedication of the Mellon Institute's new building.

Science is at the very root of our national program of objectives which President Roosevelt has phrased as "the more abundant life," Dr. Compton explained.

If we were willing to sacrifice present pleasures for the sake of future benefits, Dr. Compton believes that we would see labor unions demanding the introduction by all industries of labor-saving and rapid production machinery in order that they might achieve higher wages and shorter hours. We would see the political forces of the country even more insistent in demanding the creation of wealth than its distribution.

The government would be strengthening its scientific services instead of curtailing them most severely of all services. The agricultural problem would be tackled by a powerful scientific attempt to find new uses for agricultural products rather than trying to achieve prosperity by curtailing production.

We might see, said Dr. Compton, income taxes which would encourage rather than suppress the man who creates a great and useful industry and who uses his wealth in a far-sighted manner for the public good.

### Retirement Age

The age at which our elders should be "placed on the shelf" because of physical and mental incapacity might well be advanced by ten years because medical science has added a decade to life expectancy in the United States during the past quarter-century.

This suggestion, which has a direct bearing on the Supreme Court controversy and the whole problem of old age retirement, was made by a Nobelist in medicine, Dr. W. P. Murphy of Boston, codiscoverer of the liver extract treatment for pernicious anemia.

This means that the conventional retirement ages of 60 and 70 might be advanced to 70 and 80. It is logical to assume, argued Dr. Murphy, that the addition to life expectancy at birth of a decade represents not merely an increase in longevity but that there has been a coincidental increase of ten years of physical and mental vitality.

Science needs to know much more

about the familiar properties of matter, Dr. Irving Langmuir, Nobelist and General Electric chemist, told the gathering of noted scientists and industrial leaders.

He predicted that X-rays, electron diffraction, and optics would open new fields to chemists because these new tools make possible magnifications far greater than are possible with microscopes.

### Wool From Meat

The possibility that artificial wool made from the casein of milk may ruin the sheep farmers of the West was suggested by Dr. Harold C. Urey, Columbia University, another Nobel prize winning chemist.

Italian scientists have succeeded in making a wool substitute from the milk by-product and two regiments of Italian soldiers are now wearing uniforms made of this imitation wool.

Such textiles can also be made from meat scraps and Dr. Urey suggested that in the future the less tender cuts of meat will appear as a lady's smart, spring suit or as a man's dress suit.

Scientists who bring about such revolutions in industry should not overlook the sentence of poverty, privation and disappointment that such changes in our methods of doing things often bring upon an innocent fraction of our population. Scientific institutions should consider the social and economic questions that arise from the research.

### New Kind of Insulin

A new kind of insulin, that may make even more effective the older kind, which for a decade has rescued thousands from death due to diabetes, was made known by Sir Frederick Banting, Nobelist and the discoverer of insulin.

The conqueror of diabetes told how a modification of insulin is being tested. Zinc, a metal, is added to ordinary insulin. Tests on dogs show that the new zinc insulin lowers the dangerous blood sugar for a prolonged period after its injection. At present it has not yet been given adequate tests on human patients.

The Canadian scientist explained that the new zinc insulin is a development that arose from the Danish discovery of how to delay the action of insulin so that a day's supply of insulin could be given in only one injection. Protamine obtained from the sperm of rainbow trout and mackerel was added to insulin to produce this effect, and this protamine insulin was called by Sir Frederick "the greatest advance in the treatment of diabetes since the discovery of insulin."

### Plastic Houses Predicted

The making of better houses out of plastic and synthetic materials was forecast by Dr. G. O. Curme, Jr., vice-president of the Carbide and Carbon Chemicals Corporation and one of the early Mellon Institute investigators.

Homes may not be thought of as a chemical project, Dr. Curme said, but in the countless applications of plastic materials, lacquers and synthetic fibers, he expects new types of house assembly to emerge with greatly reduced costs. This will give sanitary, noiseless, fire-proof, moisture-proof and vermin-proof construction.

He expects rail transportation to follow the trends of automobiles and he said that the Diesel engine used on railroads is of far greater significance than the more obvious streamlined exterior.

*Science News Letter, May 15, 1937*

### PHYSICS

## Two-Pound Battery Will Deliver a Thousand Volts

**A**TINY, compact battery that weighs less than two pounds and yet will deliver 1,000 volts was described by Willis E. Ramsey of the Bartol Research Foundation of the Franklin Institute to the American Physical Society. Moreover the battery will keep indefinitely when not in use because it is completely dried and sealed in an airtight box. When operation is desired a few drops of ammonium chloride are applied to the battery and its high voltage is obtained. After use it is again dried. Original purpose of the equipment was to supply high voltage without undue weight in the cosmic ray measuring apparatus sent aloft on un-manned small balloons.

On the same program Prof. H. P. Robertson, Princeton University mathematician, described calculations on the dynamic effects of the sun's radiation on small pieces of matter up to one or two inches in diameter. The involved mathematics of Prof. Robertson show that the effect of the radiation which a particle of matter might receive from the sun and then given off by the particle has the net result of retarding the orbital velocity of the particle about the sun. This slowing down, in turn, has the effect of gradually drawing the particle nearer and nearer to the sun until it is finally drawn into it. Thus the solar radiation is an agency for clearing the neighborhood of the sun of small particles, by sweeping them into it.

*Science News Letter, May 15, 1937*