

## MEDICINE

# Serum Plus Sulfapyridine Advised for Pneumonia

**T**HE COMBINATION of both anti-pneumonia serum and the new chemical remedy, sulfapyridine, is more successful in treating pneumonia than either serum or chemical remedy alone, Dr. Maxwell Finland, of Thorndyke Memorial Laboratory, Boston, told members of the Conference of Health Officers and Public Health Nurses meeting at Sarasota Springs, N. Y.

Serum can be used and will be successful in about two-thirds of the cases of pneumonia due to the pneumococcus, Dr. Finland said. Sulfapyridine is probably useful in all types of pneumococcus pneumonia and is probably as successful as the older remedy, sulfanilamide, in treating infections with the hemolytic streptococcus. Sulfapyridine may also be useful in some cases of infection with

another very common germ, the staphylococcus aureus.

Typing and other tests to determine the kind of germ causing the pneumonia should be done, Dr. Finland believes, even if the doctor expects to treat the patient with a chemical remedy instead of serum. Then if it turns out that the patient cannot stand the drug, serum can be given without further delay.

## Fathers Get Best Food

**F**ATHERS may feel they do not always get their due but when it comes to food, fathers in poor families get the best of it, a survey of 100 Toronto families shows. Results of the survey, made on families not on relief with an average weekly income per person of \$3.48, were

reported by Dr. E. W. McHenry, of the Toronto University School of Hygiene.

On the average, Dr. McHenry said, the families secured about three-fourths of the total amount of food they needed. Only three of the 100 families received an adequate total amount of food.

The men got nearly nine-tenths of the amount of protein they needed, but the women received less than three-fourths of the needed amount. The children received only half the calcium (lime) they needed but half the men actually got more calcium than they needed. This was believed due to the fact that cheese was used generously in the men's diet but was not given to the children, and the children failed to get enough milk.

Almost all the men received more iron than they needed but the mothers and children received only one-half of a suitable supply.

The inadequate food supply of the mother, Dr. McHenry pointed out, not only prejudices her health but has a harmful effect on her child if she is carrying or nursing one.

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## PHYSICS

# High Altitude Neutrons Are Clue to New Atom-Smashing

**N**EUTRAL atomic fragments by the billions, 1,000 times more plentiful at 13 miles overhead than at sea level, give the first clue to a new kind of atom smashing, Dr. S. A. Korff of the Franklin Institute's Bartol Research Foundation suggested to the American Physical Society meeting at Princeton.

The fragments are neutrons, atomic particles without electrical charge that have amazing ability to pierce all atoms.

Sending a new type of neutron detector 70,000 feet up in unmanned balloons, Dr. Korff found that while cosmic ray intensity was increasing 100 times over sea level intensities the neutron intensity was increasing by 1,000 times.

Explaining the origin of the stratosphere neutrons, Dr. Korff said:

"If a cosmic ray collides with a nitrogen nucleus and completely disrupts it, seven neutrons will be liberated. The presence of neutrons may be an indication of some such explosion induced by cosmic rays in our atmosphere. Cosmic rays are the only agency with sufficient energy to produce such a disruption. Possibly these neutrons are the clue to

an important new atom-smashing process."

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## Egg-Shaped Charge

**S**CIENTISTS have a new electrical picture of the unseeable atom—an egg-shaped glob of electrical charge.

The new atom portrait was painted verbally by a three-man research team from Columbia University, Prof. I. I. Rabi, Drs. L. M. B. Kellogg and N. F. Ramsay, and Prof. J. R. Zacharias of the College of the City of New York.

Telling their scientific colleagues that they had "confirmed the existence of the deuteron quadrupole moment" the Columbia investigators described how they made the discovery of egg-shaped electrical pattern for deuterium atoms. Deuterons are the electrically charged nuclei of this rare kind of heavyweight hydrogen.

The new results of egg-shaped electrical distribution are helping the mathematical physicists in their important calculations of the inter-nuclear forces;

forces which determine how all material matter is put together.

What the experiment really detects is the resonance vibrations of the nuclei in terms of exactly known radio frequencies. Plotting out the measurements the scientists obtain curves on which resonance points resemble spectral lines on a photographic plate.

In fact, the operations of the molecular beam apparatus are in many ways comparable to those of a spectrograph except it works with radio waves instead of rays of light.

Where a spectrograph picks up light rays and forms characteristically-placed spectral lines, the Rabi equipment detects characteristic resonance points formed by the magnetic properties of the atoms and molecules. The placement of these points is likewise unique for each element.

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## Regimentation in Extreme

**S**OME of the dictator nations which like to order and regiment the lives of all their inhabitants could get some ideas on super-regimentation from an experiment described to the meeting.

Dr. Sidney Siegel, Westinghouse research fellow, described his ability to produce single crystals of gold-copper alloys which, in some cases, contain one septillion atoms (1,000,000,000,000,000,-

000,000,000) all arranged in perfect alignment and set into a single regular pattern. Here is regimentation to end all regimentation.

Object of the large single crystals, which are sometimes four inches long and three-sixteenths of an inch in diameter, is to study the forces which bind metals of alloys together.

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## PSYCHOLOGY

## First Steps to Language Discovered in Chimpanzees

**B**EGINNINGS of the ability that enables man to talk have been discovered in man's close relatives, the chimpanzees, by Drs. Robert M. Yerkes and Henry W. Nissen, of Yale University's Laboratories of Primate Biology, they revealed (*Science*, June 23).

All apes do not have the symbolic ability necessary for speech, the scientists indicate. And use of symbols as simple to man as "blackness" or "whiteness" is very difficult for any chimpanzee. This makes them think they may have stumbled on the very start of pre-linguistic ability in the evolutionary ladder.

A fundamental difference between man and the very man-like chimpanzee is revealed by one test of this ability to use symbols. Food is placed in one of two boxes and then the relative positions of the boxes are changed.

A man is able to find the food again with no difficulty. He may have said to himself as he watched it placed there, "It is in the black box" or "It is in the white box."

The ape, apparently lacking an understanding of "whiteness" or "blackness," finds the same problem extremely difficult if not entirely impossible. If, however, the ape has a cue to tell him on which side the box with the food has been placed, the problem becomes simple.

"It appears," the scientists conclude, "that whereas the 'thereness' of the cor-

rect box may readily be responded to by the chimpanzee, the 'thatness'—as exemplified by a symbolic process equivalent to rectangular whiteness—is used with difficulty and uncertainty."

Symbolic thinking may occasionally oc-

## PHYSICS

## Best Ways to Make Raindrops Studied to Aid Ray Research

**A** WELL known weather phenomenon which may make rain threaten but never come is helping scientists trap cosmic rays in better fashion, it was reported to the American Physical Society meeting at Stanford University by Dr. Robert M. Langer of California Institute of Technology.

"There may be excess moisture in the atmosphere and rain may threaten for a long time before the droplets grow big enough to fall," explains Dr. Langer. "The condensation of water vapor from the air on to the drop happens rapidly enough at first but so much heat is given out in the process that the droplet warms up until the evaporation from it just about equals the condensation upon it.

"Unless this heat of condensation is dissipated the droplet will stop growing before it can be seen. The best way to dispose of the heat is to pass it into the surrounding air if this air remains cool enough."

This matter of "why it doesn't rain" is important not only to the weatherman but also to cosmic ray scientists who make the rays become visible by having them create paths of artificial raindrops in special instruments known as Wilson cloud chambers.

The idea, Dr. Langer adds, is to produce a fog along the track of the cosmic ray. If the fog particles form slowly the track is distorted meanwhile by air cur-

cur in the chimpanzee, these scientists conclude, but it is relatively rudimentary and ineffective. Older, more experienced chimpanzees are no better at it than are the young.

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rents. A false impression of the track is obtained.

Working with Dr. Carl Anderson, Nobel Prize winner of California Institute of Technology, and with Dr. Seth Neddermeyer and Dr. J. K. Boggild, exchange fellow from Denmark, Dr. Langer has found that it takes a full second for fog drops in a cloud chamber to attain full growth. Nothing, apparently, can decrease this time without spoiling some other feature of the experimental arrangement.

As a result, he reports, extreme precautions must be taken to prevent air currents before good cosmic ray tracks are to be expected.

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## METALLURGY

## Metallurgical "Surgeons" Operate on Steel Mill

See Front Cover

**N**OT a group of witches stirring their mysterious cauldron, but a group of arc welders doing a major operation are shown on the front cover of this week's SCIENCE NEWS LETTER. Such operations are now as common in the industrial world as appendectomies are to the average person. This particular operation was to quickly restore a steel mill to service by repairing the pusher head of a scale breaker which is used to remove slag from slabs coming from the reheating furnace.

To repair the break which stopped an entire mill, 400 pounds of steel, in the form of arc welding electrodes supplied by The Lincoln Electric Company, Cleveland, Ohio, were melted into the casting. Without electric arc welding, the mill would have been shut down for several weeks awaiting a new casting. Six arc welders had the mill back in operation in eight hours.

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The papyrus plant, once so useful to Egypt, no longer grows there.

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