

effective in curing ordinary pneumococcus pneumonia, is the subject for comment by the *Journal of the American Medical Association* (Dec. 21).

Because of sporadic cases and minor epidemics that have occurred in this country and abroad, the doctors of the nation through this comment are being warned to watch for this disease which has already acquired a whole series of labels. The term "acute pneumonitis" is used in the report.

Unlike ordinary pneumonias, the cause of this new disease is believed to be a virus, rather than a germ. Dr. J. M. Weir and Dr. F. L. Horsfall, Jr., of the Rockefeller Foundation, have succeeded in transmitting the disease to the wild mongoose, abundant in Jamaica. The virus was also recovered from the ill mon-

gooses and its guilt as the cause of the infection established by being again used to cause the disease. The mongoose was used as an experimental animal because of its resemblance to the ferret and because it can easily be obtained.

Because it resembles epidemic influenza in many respects, the new disease is of peculiar interest just now when influenza has been epidemic in some places in this country.

One striking feature of the disease is that it has a long incubation period, developing about two weeks after infection. The onset is accompanied by high fever, headache, sweating, rasping cough, little involvement of the lungs that shows up in X-rays, and the infrequency of chill or pain in the chest. Most cases are mild.

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some cases of gingivitis and pyorrhea," Dr. Stephan reports.

Long-term studies of patients with caries and other dental diseases are now under way. In some cases carbamide is being used as a dentrifice. Carbamide would be ineffective, however, unless there was some urease to convert it to ammonium carbonate, and not all persons may have enough of the urease-containing bacteria in their mouths to do this job effectively. So in some of the test patients, the mouth is being inoculated with harmless bacteria which contain urease. In still others, the two, the bacteria and carbamide, are being used together.

These are the tests which are expected to shed new light on the cause of tooth decay and its prevention.

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DENTISTRY

Discovery Gives Promise Of Dental Decay Prevention

Rinsing Mouth With Carbamide Solution Not Only Protects From Acid But Adds Calcium to the Teeth

CARBAMIDE, a common chemical known also as urea and produced in the body from proteins as well as in the laboratory, may provide the weapon for eventual conquest of tooth decay or dental caries. It may itself become this weapon and is now being tested for its caries-preventing possibilities.

Discovery that carbamide can play a role in protecting teeth against decay was made by Dr. Robert M. Stephan, of the University of Illinois College of Dentistry. (*Science*, Dec. 20.)

"These studies promise to shed new light on the causation and prevention of caries and to furnish a new treatment for gingival (gum) and periodontal diseases," Dr. Stephan declares.

Carbamide's tooth-protecting ability depends on the fact that under the action of an enzyme called urease it is converted to ammonium carbonate. The latter is able to neutralize some of the acids which might otherwise produce caries activity.

Rinsing the mouth with a solution of carbamide (synthetic urea) has been found to change the condition of bacterial material on tooth surfaces and in cavities to a more than normal degree of alkalinity. At this degree of alkalinity, calcium phosphate tends to be deposited

on the tooth from the saliva instead of being dissolved from the tooth. In other words, the teeth are not only protected from acids which take calcium out of them but are given additional amounts of tooth-building calcium, at least on their surfaces, if not within their structure.

The enzyme needed to convert carbamide to ammonium carbonate is contained in certain bacteria, such as *Staphylococcus albus* and *aureus*, which grow on the tooth surface in the bacterial plaque. These plaques also contain bacteria which have the power to ferment starches and sugars to acids which decalcify teeth and thus cause decay.

Previously it has been thought that the saliva neutralized the acid in these plaques by means of its buffers, substances which tend to lessen the effects of acidifying or alkalinizing materials. Now Dr. Stephan has discovered that in addition to the buffers contained in saliva, its urea is converted by the action of certain urease-containing bacteria to the acid-neutralizing ammonium carbonate.

"Solutions of carbamide, used in conjunction with a toothbrush, have been found to be effective in cleaning teeth, and clinical observations have indicated that the treatment may be of value in

ASTRONOMY

Astronomers Find Hydrogen Gas in Cunningham Comet

HYDROGEN gas, never before recognized in a comet, has been discovered in Cunningham's comet, now visible in the western evening sky. This discovery, which radically changes the ideas of astronomers about the nature of comets, was announced here at the Harvard College Observatory, where the comet was discovered in September.

Up to now, carbon, oxygen, nitrogen and sodium have been the principal elements recognized in comets by analyses of their light. Except for the sodium, these have always been in compounds, such as carbon monoxide.

Studying one spectrum plate of the new comet, Leland E. Cunningham, discoverer of the comet, and his colleague, Dr. Fletcher G. Watson, have found dark bands that seem to show that a comet consists mostly of hydrogen.

Similar dark bands have been found in comet spectrum photographs before, though they have never been interpreted as due to hydrogen in the comet itself. It is planned to re-examine these old plates as soon as possible. With further exposures that may be made of the new comet, these may confirm the presence of hydrogen.

If it proves correct, the new discovery, said the Harvard astronomers, will be important in the interpretation of future comets. Any new clue to their birth will contribute to understanding better one of astronomy's major unsolved puzzles, the origin and evolution of the solar system.

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