

## MEDICINE

# Step Taken Toward Solving Question of Dropsy's Cause

## Spinach Defended as Adequate Iron Source; New Rickets-Preventing Factor Found in Milk

**A**N IMPORTANT step toward solution of the question of what causes dropsy and one form of kidney disease was reported by Dr. Lillian Eichelberger of the University of Chicago at the meeting of the Federation of American Societies for Experimental Biology.

In dropsy, often associated with kidney and heart disease, watery fluid gets into the body tissues and causes swelling. Nature has fixed it, Dr. Eichelberger explained, so that ordinarily this cannot happen. Otherwise everyone would swell up after drinking water or beer or other fluid.

For the first time the condition of faulty water-handling mechanism, known as hydronephrosis, has been produced in animals in the intermediate as well as the final stages, Dr. Eichelberger reported. As a result, scientists can now probe into the underlying cause of the condition with some hope of solving the problem.

### Earlier Detection

Hydronephrosis occurs in some cases of prostate disease and sometimes in pregnancy. Water backs up into the kidneys because the outlets from them are blocked and the pressure destroys the kidneys. It also occurs in renal rickets, an ailment that afflicts children of 10 or 12 years. A disturbing feature of this condition is that the children are without any signs of kidney disease until the last, fatal stage. Dr. Eichelberger's research may lead to ways of detecting the disease earlier and possibly remedying it.

Alkalinity may be a factor in dropsy. Dr. Eichelberger reported she could get much more fluid into the tissues of the animals if she made their bodies alkaline.

Contrary to previous opinion, Dr. Eichelberger also found that a thin person has no more water in his muscles than a fat person.

Spinach was vindicated at a late session of the meeting. Early reports there had showed that only about one-fifth of the vegetable's iron content was in such form that the human body could use it.

Dr. C. A. Elvehjem, of the University of Wisconsin, reminded the scientist-physicians that the total content of iron in spinach is so high that one-fifth of it makes a sizable amount.

An unsuspected rickets preventing element in milk, present after the removal of all traces of the known anti-rachitic vitamin D, was announced to the Society of American Biological Chemists at Memphis by Profs. John M. W. Bunker and Robert S. Harris of the Massachusetts Institute of Technology.

### Byproduct of Research

The discovery was a paradoxical byproduct of research. Instead of seeking an anti-rachitic element, the two biologists for the past three years attempted to develop a diet of uniform effectiveness for producing the disease in laboratory rats.

The new factor may make valuable for human and animal food large quantities of casein, a waste product of milk processing which represents one of the great losses in agriculture.

The scientists sought a protein substitute for ground whole corn, the recognized protein constituent of diets used for producing rickets. For some as yet unexplained reason, not all corn will produce rickets.

They experimented with casein, principal milk protein, preparing it absolutely free of all known forms of vita-

min D. They naturally expected rats fed on this diet to develop rickets. Instead they thrived with no trace of the disease. In a further effort to make casein rickets-producing the two biologists predigested it with enzymes and alkalis. But the rats still thrived. The scientists then began changing the calcium-phosphorus ratio in the rat diet. Diets calculated to produce rickets in its severest form had no effect.

The inevitable conclusion was that milk has a hitherto unsuspected anti-rachitic property. Attempts are now under way to find out what part of the casein protects.

*Science News Letter, July 3, 1937*

## PUBLIC HEALTH

## Trailers on Highways Are Health Jekylls-and-Hydes

**A**UTO trailers now luring city people out for a summer's gypsying on the highways of the nation give to the casual observer no hint of sinister deeds, but they have a Jekyll-and-Hyde personality. As they travel the highways they can roll up benefit or disaster to health.

Acting as veritable Dr. Jekylls, the trailers can increase the physical well being of a large part of the population by getting these people outdoors and in sunshine much more than would otherwise be possible.

Acting as Mr. Hydes, they can jeopardize the health not only of those who ride and live in them but of whole communities through which the trailers pass. Here is the picture of Mr. Hyde in a trailer as worried health officers see him:

Communicable diseases—typhoid fever, smallpox, influenza and all the rest—are spread fastest by travel. With thousands of persons travelling constantly, many of whom never travelled be-



**STREAMLINED FOR POWER AND SPEED**

fore, the spread of disease may be greatly accelerated.

Trailer tourists cannot depend on the milkman or the city water works to supply them with safe milk and drinking water. They must find these for themselves. Penalty for not using a safe supply may be a serious case of typhoid fever or some other ailment from contaminated water or milk.

Gravest danger of all is the trailer tourist's garbage and other waste. If this is not properly disposed of, it will scatter disease along the highways and in tourist camps, villages, farms and cities.

A recent conference of health officers suggested many ways to meet this danger. Among them was the radical step of requiring health department approval of every trailer's sanitary arrangements before a license is issued.

In the end, however, it is up to the trailer tourist to make his trailer a Dr. Jekyll instead of a Mr. Hyde. Specific directions for this can be obtained from any health department.

*Science News Letter, July 3, 1937*

#### ENGINEERING

## Steam Equals Electricity In Speed and Heavy Power

**T**HE BATTLE between electricity and steam as the motive power in America's railroad locomotives has entered a new phase with the announcement that a 110-foot long giant of 6,000 horsepower is being planned by the Pennsylvania Railroad. Hauling heavy 14-car trains at 100 miles an hour is the goal of this newest locomotive and, when achieved, will make steam equal with electricity in combining speed and heavy duty power.

Engineers of the railroad and of the Baldwin, American and Lima Locomotive Companies have cooperated on the new design which, from artist's conceptions, looks like a giant, blunt-nosed lead pencil on wheels. There is no visible smokestack and all surfaces are as smooth as those on the more familiar Diesel-powered Zephyrs and Comets that have caught the public's train-traveling fancy.

One hundred and ten feet long, including the tender, the proposed steam locomotive will burn soft coal, fed automatically so that its engine crew will still remain at two.

It will carry 26 tons of coal and 25,000 gallons of water and have a cruising radius, to borrow aviation's phrase, of 100 miles.

*Science News Letter, July 3, 1937*

#### PUBLIC HEALTH

## Dust Fights Dust in New Silicosis Control Method

**P**REVENTING silicosis by adding dust to the air sounds like a strange paradox, since silicosis is the lung disease resulting from breathing dusty air containing silica particles. Yet prevention of this disease, to which a million or more American workers are exposed, may in future be accomplished by fighting dust with dust.

This is the possible solution of the silicosis problem suggested by results of a mineralogical study by R. C. Emmons, professor of geology, and Ray Wilcox, of the University of Wisconsin.

The idea is to add protector mineral dusts to the air containing silica dust. Scavenger cells function poorly in removal of colloidal silica or any pure mineral dust. However, inhalation of one or more additional dusts, whose electrical charges are opposite to that of the noxious material, may result in aggregation of all dusts into large particles which can be normally removed before chemical action occurs.

Silicosis, prevalent in atmospheres heavily laden with siliceous dusts, is apparently caused by the chemical reaction of mildly alkaline lung fluids on the dust particles, producing a colloidal suspension of silica which collects on the cell walls and destroys living tissue. Based on experiments using beef and human blood sera in an attempt to approximate actual lung conditions, the suggestion is made that other minerals, particularly sericite, biotite and talc, may be susceptible to the same chemical reaction and consequently act as causative agents for silicosis.

Mixture of protector dusts with contaminated air can prove effective and economical only when preceded by a

microscopic examination of the noxious dust to determine size distribution and mineral content.

The study by the Wisconsin geologists was undertaken after recognition of the fact that modern preventive methods are expensive and incompletely successful, and in an attempt to substantiate the idea that minerals other than silica and asbestos can cause the disease.

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#### SOCIOLOGY

## Child Marriages Banned In 39 States and D. C.

**P**UBLIC feeling aroused by publicity given to a number of child brides early this year has apparently resulted in general tightening of regulations to prevent such marriages of very young children.

A survey by the U. S. Children's Bureau shows that the legal minimum marriage age for children has now been raised above the common-law age in 39 states and the District of Columbia. In all but nine states the youngest age at which a girl can legally marry is between 14 and 16 years. For boys in these states the legal minimum marriage age varies from 16 to 18 years. The highest statutory minimum age, found in New Hampshire, is 20 for boys and 18 for girls.

In Colorado, Florida, Idaho, Maryland, Mississippi, New Jersey, Rhode Island, Tennessee and Washington the common-law marriage age still applies and boys of 14 and girls of 12 years are considered able to give valid consent to marriage.

*Science News Letter, July 3, 1937*

## ● RADIO

July 6, 4:15 p.m., E.S.T.

BABYLONIANS: FATHERS OF SCIENCE—  
Dr. Waldo H. Dubberstein, Oriental Institute of the University of Chicago.

July 13, 4:15 p. m., E.S.T.

FOUR RULES OF THE ROAD — H. C. Dickinson of the National Bureau of Standards.

In the Science Service series of radio discussions over the Columbia Broadcasting System.

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