

unusual type of wing is invented, 600 miles an hour is as fast as airplanes can hope to travel. Racing pilots still have 200 miles per hour or so more of speed to conquer.

Even a transport airliner plowing through the air at about a hundred miles an hour has part of it traveling at 600 miles an hour. This is the tip of its propeller turning 1800 revolutions per minute. Such speed is wasteful if the propeller section is not correctly designed. Tests in another N. A. C. A. wind tunnel show that the tip of the propeller at near the velocity of sound is holding the plane back rather than helping it forward. Gearing the propeller so that it turns over once while the engine turns over twice, will increase propeller efficiency.

To the delicate mechanism of the human body which must be able to withstand high air speeds, not speed but changes in speed and direction are dangerous. It is doubtful if a pilot could stand more than 300 miles an hour on sharp turns. Much higher straight-away speeds would be safe if acquired and lost gradually.

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HYDRODYNAMICS

Boats Could Double Speed Skimming Surface of Water

SMALL BOATS are given wings under water to double their speed without increasing power consumption in a suggestion made before the meeting of the American Society of Mechanical Engineers at New Haven, Conn., by Dr. Oskar G. Tietjens, research engineer of the Westinghouse Electric and Manufacturing Co.

Frictional resistance in water is 800 times the wind resistance of the same surface in air, Dr. Tietjens said, because water is 800 times as dense as air. For the same reason the lifting force of a plane under the water is 800 times that of the same surface in the air, he stated.

Hence, with small underwater wings or fins, Dr. Tietjens proposes to lift almost the entire craft out of the medium of high resistance into that of little resistance. He calculates that two steel planes, each eight inches wide, one located just forward of amidships and the other just in front of the propeller, would be adequate for a twelve-foot boat, and he thinks such a system practicable for boats from twelve to fifty feet long.

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PHYSIOLOGY

Old Age May Be Postponed By Calcium And Phosphorus

EATING simple salts of calcium and phosphorus to build strong healthy bones may also lengthen the prime of life and delay the onset of old age, Prof. Victor K. LaMer of Columbia University, New York, has determined from a review of the work of other scientists.

If the proper amounts of calcium phosphate, a chemical now added to common salt to prevent it from caking in moist atmosphere, were eaten, life might be prolonged some ten per cent. Those who would normally die at 70 might continue to live until 77, Prof. LaMer believes. The specter of old age, the appearance of senescence, would be pushed farther into the future.

Young people, mothers and those in the prime of life will also be benefited by these essential mineral salts in their food. Experiments on rats by Prof. H. C. Sherman and Dr. Louise Campbell of Columbia, with whom Prof. LaMer has been working, have shown that rat mothers, and presumably human mothers, produce babies earlier and longer and raise more children when given a proper amount of these salts in the form of milk powder.

By building strongly calcified bones such as result from a high intake of calcium and phosphorus in the diet, the prime of life can also be prolonged, Prof. LaMer contends.

Calcium and phosphorus can best be supplied to the body by eating liberally of milk and leafy vegetables but it has also been shown that certain inorganic salts of the two elements can function as well as organic forms, such as occur in foods, in meeting the deficiencies of these elements.

Prof. LaMer and associates have worked out a "solubility product principle" by which it may be determined in just what proportion the two elements should enter into the diet to give the best result. Both calcium and phosphorus must be added as the inclusion of just one element may cause trouble.

Decay in teeth may be caused by inadequate amounts and proportions of these two vital bone-building elements. Prof. LaMer recalled the work of Prof.

E. V. McCollum of Johns Hopkins on tooth decay in rats.

It is to be expected that some sort of calcium phosphate will in the future be added to common table salt just as iodine is now added to salt in regions where ordinary food is lacking in this element essential to prevention of goiter.

Growing children require twice as much calcium in their food as a normal adult, and mothers need three times that required by other adults.

Prof. LaMer warned that improper bone formation can not always be detected by body weight, and malformed bones may be affecting health for long periods without the person's realizing his condition.

Although important, vitamin D and ultraviolet light can not substitute for the proper amounts of calcium and phosphorus in the diet, Prof. LaMer explained.

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ORNITHOLOGY

Rooster Saves Self By Leading Band of Quail

A ROOSTER designed for the frying pan instead has become the proud leader of a band of Gambel quail, according to Custodian Martin L. Jackson of the Montezuma Castle National Monument, Arizona.

Mr. Jackson, craving a feast of fried chicken, purchased a nice young fowl. A little fattening seemed necessary, so the young bird was given a respite. His growth was rapid, and soon, because of resemblance to a comic strip character, he became known as Gump the Rooster.

At first all the feathered inhabitants of the Montezuma Valley seemed to fear Gump. Luckily for him, however, before his frying-pan zero hour arrived the Gambel quail made advances, found him friendly, and adopted him as their natural leader. Soon about 35 quail were observed feasting in the edge of a creosote bush thicket near Mr. Jackson's home with Gump in their midst.

Mr. Jackson now has given up all designs upon Gump's life.

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