

## BACTERIOLOGY

**"De-Tailed" Bacteria Still Able To Swim**

► THE "tails" with which some species of bacteria are equipped are not needed for swimming, declares Dr. Adrianus Pijper of the University of Pretoria, South Africa, in the journal, *SCIENCE* (April 15). He has been contending for some time that such bacteria swim by twisting and wriggling their way through surrounding fluid, and that their tails, or flagella, are merely something trailing behind them.

Now, however, he has gone a step beyond. He grew a lot of "tailed" bacteria in suitable broth, and deprived them of their tails by shaking them hard for 15 minutes. At the end of that time, microscopic examination showed that most of their tails had been amputated; yet the bacteria were swimming about, and lively as ever.

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## PHYSICS

**Long "Rope" of Water Would Support Own Weight**

► A VERY fine "rope" of water hanging down one and four-tenths miles would support its own weight and not break.

Dr. Lyman J. Briggs, ex-director of the National Bureau of Standards, reported to the National Academy of Sciences in Washington, experiments that promise to help explain how the tallest trees are able to suck up sap from their roots. Water is as strong in tension as some metals, provided it is in a small enough tube.

As every schoolboy is taught and as well-diggers learn from experience a common suction pump won't raise water more than about 32 feet.

Dr. Briggs doesn't deny this, but the little capillary tubes that he whirled at high speeds until the water in them broke in two developed a negative pressure of about 223 atmospheres, which is equivalent to a vertical column of water 7,400 feet high hanging from the closed top of the tube which contains it.

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## PSYCHOLOGY

**Dull Student Differs in Taste from Bright Student**

► THE boy whose low grades keep him out of the college preparatory courses in high school differs from the brighter boys in what he admires in his classmates.

The dull boy whose poor marks land him in the so-called "general course" likes his classmate to be a good listener rather than talkative or just silent. He admires a boy who is neat in appearance rather than one who could be called a "good dresser." He prefers fellows who are athletic to those

talented in arts or crafts. He has a greater liking than does the bright boy for classmates who enjoy practical jokes as compared with the serious-minded.

These differences in taste may reflect more than difference in intelligence or school grades. The two groups of high school students whose preferences in companions were surveyed in a suburb of New York were alike in proportion of each sex, age and grade in school, but they came from entirely different kinds of homes.

There was almost no overlapping of the two groups in regard to the occupation of their parents. All those in the college preparatory course have parents in professional, managerial, clerical or business occupations. Nearly all those in the general course are from laboring or semi-skilled worker groups.

Sex differences were few, but girls have a greater preference for others of their own sex who cooperate with a group as compared with those who enjoy their own hobbies or are good leaders. They also have a greater admiration than do the boys for those who enjoy hearing or telling jokes as opposed to those who enjoy practical jokes, and for the serious-minded as against the practical jokers.

The study was reported to the *JOURNAL OF SOCIAL PSYCHOLOGY* by Drs. Anne Anastasi and Shirley Miller, of Fordham University and Barnard College, Columbia University.

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## ENGINEERING

**Fiber Glass Boats Buoyed By Tiny Glass Bubbles**

► FAMILY boats, with one-piece hulls made of impregnated glass fiber, utilize tiny glass bubbles for increased buoyancy, the Beetle Boat Company of New Bedford, Mass., revealed. The bubbles are in a product known as Foamglas which is placed in various parts of the hull.

Foamglas is a product of the Pittsburgh Corning Corporation. It does not absorb moisture, since the cells in it are closed. The boat is leak-proof, corrosion-proof, rot-proof and is not attacked by vermin. Its light weight is one of its principal features. The 12-foot boat, with a six-foot beam and nine-inch draft, weighs only about 300 pounds.

The type to be available this summer is a sailboat, with a sail area of about 90 square feet. Foamglas has been widely used by the U. S. Navy and U. S. Merchant Marine in life rafts, floats and other buoyant equipment. One-piece boats of fiber glass impregnated with a resin are already under test by the Army Engineers. The same material has been used experimentally in wings for airplanes. The advantage of the impregnated glass fiber material is a combination of high strength, durability, resistance to destructive agencies and light weight.

*Science News Letter, May 14, 1949*



## MEDICINE

**World's First Molecular Disease Is Discovered**

► DISEASE has been traced to a difference in the composition of a chemical molecule of the blood and the charge of electricity upon it.

Dr. Linus Pauling, heading a chemical group from the California Institute of Technology, reported to the National Academy of Sciences his discovery that sickle cell anemia seems to be the world's first molecular disease. This disorder has red blood cells that have the shape of a sickle, and this is caused by the difference in the two kinds of hemoglobin molecules.

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## METEOROLOGY

**Radar Used in Obtaining Picture of Thunderstorms**

► RADAR'S penetrating glances were turned on the thick clouds of thunderstorms by Dr. E. J. Workman of the New Mexico School of Mines, who reported his results in Washington at a joint session of the American Meteorological Society and the American Geophysical Union.

Here are some of the things radar helped to show him:

A thunderstorm develops "straight up and down", or nearly so. A strong horizontal wind aloft will knock its top off and prevent it from developing.

The cloud is deep, with temperatures at the bottom near freezing and internal temperatures at higher levels dropping all the way from 25 or 30 below zero Fahrenheit to as much as 70 below. The top of the cloud must always be cold enough to produce quick freezing of water.

When the cloud top, as seen by radar, gets to a temperature of about 50 degrees below zero Fahrenheit, it begins to collapse downward. The collapse is rapid—as much as 800 feet per minute. Rain comes out of the base at temperatures between 45 and 50 degrees above zero.

Lightning flashes begin when the cloud reaches its maximum height, the first stroke usually coming about when the rain begins to fall. Strokes may jump from point to point within the cloud; when they jump between cloud and earth they are apt to follow the path of the rain. Field observations and laboratory tests agree in indicating that much of the electricity in the lightning is accumulated in connection with the formation of ice, in the form of hail.

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# CE FIELDS

## CHEMISTRY

### Scientists Discover New Kind of Nitrogen

► DISCOVERY of a new kind of nitrogen, one of the commonest of the chemical elements, was announced in Washington to the American Physical Society by Dr. Luis W. Alvarez of the University of California's Radiation Laboratory.

It is mass 12 contrasted with mass 14 nitrogen which exists in greatest abundance in the air we breathe. The new isotope is manufactured by bombarding carbon with high energy protons from an atom-smashing linear accelerator. The new nitrogen 12 lives only a fleeting instant, a mere dozen thousands of a second of half-life, before disintegrating through its radioactivity.

Nitrogen of 13, 14, 15, 16 and 17 mass had been previously known.

Discovery of three other new isotopes, all radioactive and made by bombardment, were announced by scientists from the Ohio State University. These are zirconium 87, yttrium 85, and molybdenum 91. These disappear after a few minutes or hours. The physicists reporting these discoveries were Drs. M. L. Pool, W. E. Scott, B. E. Robertson and D. N. Kundu.

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## GENETICS

### White Muskrat Discovered Has Luxury Look of Ermine

► WHITE fur coats with the luxury appeal of ermine but the pocketbook appeal of muskrat may be what the fashionable woman will wear some years in the future. They will come from the backs of a new kind of muskrat found in the swampy lands around Cambridge, Md.

The new muskrats have been named Maryland white by Dr. Herbert L. Dozier, director of the U. S. Fur Animal Field Station there. They are not true albinos but a new mutation, he reports to the JOURNAL OF MAMMALOGY (Nov. 1948).

The young have fur of a maltese gray, with white underneath, when born, and gradually lose color as they grow older. At maturity the animals are smoky-white or even practically all white except for a sooty nose spot.

The eyes at first appear to be dark instead of pink like those of true albino animals. Closer examination under strong light, however, shows them to be a dark red, therefore somewhat like albino eyes except for the possible possession of a little pigment. Dr. Dozier suggests that genetically the

new color-phase may be an "albino allele," or partial albino.

True albino muskrats have also been found in this region, he reports, in addition to other color phases running the whole gamut between the albinos' pure white fur through fawn and the usual browns to a complete black.

Dr. Dozier is keeping muskrats of as many different colors as he can secure, both by his own efforts and the cooperation of interested trappers. He keeps them in breeding pens and is working out as well as he can the genetics of their coat colors for the benefit of the future fur trade.

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## AERONAUTICS

### England Stepping Ahead In Building Flying Boats

► ENGLAND is stepping ahead in the production of giant flying boats for overseas civilian transportation, it was revealed in London with the announcement of a new fleet under construction, the first ship of which will be ready for flight early in 1951. The new craft will belong to the Princess fleet.

Great Britain's decision to order and operate more flying boats at a time when the big airline operators of the world were giving them up in favor of landplanes, was a gesture of confidence in a type of airliner which has been extensively used by British companies almost since regular commercial air transport service began, the Society of British Aircraft Constructors recently stated.

The principal advantage of their use is the fact that the big flying boat needs few special facilities for its operation, and that every open stretch of water is a potential landing place. Flying boats do not need expensive landing fields, merely having to pay port charges and for such special services as may be provided for their special use.

Three of the new Princess double-deck flying-boats, which British Overseas Airways Corporation will operate across the Atlantic to South America, are under construction in the Cowes, Isle of Wight, workshops of Saunders-Roe Ltd. Parts for four more have been ordered. When completed, they will be 140-ton craft, each with ten engines.

Bristol Proteus turbo-prop engines will provide each Princess with power. Eight of them will be arranged in pairs, and two separate units will be placed in an extreme outer wing position. With a total of 35,000 horsepower, the Princess flying boats will be able to cruise at 380 miles an hour. They are designed for a still-air range of 5,500 miles. This is regarded as sufficient for flights from London to Buenos Aires, on which the maximum stage lengths are 3,100 miles, or for a trip from England to New Zealand, with maximum hops of 3,000 miles.

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## MEDICINE

### Streptomycin Royalties Build Research Institute

► STREPTOMYCIN, famous antibiotic drug which was almost literally dug out of the earth, will have its life-saving benefits greatly increased through the generosity of its discoverer, Dr. Selman A. Waksman of Rutgers University. Royalties from the streptomycin patent will be plowed back into more research of the kind that gave the world this drug and may give it others equally beneficial.

The drug was patented by Dr. Waksman in 1945, two years after he and his students discovered it, in order to insure its greatest development in the public interest.

Dr. Robert C. Clothier, president of Rutgers announced that Dr. Waksman has assigned his patent to the Rutgers Research and Endowment Foundation and that royalties from the patent will be used to build and operate a new Institute of Microbiology at Rutgers. Dr. Waksman will be its first director.

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## GENERAL SCIENCE

### Rate of Fabric Wear Is Determined Electrically

► THE probable life of fabrics at points of wear can now be determined electrically and accurately without injury to the goods. The rate of wear is determined by measuring the "electrical capacity" of the cloth in use at regular intervals. This property of the textile decreases with the wear.

Electrical capacity, called capacitance by scientists, is the property of materials which permits the storage of electricity when there are potential differences between conductors. In a new instrument developed for measuring wear in textiles, the wear is measured by sending electric impulses through the fabric. In the process, terminals of the electric source are far enough apart so that the sample of textile can be passed between.

This process of measuring textile wear was developed by Dr. H. F. Schiefer and associates at the National Bureau of Standards. The work was done under the sponsorship of the Army Quartermaster General whose special interest is more durable clothes for soldiers. The same device can be used for exploring the uniformity of textile materials.

This new process promises to have wide applications in replacing unsatisfactory and destructive methods now employed. One of these is by measurement of the time required to wear through a sample in an abrading machine. Other methods are based on changes in thickness with wear, air permeability, light transmission, and the breaking strength of material at various stages of abrasion.

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