

ASTRONOMY

Magnetic Iron in Space?

Needle-shaped minute bits of iron in giant magnetic fields may occupy outer space between stars, two Princeton astronomers suggest.

► **SPACE** outside the earth's atmosphere may be filled with tiny, magnetic needles of iron in giant magnetic fields.

This newest picture of what lies between the stars was suggested by two Princeton University astronomers in the journal, *SCIENCE* (May 6).

These needle-shaped bits of intensely magnetic iron which may occupy vast reaches of space would be so tiny they would be invisible to the naked eye, even from close range (perhaps through the windows of a future space ship). But clues hinting that these minute needles are out there have been discovered, Drs. Lyman Spitzer, Jr., and John W. Tukey said.

Their idea, which they are not ready to term a "theory" yet, came from the findings of American and Dutch astronomers and a new theory of one of the world's leading atomic scientists.

Dr. W. Arthur Hiltner, of Yerkes and MacDonal Observatory of the Universities of Chicago and Texas, and Dr. John S. Hall, of the U. S. Naval Observatory in Washington, reported earlier this year that light from the stars of the Milky Way

dances in a restricted way. Milky Way starlight, they found, vibrates more in one direction than another. It is polarized light.

The Princeton astronomers say that magnetic iron needles in space might account for this, if there are giant magnetic fields. These fields, they add, would be on the order of those suggested recently by Dr. Enrico Fermi of the University of Chicago. Dr. Fermi, an inventor of the chain-reacting pile which led to the atomic bomb, believes these fields are involved in the birth of the cosmic rays which bombard our earth.

The theory of two Dutch astronomers, Prof. Jan Hendrik Oort and Dr. H. C. van de Hulst, helps explain the growth of particles in interstellar space. Drs. Spitzer and Tukey propose that the particles may be compounds of iron, magnesium and oxygen.

If more research confirms the Princeton astronomers' idea of space, they believe that it may be possible to chart the magnetic fields between the stars.

Science News Letter, May 14, 1949

Streptomycin is not equally effective against all forms of TB. It is of greatest benefit in miliary TB which spreads rapidly throughout the body and in TB of the skin and mucous membrane, the lining tissues of body organs, Col. Hugh Mahon, chief of the pathology service of Fitzsimons General Hospital, Denver, declared.

It is less effective, he pointed out, in pulmonary TB because the antibiotic has only an indirect effect on lung cavities, not being able to penetrate the fibrous tissue of the wall of the cavity.

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ENGINEERING

Thirty Miles Up Measured By New Air-Borne Device

► **DISTANCES** above the earth up to 30 miles can be measured with high accuracy by a new instrument, revealed by General Electric engineers. It is a new type of hypsometer, an instrument that measures altitudes by determining the boiling point of a liquid and from it calculating the atmospheric pressure.

The fact that the boiling point of water decreases as the atmospheric pressure decreases is well known. It is also well known that the atmospheric pressure depends largely upon the altitude. This new hypsometer was developed particularly for use in free balloons which are sent high above

MEDICINE

Advances in TB-Fighting

► **STREPTOMYCIN'S** effectiveness in TB-fighting has been prolonged by combining it with para-aminosalicylic acid, PAS for short, the National Tuberculosis Association was told in Detroit. This was one of three drugs on trial to overcome the limitations of the antibiotic.

Studies with the sputum of TB patients revealed that the disease germs remained sensitive to the antibiotic up to the 120th day of treatment when PAS was added, William Steenken, Jr., head of the laboratory of Trudeau Sanatorium, Trudeau, N. Y., reported. With streptomycin treatment alone, resistant germs began to emerge about the 42nd day of treatment, he pointed out.

Promizole, a distant relative of the sulfa drugs, was also tried in combination with streptomycin but failed to retard the growth of resistance in the tubercle bacilli to the antibiotic, Mr. Steenken stated.

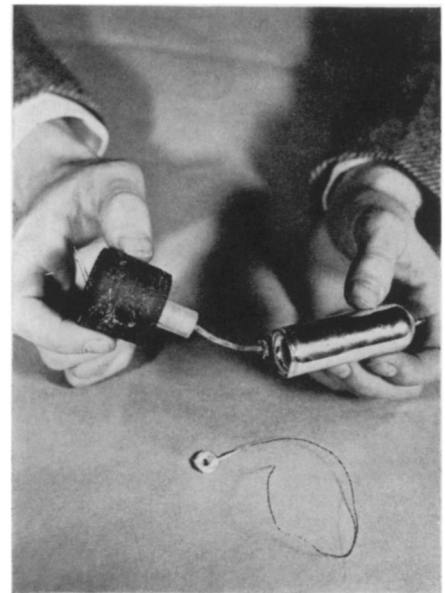
Confirmation of these results was presented by Dr. William B. Tucker, chief of the tuberculosis service of the Minneapolis Veterans Administration Hospital. Dr. Tucker pointed out that evidence has been accumulated which shows that PAS in combination with streptomycin delays TB

germs from becoming sensitive to the antibiotic. Promin, a relative of the sulfa drug family, and promizole had no delaying effect.

Streptomycin treatment of approximately 6,000 patients with various forms of TB in the VA program has also demonstrated that by cutting the dosage of the drug and administering it at three-, four- or five-day intervals, its effectiveness could be prolonged without reducing the benefits of the treatment, Dr. Tucker stated.

A derivative of streptomycin, dihydrostreptomycin, has shown promise in overcoming another handicap of the antibiotic in which patients suffer a disturbance of equilibrium, Dr. N. Stanley Lincoln, director of the Hermann M. Biggs Memorial Hospital, Ithaca, N. Y., told the meeting.

Studies in progress at four New York state tuberculosis hospitals, the Hermann Biggs, Homer Folks, Mt. Morris, and Ray Brook, have revealed that this derivative drug is less toxic to the nerve tissue than the parent drug, Dr. Lincoln and associates reported. However, dihydrostreptomycin leaves the problem of resistant germs unsolved.



ALTITUDE MEASURED—Carried aloft in balloons, this instrument gives data on altitude by boiling a small quantity of water in the glass vacuum bottle and then measures the water's temperature electrically. The doughnut in the foreground is the heating coil with a tiny battery connected to its wire tail.

the earth, reporting automatically by radio the weather conditions encountered. It looks like a radio tube, and was designed to replace the presently used bellows-type devices which expand and contract with changes in the air pressure.

The instrument contains a small vacuum flask which holds about five thimbles-full of liquid. Water sometimes is used, but a liquid with a lower freezing point, such as carbon disulfide, is usually chosen. Inserted in the open end of the liquid chamber is a thermistor, a delicate device for measuring temperature. It is a device in which the electrical resistance changes as the temperature changes.

The steam from the boiling liquid causes the temperature changes. It is the changes in the electrical resistance of the thermistor that are transmitted to the ground station by the balloon's radio. The greater accuracy of this instrument is due to the fact that it is the temperature of the steam itself that is used as an index, not that of the boiling water.

Science News Letter, May 14, 1949

Science Service Radio

► LISTEN in to a discussion on "Progress in Detecting Cancer" on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EDST, May 21. Dr. Charles Huggins, professor of surgery at the University of Chicago, will be the guest of Watson Davis, director of Science Service. Dr. Huggins recently announced a blood test for the detection of cancer which is expected to come into general use in the coming months, and it should be a very real life saver for the future. Dr. Huggins will tell in his own words about this progress and related research.

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Words in Science— ENDEMIC

► WHEN a disease is prevalent among a limited population or community, it is said by public health officers to be endemic, en-dem-ic with the stress on dem. Malaria, for example, is endemic in certain parts of the world.

When the disease spreads so as to affect an unusual proportion of the population or so that it is not limited to a single locality, then it is said to be epidemic, pronounced e-pi-dem-ic.

If the disease should spread to international or world-wide proportions, it is said to be pandemic. Influenza was pandemic in 1918.

The origins of these words make clear their meaning. The latter part, "demic" comes from the Greek word for people, the same one from which we get the word democracy. The prefix "en" means within and indicates its confinement to a locality; "pan" means all, pointing out its wide-spread nature; "epi" means on or over, indicating that it is spread over the community or population.

Science News Letter, May 14, 1949

CHEMISTRY

Pioneer Sugar Chemist's Son Wins \$5,000 Prize

► THE SON of a pioneer scientist in the field of sugar chemistry was awarded the \$5,000 fourth annual sugar research prize.

Dr. Hermann O. L. Fischer of the University of California was presented the award by the National Science Fund of the National Academy of Sciences. Dr. Fischer's father was the German chemist, Emil Fischer, who has been called the "father of modern carbohydrate chemistry."

The University of California chemist and

the three previous winners of the award are eligible for a final grand prize of \$25,000 to be awarded next year for the most outstanding contribution to original knowledge about sugar since 1945.

After leaving Germany in 1932, Dr. Fischer served as a professor of chemistry in Switzerland and Canada before going to the University of California last fall.

Dr. Fischer's research was hailed as "vital not only to progress in organic chemistry, biochemistry and physiology, but basic to better understanding of nutritional problems," by Dr. Hans Clarke of Columbia University in a presentation address.

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