

## ASTRONOMY

**Discover Pluto Takes Six Days to Rotate Once**

► PLUTO, the solar system's most distant planet, takes slightly longer than six days to rotate once, two scientists have discovered.

Dr. Merle F. Walker and Robert Hardie, using the 42-inch reflecting telescope at Lowell Observatory, Flagstaff, Ariz., found Pluto's rotation rate by charting changes in its apparent brightness.

The planet is so far from the sun, more than three and a half million miles, it appears nearly like a star in even the largest telescopes. Its rotation rate, therefore, cannot be learned from direct observation of surface features as can be done for Mars, for instance.

Light and dark markings on Pluto's surface, however, cause minute variations in its brightness.

These changes were measured photoelectrically to obtain a period for Pluto of 6.390 earth days. Change in brightness during the planet's "day" is only one-tenth of a magnitude, too small to be detected visually.

Rotation period of Mars, by comparison, is only 37 minutes longer than the 24 hours earth takes to make one complete revolution about its axis.

Dr. Walker and Mr. Hardie combined recent observations with earlier photoelectric observations by Dr. Walker at Mt. Wilson and Palomar Observatories in California and by Dr. G. P. Kuiper at Yerkes Observatory, Williams Bay, Wis., to obtain Pluto's rotation rate.

Science News Letter, January 28, 1956

## AGRICULTURE

**Treat Cotton Seed With New Insecticide**

► TREATING COTTON SEED with a systemic insecticide has provided "highly effective" control over a host of cotton pests for periods of three to seven weeks after the plants emerge, the U. S. Department of Agriculture has revealed.

While several systemic insecticides are being tested, one called American Cyanamid 3911 is the most advanced, the USDA said.

In all locations where this organic phosphorus compound was used on cotton seed, thrips, aphids and spider mites were controlled for three to seven weeks after the plants came up.

Some scientists found that the 3911 compound controlled boll weevils to a certain degree, while others had negative results. Apparently this difference was due to a difference in the time when the weevils entered the cotton fields.

The compound, more toxic than any insecticide presently recommended for cotton, demands extreme care in its use, the USDA said. Custom treatment of planting seed by trained personnel under carefully controlled conditions appears to be the

only safe application method.

The new chemical will be recommended by the USDA for limited grower trials this year and probably also by some of the southern state agricultural experiment stations.

In laboratory tests, seven other systemic insecticides have proved highly effective against aphids and spider mites, two worked well against thrips and five others were effective against the boll weevil.

Science News Letter, January 28, 1956

## MEDICINE

**Find Stingless Iodine Is Real Germ-Killer**

► IODINE that tingles but does not smart or sting is the form of iodine that does the germ-killing job, scientists at Rutgers Colleges of Pharmacy and Arts and Sciences, Newark, N. J., have discovered.

This iodine is different chemically from the iodine used to make the familiar household antiseptic tincture of iodine. It is a two-atomed, or diatomic, variety.

It is effective in very weak solutions and does not harm tissue. The Rutgers scientists add iodine crystals to distilled water. This gives a "slurry," which is a kind of muddy mixture. The clear fluid at the top, which is the two-atomed iodine solution, is drawn off.

A tincture is a solution in alcohol. The alcohol is at least partly responsible for the sting.

The two-atomed kind is dissolved in water, which does not smart as much.

Chief drawback to its use as replacement for ordinary iodine is that the solution must be freshly prepared for each use. The Rutgers scientists hope the stingless iodine can be put into a tablet that could be dropped into water to give the antiseptic solution.

Further tests on its safety are also needed. Chief human guinea pig so far for the two-atomed iodine has been Prof. Michael Iannarone of Rutgers. Every day for three months, Saturdays and Sundays excepted, he has been washing his mouth out with this iodine. He vouches for the fact that it tingles but does not sting or burn, and that it kills all kinds of germs.

Counting the number of mouth bacteria before and after the iodine wash, he found that 99.8% of the organisms were killed in record time.

One use foreseen for the new iodine is in cold sterilization of hypodermic needles for mass immunizations. In case of disasters with steam sterilizers destroyed, the iodine cold sterilization might be valuable. It might be useful for sterilizing other medical equipment and for purifying drinking water. Diatomic iodine is "an extremely effective" germ killer in three-hundredths of a percent solution, Dr. Benjamin Carroll of Rutgers reports.

The Rutgers scientists warn, however, that no one should try the mouth-washing experiments with a home iodine solution.

Science News Letter, January 28, 1956

**IN SCIEN**

## ASTRONOMY

**Spot Comet Returning After Seventy Years**

► THE FIRST comet spotted in the heavens in 1956 is an old one that reappears about every 70 or 75 years.

Known as Comet Olbers, its exact period cannot be predicted accurately because of difficulties in calculating the disturbing influences of the solar planets on its path and because it is seen so rarely.

Comet Olbers is so faint, 16th magnitude, it cannot be spotted by the naked eye but its light is recorded photographically by relatively large telescopes.

News of its rediscovery on Jan. 4 by Antonin Mrkos of Skelnate-Pleso Observatory, Czechoslovakia, was cabled to Harvard College Observatory by Mlle. J. M. Vinter-Hansen of Copenhagen, Denmark.

Science News Letter, January 28, 1956

## PSYCHOLOGY

**Test Detects Brief Blackouts of Epilepsy**

► PSYCHOLOGICAL TESTS that detect the brief blackout periods of epilepsy are helping diagnose the condition, scientists of the Veterans Administration Hospital in Salt Lake City find.

The tests work by showing that the epileptic, who is usually highly intelligent, has temporarily lost the train of thought or forgotten what task he was working on.

In one part of the test, for example, pictures were shown the patients. The pictures were of objects with something missing. A cup lacked a handle, the knob was off a door or a second hand off a watch.

The patient being tested was asked to tell what was needed to complete the picture. He might go along all right on picture after picture and then without warning say "What was it you wanted to know?" or answer "It is one-fifteen" instead of spotting the missing second hand.

These errors are particularly revealing in an epileptic patient because the epileptic patient will usually recover his train of thought immediately and finish answering the questions as expected.

Other patients, even those with organic brain damage, or the mentally ill, usually do not make this type of error.

Results of the study by Drs. H. B. Hovey and Kenneth A. Kooi show that 44% of the epileptic patients tested gave definite evidence of this mental black-out. Only 17% of those with organic brain damage and only nine percent of the mental patients momentarily lost their thought train.

Science News Letter, January 28, 1956

# CE FIELDS

## PHYSIOLOGY

### Adapt Fusion Test To Other Senses

► THE EYE'S TENDENCY to see as a steady, continuous light any light that flashes on and off faster than a certain critical frequency has its counterpart in the other senses of hearing and touch.

This tendency enables persons to see separate "frames" as a continuous moving picture.

A measure of "temporal acuity," as it is called, can aid physicians in distinguishing patients with nervous disorders from those with psychoses, and to pick out those suffering from damage to the brain from those whose illness is functional.

Success with such diagnosis in a study of patients at the Veterans Administration Hospital, Seattle, Wash., is reported by Drs. Albert F. Ax of the University of Washington and William H. Colley of the VA Mental Hygiene Clinic, Huntington, W. Va., in the *Journal of Consulting Psychology* (Dec., 1955).

Temporal acuity for touch is the time spacing between individual touches required to perceive them as a vibration. For electric shock, it is the time spacing required to make the shock felt as a tingle.

Best one of these measures for diagnostic purpose, the doctors report, is visual flicker fusion, especially when the patient tells when the flicker begins as he watches lights flashing at a descending rate of speed.

As other senses are added to the test, however, the value for diagnosis is improved.

When the measures of time acuity in several senses were added, diagnosis was improved until a combined scale enabled the doctors to diagnose correctly 81% of the cases studied.

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## MEDICINE

### Steam Kettles Urged for Colds

► WHEN a child has a bad cold and cough the doctor may order a humidifier, or he may tell mother to keep a tea kettle steaming near the child's bed.

Dr. Abraham Friedman of Haifa, Israel, favors the old-fashioned steam kettle over mechanical humidifiers. In a report to the American Medical Association's *Archives of Otolaryngology* (Nov., 1955), Dr. Friedman explains the reasons that led him to make this decision.

The steam kettle, he finds, is better because it can produce more moisture than a cold-air mechanical humidifier, the now

generally accepted apparatus. Moist air helps prevent the blocking of breathing passages that may occur in an acute inflammatory disease of the throat and bronchial tubes.

In breathing, the air enters the respiratory tract at room temperature and humidity. On its way down the air absorbs moisture from the membrane lining the passages. It finally is exhaled at body temperature and saturated with water. The difference in temperatures and humidities between the air inhaled and exhaled results in a continuous loss of water from the respiratory tract.

In acute respiratory disease, the loss is speeded up and the breathing passages eventually may be blocked by the formation of a dry crust on the membranes. The drier the inhaled air, the more water it absorbs from the membranes, thus increasing their "drying out."

To prevent obstruction, the air breathed in must be as moist as the air breathed out. This means that the temperature and humidity of the air inhaled should be approximately equal to the temperature and humidity of the air exhaled.

Since there is a ceiling on the amount of water air will hold at a specific temperature, the air temperature must be raised to increase the water content. The mechanical humidifier may raise water content, but the low-temperature air cannot hold as much water as high temperature air would, he notes, adding that a steam kettle accomplishes both things.

While recommending the steam kettle method, Dr. Friedman warned that necessary precautions must be taken against the hazards of a burn and the development of a high fever in the child.

Science News Letter, January 28, 1956

## TECHNOLOGY

### Frogman Tests Missiles in Tank

#### See Front Cover

► A TANK for testing underwater missiles dropped by aircraft is on display at the hydrodynamic laboratory of the British Admiralty in Teddington, Middlesex, England.

Shown in the photograph on the cover of this week's SCIENCE NEWS LETTER is a frogman underwater in the new tank. He sits astride and makes adjustments to what is described as "a metallic torpedo-shaped object used for developing new streamlined forms."

The object is suspended from a rotating arm not shown in the photograph.

Water in the tank is especially filtered so that submerged objects can be clearly seen from observation windows 100 feet away.

Also put on display were a water tunnel, and a giant rotating beam in a circular pool that is used for testing "self-directional" weapons.

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## MEDICINE

### USSR Seeks U.S. Polio Fighting Know-How

► POLIO is getting through the Iron Curtain.

Although said jokingly at a press conference, four Russian polio experts visiting the United States to study the Salk vaccine reported that the number of polio cases in Russia has been increasing in recent years.

Two reasons given for the increase were the spread of more virulent strains of the crippling disease from other countries, and the greater exchange and improved communication between countries.

The Russian experts said that they would not take a batch of the Salk vaccine back to Russia with them for testing there.

Dr. Mikhail P. Chumakov, director of the Poliomyelitis Research Institute in Moscow and spokesman for the group, pointed out that the problems of polio in the United States and Russia are different.

He stressed the fact that children from birth to the age of five are the most susceptible group in Russia and that they are therefore interested in the vaccine's effectiveness for this group.

That is the age group in which there has been the least experience in the United States with the vaccine.

The Russians have not perfected a vaccine of their own, although they are busily experimenting with both dead and live viruses. For practical application, Dr. Chumakov noted, dead virus seems to be the best. However, he believes that eventually live viruses will prove effective.

The incidence of polio in Russia, he stated, is approximately 5 in 100,000 persons in those areas of outbreak, but only 0.6 to 0.8 in 100,000 for the entire nation. Incidence in the United States in 1955 was 18 in 100,000.

The four are visiting the Public Health Service's National Institutes of Health at Bethesda, Md., Dr. Jonas Salk, developer of the poliomyelitis vaccine in Pittsburgh, Children's Hospital in Boston, Mass., the Yale University Medical School in New Haven, Conn., the University of Minnesota Medical School in Minneapolis, Children's Hospital Research Foundation in Cincinnati, Ohio, and Johns Hopkins University in Baltimore, Md.

These places were selected by the Soviet scientists, who evidently know where polio treatment and research centers are located in the U. S.

The Russian scientists are accompanied on their tour by Dr. Alexis I. Shelokov, virologist of the Public Health Service.

All four of the Russians are from the Academy of Medical Sciences of the USSR. Besides Dr. Chumakov, the visiting Russian scientists include Marina K. Viroshilova, senior research worker of the Poliomyelitis Institute; Anatolii A. Smorodintsev, director of the Department of Virology of the Institute of Experimental Medicine, and Lev I. Lukin, scientist of the Academy.

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