

ENTOMOLOGY

Giant Polyphemus Lives For Only One Purpose

See Front Cover

► THE POLYPHEMUS moth is one of our largest and most beautiful silk-spinning moths. The photograph by George A. Smith, on the front cover of this SCIENCE NEWS LETTER, shows the beauty and detail of this giant moth. It is found from the Atlantic to the Pacific. Its wings, which often reach a span of four inches, are delicately marked with shades of ochre, brown and blue. There is a distinct eye-like spot in each wing. The polyphemus never eats during its lifetime, which is only a few days. Its only mission seems to be that of finding a mate and depositing its eggs in order that its race will be continued.

Science News Letter, June 8, 1946

PSYCHIATRY

Nervous? Time Off from Job May Be Bad Advice

► TELLING a "nervous" patient to take time off from his job may be the worst advice a doctor can give. If the advice is followed the patient may become a chronic mental patient, Dr. Frederick W. Dershimer, director of psychiatry for E. I. du Pont de Nemours & Company, warned at the meeting in Chicago of the American Psychiatric Association.

Employers and the public as well as employees may suffer if workers with nervous and mental disease are too rigidly eliminated from industry, he pointed out.

"Before we decide to screen them out," he said, referring to such cases, "we need to give serious consideration to the fact that the inventor of nylon was a known psychiatric case for years. Denying employment to him would have cost the du Pont Company more than the psychiatrist could hope to save in a lifetime."

Many patients suffering from severe psychoneuroses and some with psychoses, which are more serious forms of mental sickness, can be treated without leave of absence, Dr. Dershimer has found. By doing so, better and quicker results can be obtained than when sick leave is granted.

Psychiatrists going into industrial work need to learn everything possible about the organization and healthy functioning of the particular company where

they work, Dr. Dershimer stated. Without this basic knowledge psychiatrists in the past have offered remedies for non-existent ills and completely missed important problems they might have helped to solve.

"Tall tales" of job hazards told to new workers by the old hands sometimes lead the newcomers to work in a state of chronic terror. Other traits and habits of the American workman may cause or make worse some psychiatric problems. Unless the company psychiatrist is familiar with such conditions he cannot help the workers.

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INVENTION

Liquids Dehydrated Into Powder Form

► THREE PATENTS, Nos. 2,400,458 to 2,400,460, have been issued to Joseph M. Hall of Chicago on apparatus for dehydrating liquids such as fruits and vegetable juices into powder form. The liquid is fed into the drying chamber through a rotating hollow shaft which ends in a set of whirling spray nozzles, so that the liquid is thrown out in minute droplets. As these tend to fall towards the bottom of the big, top-shaped drying chamber they are met by a rising current of hot air, which removes the water. As planned by Mr. Hall, the dehydration is a two-stage process, the liquid being concentrated in the first drying chamber, and the concentrate reduced to final dryness in the second.

Rights in the patent are assigned to the Drying and Concentrating Company.

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GENERAL SCIENCE

Postwar Research Grants Of \$175,000 Announced

► POSTWAR research grants to 28 universities and colleges providing \$175,000 for investigations in many fields of physics and chemistry were announced by Dr. Joseph W. Barker, president of the Research Corporation.

Such special grants, named in honor of Dr. Frederick Gardner Cottrell, whose gift of patent rights in electrical precipitation in 1912 inaugurated the foundation, will total \$2,500,000 in the next five years. They are intended to aid the return to their educational institutions of faculty members in war research.

*Science News Letter, June 8, 1946***IN SCIENCE**

AERONAUTICS-ENGINEERING

Gas Turbine Engines for English Passenger Planes

► FOUR GIANT planes for the North Atlantic route, each to accommodate 180 seated passengers, have been authorized by the British government and three of them will be powered by gas turbines. The first, already in an advanced stage of construction, will be powered by conventional engines.

One of these eight-engined 110-ton planes, all to be known as Brabazon 1, will be ready for use within a year, its builder, the Bristol Aeroplane Company, expects. The first of those powered with gas-turbine units will be ready a year later. The Brabazon 1 will have a wing span of 230 feet. Fitted with sleeping berths, the new planes will accommodate 80 passengers.

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MEDICINE

If You Have a Cold, Don't Exercise

► EXERCISE IS bad for the common cold, contrary to some conceptions that a sweat will eliminate the ailment.

This is reported by Dr. Franklin Henry, assistant professor of physical education at the University of California, on the basis of experiments in which he tested 21 students both under conditions of good health and in the stages of an active cold.

Dr. Henry found that a person puts forth more effort when exercising with a cold than he does when in good health.

He said that while there is no significant difference in blood pressure or pulse rate, breathing performance for 15 seconds after exercise was significantly poorer in persons suffering from colds.

Dr. Henry also found, by analysis of the last bit of expired air after exercise, that there was a greater accumulation of carbon dioxide in the blood streams of persons with colds. He said this was probably due to a reduction in the individual's alkaline reserve, resulting in temporary hyperacidity in persons taking exercise with colds.

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CE FIELDS

PLANT PHYSIOLOGY

Signal Growth Potential Soaked Corn Grains

► CORN GRAINS, after soaking in water for a while, can give electrical signals telling how likely they are to sprout if planted, and what kind of yield can be expected from the stalks that will grow from them. How this is done is told by two Yale scientists, Dr. Oliver E. Nelson and Dr. H. S. Burr, in the *Proceedings of the National Academy of Sciences*, (April 15).

Soaked corn grains, they explain, have an electrical potential, and this can be registered by touching suitable electrodes to their opposite ends and leading the minute current thus released to a sufficiently sensitive galvanometer.

First readings made in this way were found to be correlated with the viability of the seed, that is, its power to sprout and grow if planted. If this connection is maintained for a time, the first potential drops somewhat and levels off. A second potential reading, made after this period of stabilization, has been found to be correlated with the weight of grain subsequently harvested from the corn-stalk produced by that seed. Various hybrid corn strains show distinctive electrical potentials, the two investigators state.

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MEDICINE

Direct Record of Human Heart Action Obtainable

► BY INSERTING a fine wire into an elbow vein and gently pushing it forward until its tip rests inside the heart or against its walls and connecting the other end to a recording galvanometer, doctors can now get a direct record of the electrical currents of human heart action, Dr. H. H. Hecht, of the University of Utah Medical School, reported at the meeting of the American Federation for Clinical Research in Atlantic City.

None of the volunteers, some of whom had heart disease, were harmed by the procedure and none complained of unusual sensations, Dr. Hecht stated.

The location of the impulses which govern the heart beat could be shown

for the first time with this procedure. They start in a section of the right side of the heart, and then spread over the human heart muscle in a well defined manner quite similar to the spread of impulses seen in open chest experiments performed on dogs and monkeys in both normal and abnormal conditions.

The electrical currents of heart action have been recorded for many years in human subjects and these electrocardiograms have been extensively used in diagnosis of heart and blood vessel disease, Dr. Hecht pointed out. However, no direct records from the human heart have been available. The significance of the electrocardiogram has been interpreted by analogy with information gained from experiments on strips cut from heart muscle, skeletal muscle or nerve tissue.

The direct records Dr. Hecht obtained show that the electrical phenomena associated with the heart beat in man are almost identical with those that can be obtained from the highly artificial nerve strip or muscle preparation. Doctors can therefore continue to use the electrocardiogram for patients, while the new technique is used to gain additional information about heart action.

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PSYCHIATRY

Juvenile Delinquents Are Neurotics

► JUVENILE delinquents are neurotic persons with unresolved conflicts and unconscious drives for which they are not responsible, Dr. Leonard M. Dub, of Washington, D. C., declared at the meeting of the American Psychiatric Association in Chicago.

Trying to reform them by, for example, teaching them that it is wrong to steal an auto for a joy-ride and that they should find something legitimate to do when they want to have fun does not help because it only touches the surface of their neurotic minds.

The real cause of the auto-stealing or other delinquent behavior lies much deeper and involves a problem of which the juvenile delinquent is not aware.

Sending such a young person to prison or reform school is almost pointless, Dr. Dub said, unless he is helped by a psychiatrist to understand and unravel the twisted threads of his own individual experience with life so that he can change not just his conscious motives for behavior but his whole attitude toward life.

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ACOUSTICS

New Instrument Imitates Any Musical Sound

► AN INSTRUMENT that can reproduce not only the sound of a piano but the tone of any individual piano or any other musical instrument is not going to be used in a symphony orchestra. It will stay in a scientific laboratory.

The instrument is a hundred-element tone synthesizer demonstrated to the Acoustical Society of America by E. C. Wente, C. A. Lovell and J. F. Muller of the Bell Telephone Laboratories, Murray Hill, N. J.

One hundred magnetic records placed side by side on a rotating drum produce sine-wave currents to generate a complex electric current. Special circuits adjust the build-up and decay rates of groups of components to simulate the sound of musical instruments.

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GEOLOGY

Paricutin Affords Chance To Study Soil Erosion

► PARICUTIN, Mexico's three-year-old volcano, not only affords scientists opportunity to study the early stages of a volcano's life history; it also offers an unparalleled chance to observe soil erosion in the raw. What water and wind are doing to the thick mantle of ash which Paricutin spread over 140 square miles of Mexican farms and forests was described and pictured by Dr. W. C. Lowdermilk of the U. S. Soil Conservation Service, before the meeting of the American Geophysical Union.

The volcanic ash is for the most part very fine and loose, and since there is no vegetation on it as yet it is washed away very easily, forming gullies that grow wider and deeper. Streams flowing down these gullies immediately after a storm consist of a gruel-like mud rather than water; in samples collected at various times, volcanic ash constituted from 40 to 60% of the total weight.

Large boulders that would sink in water will float on the fluid mud. Stones are often found in the middle of fields after a mud-flood has swept over them.

Yet this mantle of volcanic ash is not an unmixed curse. If modern plows and tractors can be got into the region, to bring the buried soil up and mix it with the ash, the fertility of the fields will be greatly enhanced.

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