

yellow and red, are shown by the colors of the globes.

The model is most decidedly a packing of much into little. The box in which the display is housed is only about three feet on a side. The assemblage of stars within it occupies a sphere of space with a radius of sixteen light years of the sun. A light year is the distance traversed by a beam of light in one year—and light travels at the velocity of approximately 186,000 miles a second. Calculations show that in this group of forty, there is only one star per 440 cubic light years, and that the average distance between the stars is seven and one-half light years.

Space may be more populous with stars than that, however, since there may be a number that have not yet been

observed because of their small size or faintness; and there may also be a number of stars within it whose faint light at present deceives astronomers into thinking they are outside the boundary.

This model was one of the exhibits of the Mount Wilson Observatory, where for many years a program of measuring stellar distances has been in progress.

See Front Cover

Among the exhibits of Mayan pottery from Guatemala was the little figurine shown on the front cover of this week's SCIENCE NEWS LETTER. This figure has the interesting device of a slit in the back of the head letting the light show through the eyes. As you walk past the figure, this spot of light appears to move, thus giving the effect of moving eyes following you.

Science News Letter, January 12, 1935

The linking of intellect and emotion is insisted upon by the new thinking. Study of reason or thought independently of emotion is declared just as objectionable as the separation of space and time or mind and body.

It is reported that the Korzybski system has produced encouraging results when used to treat certain types of insanity based upon false identifications or delusions.

Science News Letter, January 12, 1935

OCEANOGRAPHY

New Current Meter Allows Prediction of Huge Waves

A RECORDING current meter, which will keep a complete record of intensity and direction of ocean currents, and by which scientists hope to be able to forecast destructive waves, has been devised by Dr. George F. McEwen, professor of physical and dynamical oceanography at the Scripps Institution of Oceanography, La Jolla, Calif.

No instrument now in use keeps a time record of current changes, Dr. McEwen stated, in explaining his new machine, now in its experimental stage on the pier at the Institution.

The device, which operates on the principle of a pendulum, consists of a perforated sphere set on gimbals free to move in two directions. The extent of the movement is recorded on a revolving waxed cylinder.

"From the movement thus recorded along two lines at right angles to each other we can easily compute the resultant line, which gives us direction and intensity of the current," Dr. McEwen said.

Dr. McEwen explained that the new instrument is designed to compile data on current movements for use in studying causes of the huge waves which have rocked the coast of Southern California and on occasions caused property damage.

Attached to the apparatus, which weighs 200 pounds in all, is a magnetic needle which automatically locks after becoming settled, so that the compass direction of the currents is known.

The disk on which the record is made is rotated by another cylinder filled with oil and containing a plunger. As the oil seeps by the plunger an attached weight slowly lowers, turns the disk, and locks the compass. Dr. McEwen anticipates constructing a similar device for measuring winds and air currents.

PSYCHOLOGY

New Mode of Thought Urged To Replace Aristotle

A DEMAND for a new mode of thinking, that junks our most fundamental laws of thought just as Einstein with relativity disarranged the old-fashioned laws of time and motion, was made to the American Association for the Advancement of Science.

As expounded by Prof. Oliver L. Reiser, University of Pittsburgh philosopher, the new non-Aristotelian method of thought blasts the idea that "a thing is what it is" or that it is identical with itself in all respects. For example, you are not the same you that existed a second ago or a year ago. An apple, or a planet, or a human being is constantly changing with time and it is therefore different second by second. Since the attacked law of identity is the most fundamental of the three traditional laws of thought in the heretofore hallowed logic of Aristotle, this new idea is upsetting.

The new mode of thinking may be more far reaching than even Einstein's ideas. It may, Prof. Reiser suggested, answer the demand for practical readjustments in the social order and it may create a revolution in the very theory of science. It may cure the insane who suffer from delusions. It may in time affect our everyday thinking. It may be the mode of thought of the man in the street.

Not easily won will be these possible revisions. Some look with skepticism upon the new ideas.

Non-Aristotelian logic, as it is called, arose out of the new discoveries in physics, the idea of evolution and mathematics. The pioneers are the Dutch mathematician, L. E. J. Brouwer, the Polish investigators Lukasiewicz and Tarski, Count Alfred Korzybski, and Prof. C. I. Lewis of Harvard. Prof. E. T. Bell, California Institute of Technology mathematician, has espoused the cause, claiming that Aristotle handcuffed human thought. Count Korzybski is its leading expositor.

"It is hoped that this new intellectual revolution," Prof. Reiser said, "will free human thinking from its limitations and remove the underlying causes of mental and social maladjustments. The next big development in the mental evolution of the race is already upon the scene and we will undoubtedly hear much of it in the years to come."

One of Count Korzybski's insistences, as explained by Prof. Reiser, is that all names of objects should be dated or numbered, such as apple number one, apple number two, much as a fond parent labels or dates the photographs of a baby. This is to avoid the fallacy of false identification.

While the present instrument is now recording currents near shore at La Jolla, the scientist hopes soon to equip ships with similar ones.

According to Dr. McEwen, the giant waves in this region are caused by a combination of coastal oscillations and

long sloping waves coming in from hundreds of miles out at sea.

"We don't know much about these currents yet," he said, "but once we have these instruments stationed in key positions along the coast we shall be able, at least, to forecast disasters."

Science News Letter, January 12, 1935

PHYSICS

Emulsions Under Microscope Stage Dramatic Performance

LIFE is not in either water or oil, as such, yet when the two are brought together in the presence of a substance that causes them to mix, or emulsify, they will stage a performance startlingly lifelike in its complexity. One of these vivid, quasi-vital performances by a non-living setup was described by Dr. P. A. Young of Montana State College, before the meeting of the American Association for the Advancement of Science.

Dr. Young used three things: water, petroleum oil, and a go-between or emulsifier known as cresoap. He related his observations:

"Through a microscope I saw a very interesting, rapidly moving drama when water touched petroleum oil containing the cresoap emulsifier. At the instant that they touched, a wall appeared between them. Then suddenly streams of oil flowed through holes in this wall and emulsified clouds of oil globules in the water, like a garden hose spraying drops of water into the air. But not all of the streams of oil formed globules, for some of the oil streams formed large masses that moved in the water, and resembled thunderhead clouds in the sky.

Moved Like a Snake

"The wall between the oil and water sometimes wiggled like a snake and then made knobs that cut off large globules of oil emulsion into the water. These globules were marvelous complex spheres of oil that contained spheres of water, and inside these internal spheres of water were very little spheres of oil that rapidly danced the Brownian movement.

"When the wall between the oil and water did not move, oppositely revolving whirlpools swirled in the oil and water beside the wall, and emulsified

the liquids they drove through the wall. Another peculiar current in the oil was a cylinder that rolled as though it were on a spindle beside the wall.

"Breaking of emulsions was spectacular, too. When a granule of salt dropped into the oil emulsion, wiggly solution lines darted out from the salt and attacked the oil globules. These suddenly exploded, ran together, and formed a lake of oil. Then a wall appeared between the oil and the salt

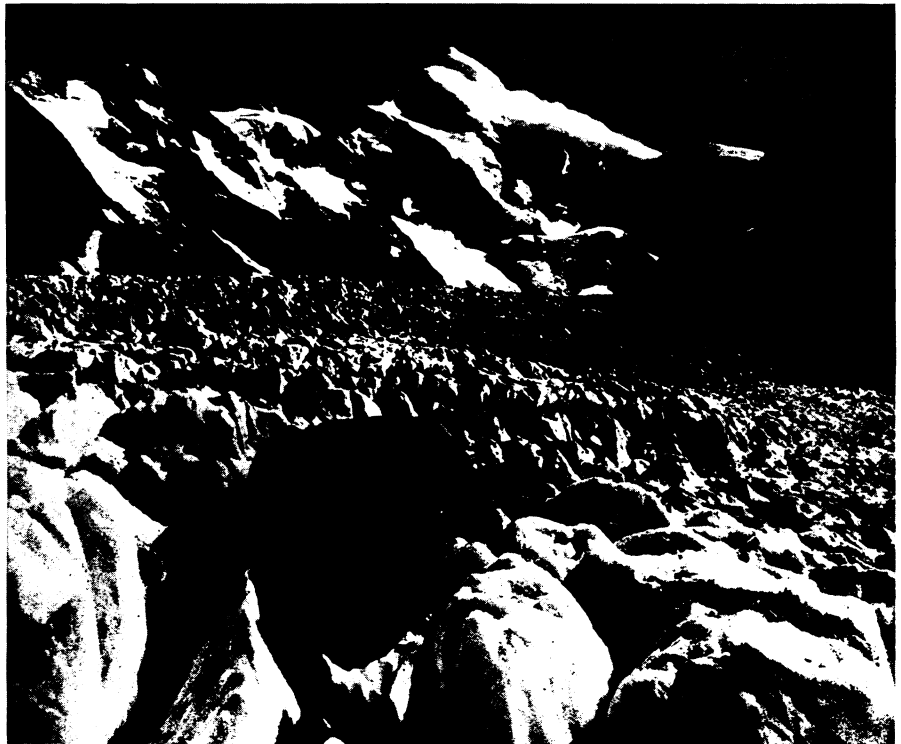
water, with oil globules exploding and joining the lake of oil on one side of the wall, while cylindrical currents rolled and pairs of whirlpools swirled on the other side.

"Thus I saw how emulsions form and break, and so I learned more about the emulsions of protoplasm, dairy products, and petroleum."

The study of emulsions is highly important to chemists, physicists, and biologists, and in the practical industries and arts as well, Dr. Young explained. Many of our most important foods are emulsions: milk is an emulsion of fat in a watery fluid; butter an emulsion of watery fluid in fat. The sprays generally used to protect crops and orchards against insect enemies are emulsions. Protoplasm itself, the complex stuff in our cells that is alive, is an exceedingly complex emulsion.

Science News Letter, January 12, 1935

It has been asserted that Leonardo da Vinci was not truly ambidextrous, using either hand indiscriminately, but that he painted with his right hand and drew with the left.



A ROCK GOES RIDING

How some of the huge "erratic" boulders that lie on hillsides in the northern United States were transported on the humps of slowly creeping caravans of ice is strikingly exemplified by a modern instance, photographed by the Washburn Alaskan Expedition of the Institute of Geographical Exploration, Harvard, in 1934, at Crillon Glacier. The great dark mass of the boulder may move only a few feet, or even a few inches, in a year; but glaciers are very patient, and in the end carry their burden many miles.