INVENTION

"Electric Eye" Now Bosses Machine for Sorting Eggs

EGGS can now be separated into the good and the bad, and even graded into as many as a hundred phases in between, by means of a new photo-electric-cell candling machine invented by Wheaton C. Ferris, a St. Louis real estate dealer. The device is said to work more rapidly and far more accurately than the best professional "egg candlers," who are now employed by commission houses to sort eggs by looking through them at a light.

Years ago, Mr. Ferris was in the general merchandise business in a small town. He bought eggs from the farmers and candled them himself. Even after he changed his occupation the memory of that tedious task stuck with him, and at last he hit upon the scheme of putting the light-sensitive photocell in place of the human eye, and automatic handling machinery in place of the human hand.

A separate problem was the prevention of eggs from cracking as they dropped out of the chute into the machine. He finally solved this by installing a rubber ring within a steel one, with an annular space between. A low-pressure blast of air is kept blowing through this, forming a cushion of compressed air on which the eggs fall.

In a test which pitted the automatic action of the machine against the judgment of an experienced egg candler, the machine passed as good several eggs which the candler rejected as bad. When the eggs were broken they proved to be good: the photocell was the better judge of quality through the eggshell.

Science News Letter, December 3, 1932

ENGINEERING

New Liquid Insulator Devised for Transformers

REJUVENATION for a "vital organ" of electrical transmission systems that cover the country is contained in a new kind of transformer oil developed in laboratories of the General Electric Company.

The transformer, by which voltage can be stepped up or reduced, is the key to the distribution of electricity far from the power plant. Most transformers are insulated with mineral oil, which will easily mix with water and thus lose its insulating ability.

Water separates from the new product twice as fast as from mineral oil, F. M. Clark stated in the *Electrical World,* and the demulsified water rises to the top of the insulating fluid

It is claimed that danger of fire and explosion is less with the new insulator because its decomposition products are non-combustible gases. When broken down by an electric arc, mineral oil yields hydrogen and hydrocarbons that form explosive mixtures with air.

The liquid insulator consists of synthetic organic dielectrics of varying physical and chemical properties and is produced in several different forms.

Science News Letter, December 3, 1932

ASTRONOMY

Check-up Shows Leonid Meteors Numerous

METEORS of the Leonid shower were more numerous than astronomers believed, after their nights of disappointing vigil in mid-November. This is indicated by a check-up made by Prof. Charles P. Olivier, director of the Flower Astronomical Observatory of the University of Pennsylvania.

In a report to Science Service, Prof. Olivier said:

"Excellent reports from observing parties from Boston University, under Prof. L. A. Brigham, show for the night of Nov. 15-16 a total of 252 meteors for four observers, facing different directions, in five hours; and of 417 meteors for four observers in six hours, these latter situated some distance from Boston.

"From State Normal College, East Radford, Va., a very large party under Prof. Paul R. Burch, counted (including duplicates) 734 meteors in three hours; the largest average being 34 per hour each for three different observers.

"From 'Lavorika,' Catskill Mountains, N. Y., the party under J. A. Kingsbury observed 901 meteors that same night, including duplicates. The party consisted of 25 persons, with a variable number of observing.

"It will therefore be seen that the numbers observed in Iowa were well equalled by parties in New York, Massachusetts and Virginia. This does not in the slightest infer that others were not equally fortunate but these are reports from large parties, already examined in some detail. Although 50 reports from 21 states have arrived."

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IN SCIENC

METEOROLOGY

Mountain-Top Wind Makes Balloons Go Down

WHEN WE FILL a balloon with hydrogen we expect it to ascend, but when the observers on Mount Washington fill one they expect it to descend. The wind goes over the peak of the mountain and down the lee side so fast that the balloon, even though inflated to rise ten feet a minute in still air, is forced down by the wind.

On quiet days the balloon behaves, and a good "run" is the result. On windy days the balloon just drops out of sight into the clouds below. Later it may be seen asserting itself after the wind has taken it away from the mountain. One balloon plunged downward into a cloud, then rose out of it, but the observers could not train the theodolite on the balloon, for while it was out of sight frostwork covered the lens.

Science News Letter, December 3, 1932

SOCIOLOGY

24 Minutes Per Job Required for Placement

IT TAKES an employment office just fifteen times as long, on the average, to place an engineer in an existing vacancy as it does to fill an employer's request for a laborer, Dr. W. E. Parker of Rochester, N. Y., has reported.

In an effort to work out most desirable methods for employment offices, records have been kept in Rochester of the time required for every activity necessary in bringing the job and the applicant together. A single card is filled out for each "job order" and on it the placement officer records his telephone calls, correspondence, interviews, and so on, including a time record of each thing he does. An average of twelve minutes is required to fill a request for a laborer, either man or woman. An average of 180 minutes is necessary to place a qualified technical employee. The average for all positions is 24 minutes.

Science News Letter, December 3, 1932

E FIELDS

CHEMISTRY

New Chemical Treatment Makes Fabrics Crease-Proof

WOOL CLOTH does not crease, muss, or wrinkle as easily as rayon or cotton. From England comes the information that a method of producing creaseless rayon has been developed.

Textile experts have considered that taking the crease out of rayon is one of the most progressive steps that could be made in improving the "artificial silk" of cellulose obtained from cotton or wood.

The crease-preventing process that has been invented and patented in England was the result of fourteen years of laboratory experimentation by a Manchester textile concern.

The method of the anti-crease process calls into service another of the chemist's synthetic products that cause the industrial revolutions of today. A synthetic resin does the trick. Yarns and fabrics of various textile fibers, not alone rayon, can be made uncrushable by impregnating them with a synthetic resin that is mainly distributed within the individual fibers.

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PHYSICS

Moon's Pull Measured By New Gravity Balance

A NEW INSTRUMENT for measuring gravity so sensitive that it detects the attraction of the moon was explained to the American Physical Society meeting at the University of Chicago by its inventor, Dr. Kenneth Hartley of Houston, Texas.

Measurement of gravity to within two or three parts in a million, which corresponds to two or three feet of difference in elevation, is of value in prospecting for oil and valuable minerals. Dr. Hartley made his gravity balance with that end in view but it has proved to be so sensitive that it has an accuracy ten times the best work done by the pendulum apparatus of the Coast and Geodetic Survey with which official gravity values are determined.

The attraction of the moon registered on the Hartley balance agreed with the vertical part of the moon's pull upon the instrument as computed theoretically. Making readings each hour during a complete cycle of the moon's journey around the earth, which takes a little less than a month, Dr. Hartley found that the moon's attraction has a period of 24.8 hours and that the 12.4 hour period found in the tides is not present. Another puzzling discovery was a small lag in time of the recorded values as compared with those mathematically expected. This has not been explained.

The Hartley gravity instrument uses the elasticity of a spring in measuring gravity. The only previous successful methods have used some form of pendulum for determining the acceleration produced by gravity. With the type of pendulum apparatus used by the government engineers, gravity can be accurately determined in only three or four places in a month, while Dr. Hartley claims that he can ascertain gravity at three places within an hour if the weather is reasonably good.

Science News Letter, December 3, 1932

CHEMISTRY

New Method Measures Water Held by Flour

HOW MUCH water can flour soak up?

This question, of obvious importance to millers, bakers, and everyone who works with flour, can be answered with the help of a new method developed by Dr. Earl B. Working of Kansas State College.

A quantity of flour is mixed with six times its weight of water, and whirled in a special centrifuge. An additional four parts of water is added, to make sure that all the flour is washed in.

After centrifuging, the flour remains in the bowl of the centrifuge as a dough. The bowl and dough are weighed together, then the weight of the bowl and the original weight of the flour subtracted. The difference represents the weight of water which the sample of flour is able to hold. This differs, of course, for different wheats, methods of milling, storage conditions and other factors.

Dr. Working's method has been used on over 200 samples of flour from all over the United States and Canada, and is regarded as quite successful.

Science News Letter, December 3, 1932

ARCHAEOLOGY

Aegean Cities 3400 Years Ago had Common Language

DWELLERS in the brilliant cities that stood around the shores of the Aegean Sea in the fourteenth century B. C., when Tut-Ankh-Amun sat uneasily on the throne of Egypt, had a common language, as they have a common language today. Fresh evidence to this effect was laid before the Hellenic Society in London by Sir Arthur Evans, famous investigator of the remains of the high civilization centering in the royal city of Knossos on the island of Crete.

It has long been known that there was a cultural connection between Knossos and the cities of the Mycenaean civilization on the Greek mainland, but whether they had a common tongue or whether, like modern European nations, they shared a culture though speaking alien languages, has never been clear.

Now Sir Arthur, by examining an inscribed vessel discovered by Prof. A. D. Keramopoulos in Cadmean Thebes, has found proof of identity in language in similarities between the letters of the Cadmean inscription and writings found in Knossos, and also in the close correspondence between personal names used in two cities.

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PHYSICS

Electrons Promise to Reveal Secrets of Matter's Heart

STREAMS of electrons, the ultimate particles of electricity, when shot through crystals promise to reveal some of the secrets of the heart of matter, the atomic nucleus.

Drs. K. Lark-Horovitz and H. J. Yearian of Purdue University reported to the American Physical Society meeting in Chicago that they have found unmistakable evidence of the role that the nucleus of the atom plays in the diffraction of electrons by crystals.

Whereas the X-ray method of crystal pattern study shows only the behavior of the electron cloud around and outside the heart of the atom, the electron waves are strongly influenced by the charge of the nucleus of the atom itself. This effect showed in the Purdue experiments as a difference in the intensity distribution of the scattered electron waves as compared with the X-ray pattern.

Science News Letter, December 3, 1932