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FLASH OF ELECTRIC LIGHT  
MAY BE NATIONAL TIME SIGNAL

(By Science Service)

Release Thursday, July 7.

New York, July 6.- A dimming of electric lights each night at 8 o'clock as a national time signal is being urged as a measure that will distribute the correct time regularly to all who are within sight of an electric light.

In the same way that the conventional time ball is dropped down the staff at noon and clocks are regulated by telegraphic or radio signals from the Naval Observatory in Washington, it is suggested that power plants regularly flash the correct time daily over their electrical systems.

This idea is actually working in Uruguay, according to James H. Collins who explains the idea in the Jewelers' Circular issued today. In that country, the lights are dimmed for about one second at 8 p.m.

"Electrical engineers say that the idea might be applied immediately in many small communities where the amount of electric current will not call for great lowering of voltage to communicate the flash", declares Mr. Collins. "In the larger cities, where immense power loads are also carried on circuits that furnish lighting current, the technical difficulties may be great."

A national electrical time signal would call attention to the inaccuracies of the clocks and watches in the average community, which vary five minutes at the least, it is declared.

The housewife would have a reliable source of time, and that old joke of "waiting for a woman" may have to be sent to the land where most of the pre-prohibition jokes have gone if every woman can set her wrist watch by electric light. Jewelers are interested in the movement because it fits into the ideals of the recently organized Horological Institute of America.

ENGLISH SPARROWS  
EAT DANDELIONS

(By Science Service)

At least one good mark may be set down for the English sparrow so commonly regarded as a pest. He is fond of the seeds of dandelion and when the flowers have given place to the fuzzy "blow-balls" spends much of his time cleaning them from the lawn. In this country as in England the sparrow is also fond of young peas and often ruins the early crops by picking off both flowers and leaves. In some Chicago suburbs it is now impossible to raise peas without protecting them with a net. Whether the sparrows' good offices in ridding the lawn of dandelions will offset his attack on the peas is a problem.



## THE NEXT GREAT STEP AHEAD

### 7. In the Science of the Earth's Crust.

An interview with William Bowie, chief of the division of geodesy of the Coast and Geodetic Survey.

A swinging pendulum and a few simple calculations may tell the practical digger for oil whether it is worth while to sink his shaft down into soil that from the surface holds forth the promise of "liquid gold".

This is a new use for gravitation. The scientists who have been puzzling out the way in which the shell of this earth is put together have found that the heavy rocks of the earth have a greater attraction for the very precise gravitation pendulum than the lighter material in the crust, and they believe that this may make it possible to discover crystalline and other extra heavy rocks that may be covered by materials of normal or lighter densities.

"If this proves to be the case, it may be possible to locate areas underlaid by dense rocks close to the surface of the ground, which may have an economic importance in connection with boring for oil", explains William Bowie, who, as chief of the division of geodesy of the Coast and Geodetic Survey, is in charge of the government's work on the determination of gravity. "Much money has been lost by oil prospectors in drilling in regions which have been found by them to be underlaid by crystalline rocks."

The geologist and the geographer may then be able to use the pendulum as a tool along with their hammers. It has been found that the latest parts of the earth's crust, the stuff that was formed during the Cenozoic era while mammals and man gradually evolved, is about one-tenth lighter than the older rocks, and this fact may help in estimating the thickness of these rocks.

Suppose Mr. Edison fired this question at you: "Where is the earth densest, under the highest mountains or under the deepest seas?" Probably, unless you are a geodesist, you would say: "Under the mountains, of course."

But it is not. Mr. Bowie explains that work in his science has proved that the crust of the earth is riding on the interior or nucleus like blocks of different kinds of wood in a pan of water.

They have found out that the shell of the earth extends approximately 70 miles deep below sea level and that at that depth the lower ends of mountains and the valleys of the sea are all at the same level.

It is like taking two blocks of wood, one of light poplar and the other of heavy oak. If they are made so that they both have the same horizontal cross-section, and if they are then cut to just the proper length so that they have the same mass, or weight, they will float on the water with their submerged ends at the same level. But the light poplar block will stick up out of the water further than the heavier one of oak.

In the case of the earth we may consider that the columns of the crust that make the mountains are like the poplar block and that the land under the deep sea is like the oak. But instead of blocks only a few square inches in area, the earth crust blocks are hundreds of square miles in cross section.

The scientists have also found that these blocks of earth crust floating at the same level must have equal pressure exerted on their bases. For this reason they have given their branch of science the name of "isostasy" which is just the scientific way of saying equal pressure.

Although they believe that the crust of the earth acts like wooden blocks on water, scientists know that the interior of the earth is not liquid. Studies of earthquakes show that tremors of this sphere go through the center portion as though it were solid. The earth nucleus is like a block of tar that has the properties of a solid, but still flows even in the coldest weather if a continued pressure is placed upon it.

This rather new idea of the way in which the shell of the earth is built will make the geologists change some of their ideas about the formation and origin of mountains.

It is known that some of the valleys that existed during the eras before man arrived, via the monkey line, are now the high spots of the earth. Mr. Bowie explains that fact. He says that when a valley was transformed into a mountain, the column of earth under it simply elongated a few miles. The rocks became less dense, and the mass of that section of the earth did not become any greater than before. This theory has been checked by finding on the mountain tops rocks containing the same kind of fossil animals and insects as are found in the valleys.



(Editors: "Beat Edison To It" is designed for your use as a regular daily feature or as a supply of short, meaty "fillers".)

BEAT EDISON TO IT!

Do you know that-

In thirteen seconds we receive as much light and heat from the sun as we do from the moon in a whole year.

On an average a rough diamond loses half its weight when cut into a brilliant.

Platinum is so ductile that an ounce of it could be drawn into a wire 1,800 miles long. The wire would be so slender that it would be practically invisible.

The Croton bug is so called because it first attracted general attention in New York at the time Croton water was introduced. It is a species of world-wide distribution, however, and is sometimes known as the German roach.

The hazard of firedamp is not, as generally supposed, peculiar to coal mines. Several firedamp explosions have occurred in recent years in the gold mines of the Far East Rand, South Africa.

BEAT EDISON TO IT!

Do you know that -

The highest wind velocity ever recorded instrumentally was 186 miles an hour on the summit of Mt. Washington, Jan. 11, 1878.

White paint made with the pigment lithopone turns gray or nearly black in the sunlight, but regains its whiteness during the night.

A code message flashed from a powerful search-light has been read 100 miles away. The flashes were projected upon high clouds and were thus visible far beyond the horizon.

In 1919 there were 31 aircraft factories in the United States. Their combined output was 432 aeroplanes and 230 seaplanes, and the total value of their products, including accessories, was more than \$14,000,000.

The moth known as Alabama argillacea, a serious pest of the cotton plant, is one of the most prolific of insects. In the Gulf States it produces at least seven generations annually, and at the end of the fourth generation the progeny of one moth, if they all survived, would amount to over 300,000,000,000 individuals.

BEAT EDISON TO IT!

Do you know that -

A second Simplon tunnel, begun in 1911, is now nearly finished.

A botanical garden recently established in Albany will contain specimens of every cultivated plant grown in the State of New York.

A hibernating animal can be awakened from its winter sleep by being brought into a warm room. When again put into a cold place it immediately resumes its dormant state.

A novel use of electric lights is found in fish hatcheries, where, in summer, lights hanging over the tanks attract myriads of insects, many of which fall into the water and thus provide food for the fish.

The French astronomer, Pons, discoverer of the comet that has aroused so much interest this year on the occasion of its periodic return to our part of the solar system, began his career as janitor of the Observatory of Marseilles. He discovered, in all, 37 comets.



BEAT EDISON TO IT!

Do you know that -

The use of the word "blizzard" has been traced back only to the year 1867, and the origin of the word is unknown.

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Kerosene lamps are generally of from 10 to 20 candle-power. The brightest run up to about 100 candle power.

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The first power-driven dirigible balloon was built by Henri Giffard, a Frenchman, in 1852. His airship was 145 feet long and was propelled by a steam engine, which gave it a speed of 5 miles an hour.

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Prof. J. J. Sylvester, the English mathematician, who died in 1897, is said to have been the last man who ever thoroughly familiarized himself with all branches of mathematics as known in his day. The subject is now so vast that no human mind could possibly master the whole of it.

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Measurements of more than 4,000 women who have entered Stanford University from all parts of the country during the last 30 years indicate that the height of the average American woman has increased more than an inch during that period. There has been a corresponding increase in weight.

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BEAT EDISON TO IT!

Do you know that -

In a "high dawn" daylight is first seen above a bank of clouds. When day breaks on or near the horizon the dawn is said to be "low".

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Gas mantles made of artificial silk will permit of handling even after several hundred hours of use.

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Orchards in northwestern Canada have been equipped with electric lights so that the fruit can be picked at night, when the air is cool. It is found such fruit keeps better than that picked in the daytime.

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In the eighteenth century certain Spaniards counterfeited gold doubloons, the spurious coins being struck in platinum and gilded. At the present day such counterfeits would cost nearly five times as much as the gold coins.

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Steam and smoke are used to give greater visibility and varied effects to the beams of search-lights used in spectacular lighting. This variety of "fireless fireworks" was first displayed at the Hudson-Fulton celebration in New York with a battery of search-lights totalling 1,000,000,000 candle-power.

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BEAT EDISON TO IT!

Do you know that -

More than 450 comets have been discovered since the invention of the telescope. Less than one-fourth of these were at any time visible to the naked eye.

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A process of making steel directly from iron ore has recently been reported from France.

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The amount of light that can be obtained for one dollar with a tungsten-filament electric lamp costs two dollars if obtained from a kerosene lamp and about fifty dollars if obtained from candles.

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More hydro-electric power is generated and utilized in Canada, in proportion to the population, than in any other country of the world except Norway. The development amounts to 274 horsepower per 1,000 inhabitants.

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Platinum coins were formerly issued in Russia, beginning in 1828, when platinum was worth only about one-third as much as gold. The nominal value of the coins then issued was about \$3,000,000, but the metal in them would now bring nearly \$50,000,000.

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THE GORGAS OF BRAZIL  
VISITS UNITED STATES

(By Science Service)

New York, July .-- Brazil's greatest medical investigator and director-general of that country's public health service, Dr. Carlos Justiniano Ribeiro das Chagas, has just completed a tour of this country under the guidance of the Rockefeller Foundation, and on July 7 will sail for his native land.

Dr. Chagas, who has been called the Gorgas of Brazil, is also head of the Oswaldo Cruz Institute at Rio de Janeiro which ranks with the best of the medical research institutions of the world, and his name has been given to a disease that ravaged the interior of Brazil until he determined what it was and how it could be cured. The Chagas disease is similar to the sleeping sickness of Africa, and yearly took a toll of the natives. It was conquered by Dr. Chagas only after he had lived in the infested district and tested his discoveries in the laboratories of his institution.

While here Dr. Chagas has made brief trips to most of the medical research laboratories and hospitals in this country, and Harvard University conferred the degree of Doctor of Science upon him.

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HONEYDEW, A NUISANCE AND  
A SOURCE OF RARE SUGARS

(By Science Service)

That syrupy substance which is found on leaves in summer and falls like fine rain from the trees, ruining everything beneath, is honeydew.

But don't blame the trees, for they are not guilty. Six families of insects excrete this syrupy substance, and those that do the most damage are the plant-lice, the scale insects and the frog hoppers.

Though primitive man thought of a special gift of the gods and called it "the saliva of the stars" and "the sweat of heaven", honeydew is decidedly a nuisance. It does not wash off because it is insoluble in water. In some cases it has been formed in such abundance on clover that it has prevented the cutting of the crop for hay. Bees gather it instead of nectar, and the resulting "honeydew honey" is sold to our bakers for the sweetening of cakes, but to the beekeeper it is worse than a loss, for not only is the price low but the honeydew is decidedly injurious to the bees. The third charge against honeydew is that it serves as a medium for the growth of sooty mould, an important pest of oranges and similar fruits.

In former times honeydew has been employed as a medicine in diseases of the chest and in certain eye troubles, and in Italy it has been used as a salve for the treatment of wounds and sores.

A generation or two ago it was supposed to be a product of the plant, and only in recent times has its insect origin become known. But a widespread error still persists. The so-called "honey tubes" of plant lice do not secrete honeydew, but are wax-forming organs.

There is a useful side to honeydew, at least from the standpoint of the ant. These frugal insects realize the value of plant-lice and gather them in, tend and shelter them for the sugar their excrement contains.

Perhaps man may profit by the example of the ant for, along with the commoner sugars, honeydew contains a number of the rarer ones which are imported at a high price. This abundant source of these rare compounds remains, in this country at least, untouched, but it is awaiting exploitation.

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## CRUSHING GERMS TO DEATH

(By Science Service)

Squeezing to death would scarcely seem a practicable means of destroying bacteria so small that they cannot be seen except by the aid of a microscope. The application of heat is the plan generally used and is, of course, the principle involved in canning, sterilization, pasteurization of milk, etc. The use of heat, however, is objectionable in many cases since it destroys the color and texture, and sometimes even changes the chemical composition.

Dr. B. H. Hite, of the West Virginia Agricultural Experiment Station, proposes to bring about the death of the objectionable micro-organism by the use of high pressures - literally squeeze the germs to death.

In hundreds of tests conducted over the past ten years, Dr. Hite has conclusively proved the reliability of this method of sterilization and has kept corn, peas, green beans, and various other vegetables perfectly for periods of five years or longer. In sterilizing cider the pressure method has a decided advantage over the heating method, since no sediment is produced. Cider sterilized in this way takes on a clear, beautiful, amber color which it retains indefinitely.

The pressure method of sterilization has proved extremely valuable in plant pathological studies where it is necessary to use sterilized leaves as a medium on which to grow plant diseases in the laboratory. Sterilization with heat so wilts the leaf that it is useless for plant disease studies, but the pressure method makes no noticeable difference in the physical appearance or structure of the leaf and disease organisms thrive on it as on the untouched leaf.

The chief drawback to pressure sterilization, from a practical standpoint, is the difficulty of constructing apparatus that will withstand the high pressures necessary - in most cases many thousands of pounds to the square inch. This is a pressure comparable with that developed in a 14 inch gun when fired with a full charge. The only apparatus at present available is of very small capacity, since it is only in this way that cylinders sufficiently strong to withstand the pressure can be constructed.

Just before the late war Dr. Hite entered into negotiations with the Ordnance Division of the U.S. War Department for the construction of an apparatus patterned somewhat after the larger end of a 14 inch cannon. These plans were interrupted by the war and have not yet been undertaken again.

If sufficiently heavy apparatus can be constructed and a plan of rapid, possibly continuous, charging and discharging can be worked out, there is reason to believe that the pressure method of sterilization may come into general use in connection with the handling of those products readily discolored or otherwise injured by the application of heat.

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## GIGANTIC BLACKBERRIES

(By Science Service)

Explorers for the United States Department of Agriculture recently discovered in Colombia what are probably the largest blackberries in the world. The fruits are often more than two inches long and nearly five inches in circumference. The flavor is said to suggest that of the logan-berry. The plant is not likely to be hardy in the Northern States but is expected to be of value for crossing with native species to give greater size to the fruits. The name of the new species is *Rubus macrocarpus*.

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## IN TERMS OF MILLICURIES

The name of the discoverer of radium is perpetuated in that of the unit used in measuring radioactivity; viz. the "curie". The multiples and subdivisions of the unit are named in accordance with metric nomenclature, the "millicurie", one-thousandth of a curie, being the one most frequently used.

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