Science News-Letter

A Weekly Summary of Current Science

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Bowing—

The SCIENCE NEWS-LETTER is pleased to appear before you in its new printed dress. It hopes that you will not mistake it for a conventional, old-line magazine. It wishes to continue as it started out in life—a personal service to its readers.

Born over four years ago, on March 13, 1922; of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

Into the pages of the NEWS-LETTER have been fed—and will continue to be fed—the cream of *Science Service's* output directed at the newspapers of the world. To this is added material especially prepared.

Now that the NEWS-LETTER is printed, it is possible to introduce novel features that we believe make its contents more valuable or easily used. Turn the pages and note:

It is a *separable* magazine. You can clip or tear out any article without losing or damaging another article on the other side.

Each article is automatically *indexed* by the key word printed above its heading. (See page 2 for explanation.)

Each article is automatically *dated* by its last line.

Books are *reviewed in brief* as they are received from the publishers.

The *classics of science* and striking passages from current books, addresses and periodicals are carefully selected and published.

Important *anniversaries* of science are appropriately noted week by week in a special department.

Regular articles tell of the happenings in the *skies* and in the great *outdoors*.

Photographs aid in the telling of the week's science.

ASTRONOMY

GEORGE ELLERY HALE

He Knows The Sun

"The most intimate acquaintance of the sun" is the title that might well be claimed by Dr. George Ellery Hale, who is shown here examining the image of the sun formed by the coelostat telescope in the rotunda of the new building of the National Academy of Sciences in Washington, a project largely the fruit of his labors.

He invented the spectroheliograph. By means of this device photographs of the sun may be made with a single wave length of light. In 1895, he organized the Yerkes Observatory of the University of Chicago, where he served as director until 1905, when he was called to organize the Mt. Wilson Observatory of the Carnegie Institution of Washington. There he remained as director until 1923 when he retired from active duty and became honorary director, in charge of policy and development, though he has continued his researches. Recently he developed the spectrohelioscope, a modification of his earlier invention, by which it is now possible to view the sun directly in light of a single wave length.

CHEMISTRY

Ice Cream From Crude Oil

By EDWIN E. SLOSSON

The chemists of America recently celebrated the semi-centennial of their organization with a meeting at Philadelphia. Dr. Edwin E. Slosson, author of "Creative Chemistry," etc., in this article tells of some of the achievements and hopes of modern chemistry as revealed in the sessions.

Ice cream made from crude oil is one of the many marvels forecast by Prof. James F. Norris, president of the American Chemical Society. Edible fats, the same as those in vegetable and animal foods, and other fats equally nutritious but not found in nature, can be obtained by breaking up the molecules of mineral oil and rearranging the atoms to form new compounds.

This cracking process has been applied to petroleum for many years to obtain a larger yield of the gasoline distillate, but the investigations recently carried out by the Petroleum Institute have shown that it is possible to attach oxygen to the cracked molecules and so produce alcohols and acids of all sorts. Aromatics, flower perfumes, fruit flavors, drugs and dyes in infinite variety may be made by such methods. This suggests that petroleum which has hitherto been used for fuel and lubricating may be found in the future to be even more valuable as a source of substances for which man has hitherto been dependent upon the chance bounty of nature. Glycerin, which is now obtained from the decomposition of soap fats, can be produced from petroleum, and transformed into nitroglycerin for dynamite. Synthetic plastics like rubber and bakelite may also be manufactured from the same raw material. It is unfortunate that we should come to realize the possibilities of petroleum only now, when the Government Oil Commission announces that the known oil reserves of the United States will last only six years at the present rate of consumption.

But Dr. Norris has his answer to

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CHEMISTRY—METALLURGY

Burning Atomic Hydrogen

By EDWIN E. SLOSSON

A chemical combination that produces greater heat than any hitherto known has been discovered by Dr. Irving Langmuir of the General Electric Company.

For over a hundred years the highest heat attainable by combustion was that produced by the burning of hydrogen in an atmosphere of oxygen. But Langmuir has found it possible to get a higher temperature by the unprecedented process of burning hydrogen in an atmosphere of hydrogen. In the oxyhydrogen blowpipe, commonly used for welding or the limelight, two atoms of hydrogen united with one atom of oxygen to form a molecule of water. In the new Langmuir blowpipe two atoms of hydrogen simply unite with each other to form a molecule of hydrogen.

The novelty of the process consists in the possibility of producing a stream of hydrogen gas in the form of single and separate atoms instead of paired atoms, in which hydrogen has been hitherto handled. The coupled hydrogen atoms are divorced by passing a stream of the gas through an electric arc. The apparatus is simple, and looks like the ordinary blowpipe that you see used in welding or cutting steel on the street car track. It is held in the hand and the point of the flame directed on the metal while the head of the operator is enclosed in a helmet to protect the eyes and face from the intense light and heat.

A stream of hydrogen from a small copper tube is driven between the tips of the two tungsten electrodes and projects a double flame several inches long. The inner flame consists of atomized hydrogen burning in molecular hydrogen, while surrounding this is a flame of molecular hydrogen burning in air.

A tungsten wire stuck into the tip of the inner flame melts and drops off like an icicle in a gas jet. Now tungsten is a metal so refractory that it required many years of experimentation to find a way of getting it sufficiently softened so that it could be drawn into filaments for electric lamps. Its melting point is over six thousand degrees Fahrenheit, so the temperature of the flame of atomic hydrogen is doubtless more than seven thousand.

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Ice Cream From Crude Oil

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that objection, for he foresees the utilization of the limitless stores of energy confined within the atom, as manifest in radium.

"When I saw not long ago in the laboratory of Dr. S. C. Lind a tiny drop of a colorless oil that had been formed from methane—the chief constituent of natural gas—as a result of the action of this form of energy upon it, I felt a new era in chemistry had dawned," Dr. Norris said. "That droplet meant a supply of combustible liquid to run our automobiles when petroleum is exhausted. We can make methane from carbon and hydrogen when the supply of natural gas fails us. The sun will always be able to convert carbon dioxide into a form from which we can get back carbon."

Dr. G. J. Esselen demurs to the suggestion of synthetic ice cream and expressed a preference for the old-fashioned method of feeding the cellulose to a cow. But in his own field Dr. Esselen was quite as radical in his prophecies as Dr. Norris. He goes so far as to surmise that the synthesis of cellulose may some day be accomplished in the factory as it is now in the field from the free raw materials of air and water.

Cellulose, which is the woody stuff of trees and other plants, now requires months or years to grow, but if the chemist once learns how to make it he may turn out a purer product in a few days or hours. Already the first steps toward this achievement have been taken. It has been found possible to make glucose artificially by the action of ultraviolet rays on water and carbon dioxide, that is, on "soda-water." It is easy to convert cellulose into glucose, and if we only knew how to reverse this reaction synthetic cellulose would be possible, though whether it would be profitable or not remains to be seen.

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METALLURGY

Light Railway Cars

The Germans are apparently going in for railway efficiency through saving of weights. Herr Peterson, an engineer of Frankfort, reported that in building two new trains for a Berlin local railway, the construction was entirely of aluminum alloyed with lithium. Aluminum is the lightest of present industrial metals, and lithium, though it adds strength to the alloy, weighs only one-fifth as much per given bulk.

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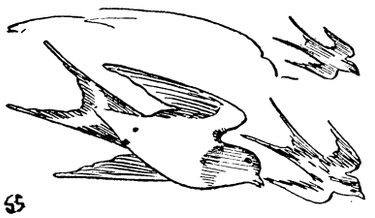
BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Migrations and Hibernations

The flowers fade, the leaves fall from the trees, and birds speed southward. The time for the Great Cold is near at hand, and those who find it hard to combat must learn to fly.



Human folk who have their favorite winter resorts in the frostless lands and their favorite lines over which they travel every autumn were long anticipated by the birds. It is a fact well known to ornithologists that birds of the same flock winter in the same general regions year after year, and that many species have lines of migration marked out as sharp and definite as railway tracks.

To a very large extent these lines are determined by the great river courses. One of the greatest channels of bird travel in the world is the flood plain of the Mississippi river, with its feeder, the Missouri. In the East, Lake Champlain and the Hudson river form links in a similar southward caravan route of the air.

Where a river occupies a deep valley between mountain systems, it is easy to understand why birds hold to it in preference to the colder and more arid heights. But there is a reason, equally good if less immediately apparent, why birds follow a great prairie stream. Such a stream bears along its banks a great belt of sheltering and food-offering timber—perhaps the only continuous line of trees to be found in the whole long flight. These are highly important to the perching birds, while the swimmers and waders naturally prefer to keep at least a thread of blue water in sight to which they may descend for feeding and sleep at night.

As autumn advances songs become rarer and rarer. The birds have departed, and insects die mutely in countless swarms or dig into the ground or seek cracks under stones or crevices in trees. The coldblooded virtuosi of our marshes and ponds, the frogs and toads, burrow into the

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