Second Polar Year Interests All Nations

Studies to be Made Affecting Many Activities

During this month scientists of thirty-three nations will officially begin a systematic study of the earth's magnetism, atmospheric electricity, earth currents, auroral displays, weather and that intangible electrical mirror which is known as the Kennelly-Heaviside layer and which makes it possible for us to send radio messages around the world.

"Second Polar Year" is the name by which this organized international effort is known. Despite the world-wide depression, some of the poorest countries have agreed to assume the expense of sending out expeditions or engaging in work called for by the program—evidence enough that the Second Polar Year is an enterprise of the highest scientific importance.

Many Countries to Take Part

The list of countries that will man stations in different parts of the world includes Argentina, Austria, Belgium, Brazil, Bulgaria, Canada, Denmark, Great Britain, Estonia, Falkland Islands, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Mexico, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and the Union of Soviet Socialist Republics and Turkey. Even nations that do not appear on this list are not indifferent to the importance of the Second Polar Year.

Second Polar Year implies a First Polar Year. In 1875 Lieutenant Karl Weyprecht of the Austrian Navy, who had achieved some distinction as an arctic explorer, suggested that stations be established in high altitudes and that at these the weather and the electrical and magnetic manifestations of the atmosphere and the solid crust be studied for a whole year by scientists of all nations. There had been no systematic observation of phenomena which, in Weyprecht's opinion, were worthy of as much attention in the interest of humanity as the new land that was claimed in the name of an explorer's country.

Science moves so rapidly that studies will be made, during the Second Polar Year, of phenomena which were unknown a half century ago. When the First Polar Year began, in 1882, there was no radio; there had been no systematic exploration of the atmosphere by sounding balloons; there were no airships and airplanes flying over the Poles or anywhere else; and only a vague notion had come into being that sunspots had something to do with our weather. In the development of new agencies of travel and communication, discoveries were made that show how dependent is our technical progress on a better knowledge of the earth.

There is the Kennelly-Heaviside layer, for example. What is it? An invisible mirror of what is called ionized air surrounding the earth at a height of 60 to perhaps 150 miles—a mirror without which there could be no radio communication over vast distances.

When Marconi first decided to send wireless messages across the Atlantic, there were many physicists who were sure he would fail. The globe is curved, it was argued. On the other hand light waves—and radio waves are only invisible light waves—dart forth in straight lines. It seemed logical to suppose that some of the radio waves—those sent out horizontally—would inevitably strike a curved hump not very far out in the ocean and never reach the other side at all.

When Marconi, in 1901, sent signals standing for the letter "S" across the ocean, he proved that the waves follow the curvature of the earth. But why? Dr. Kennelly, now of Harvard, and Dr. Seaviside, an English mathematical physicist, showed independently that far above the earth there must be a layer of electrified particles which reflects radio waves to their destinations and makes it possible for them even to travel around the earth.

Radio waves will be sent up vertically so that they may be reflected back. The time that it takes to hear an echo will make it possible to calculate the height of the layer. By this method it has been discovered that there is not only a Kennelly-Heaviside layer, which reflects the very long and moderately long waves from a height of perhaps sixty miles, but an upper layer, named after Professor Appleton, who studied it carefully, which sends back the short waves which are now being used in what is called beam transmission, as well as in other forms of transatlantic communication.

Studies in the North

It is supposed that ultra-violet light from the sun electrifies the upper Appleton layer and that the properties of the lower Kennelly-Heaviside layer are due to electrons. But suppositions are not knowledge. Hence the need of scientific study at Toronto and elsewhere.

Moreover, the question remains to be answered whether there is any connection between the aurora and these two layers. Radio messages take the shortest path. When we send a telegram through the ether to Manila, the waves that carry the signals will, of course, travel in every direction, but those detected at Manila will have traveled along a great circle (always the shortest path on a globe), and hence by way of Alaska in those high latitudes where disturbances in the reflecting layers seem especially likely to occur. Not only science but the business man accustomed to send radio messages to distant countries is therefore likely to profit by the researches that will be conducted in this Second Polar Year.

Message

I want to tell you the hay is strewn
Under the curve of a knife-edged moon;
I want you to know that the clover smells
In a reeling fragrance that sinks and swells
As the wind comes up from the sea below,
And the boughs of the spruce swing to and fro.

I want you to know. I want you to know!
—Martha Banning Thomas.

Night Marauder

Samuel Scoville, Fr., Nature's Magazine (June, '32).

As the last gleam of sunset faded, there came a brightness in the east, and a rim of raw gold showed above the edge of the world. For an instant the lonely Barrens lay still as sleep. Then, as the full moon climbed the sky, the wild, sweet melody of the whippoorwill thrilled as if the moonlight itself had been set to music. But in the very middle of a note the singer stopped, as in the distance sounded the ghostly call of the great horned owl—"Whoo, hoo, hoo, hoo, hoo." Although it was faint and far away, an indescribable menace seemed to thrill through the weird notes. A few moments later, across the moonlight drifted a shadow from whose depths two dreadful eyes flared like fire. The next instant a great owl, some two feet high, sat perched on a dead limb of a sweet gum which overhung the water. Its plumage was a blending of black and gray and tawny, with a broad white collar, while an angle of black feathers on its forehead gave a scowling effect to the bird's glaring eyes. At the bottom of a large hole in the tree-trunk her mate brooded two white eggs the size of a hen's egg but nearly round.

To-night, the female, the larger and more savage of the two, was winnowing the Barrens for the food which her fierce blood craved. Like a shadow of death she drifted above the tree-tops, her ear-tufts showing like horns, while her broad wings muffled with soft down were noiseless.

For a time there was no sign nor sound of life which the sharp sight and michrophonic ears of the horned bird could detect. Then as she crossed a little clearing in the woods she opened her hooked beak and gave the same menacing hoot which had shuddered through the air a few minutes before. At the sudden sound two rabbits leaped high in the air and darted towards a tangle of green thorn. If they had kept still, not even the vast black pupils of the owl's eyes would have seen them. Like a shadow the bird swooped; only the rabbits' nearness to the thicket saved them. As the powder puff of the hindmost disappeared among the vines, the crooked talons of the owl gripped the empty air behind it. Snapping her beak angrily, she curved up again and continued her hunting.

Soon the grim huntress spied another possible victim. This time it was a black and white animal with a flaunting bushy tail, of a breed which she had never chanced to meet before. The stranger did not crouch and run, but unconcernedly dug grubs out of a dead log, for the American skunk fears neither man nor beast nor bird. Its motto is: "Don't hurry; others will." A million years before the World War it learned the secret of the gas-attack. Like a flash of darkness the great owl shot down toward the unconcerned skunk. Swift as was her sweep, the animal's defense was swifter. Instantly there shot upwards a cloud of corrosive gas, choking as the raw fumes of ammonia. The owl's eyes were blinded and her lungs strangled by the deadly vapor. Gasping and squawking she retreated, while the skunk calmly went on digging for grubs. Great horned owls were nothing in its young life.

Up and up the baffled bird soared, until the pure sky air drove out from her lungs the last trace of the choking fumes, although her feathers would for many a long day bear the sign and scent of her defeat. High above the earth like a huge moth she drifted toward where the lamplight of a farmhouse showed warm against the black cedars. As she neared the place her keen ears caught the sleepy note of a turkey hen who had persisted in roosting on a tree instead of in the barn. As the independent fowl settled down to sleep, a dark figure suddenly appeared on the limb beside her, and when she drew her head out from under her wing she looked directly into a pair of baleful eyes. With a sharp "quit" the turkey moved away from the menacing bulk, only to find the dreadful stranger again close beside her. Inch by inch she was edged clear to the end of the branch, until with a frightened squawk she fell flapping into the air, protected no longer by the overhanging boughs. Before she could reach the ground the fierce bird was upon her, and her life went out under the owl's cruel claws. Then, turning back the feathers of the fowl's breast, the owl skinned it as neatly with her crooked beak as a man could with a knife, and came back to her nest full-fed.

A few days after the farm-yard raid came one of those sudden hot days found in every spring. The brooding owl, in her winter coat of feathers, gasped for breath as the temperature within the gum-tree rose steadily. At last she could bear it no longer. Warning her mate, with a double-hoot, to watch the nest, she flew down the stream until she reached a concealed cove. There, in the dusk of the dropping trees, she sat like a brown stump by the water's edge, staring inscrutably into its depths. At last, as if called by the spell of that fixed gaze, a large catfish rose through the brown water. Slowly as the minute hand of a clock the black body floated upward till it was scarcely six inches below the surface. Then with a pounce like the uncoiling of a spring, the owl's left foot ripped through the water and clamped its claws into the smooth back of the fish. Shedding its sluggishness like a mask, the black swimmer struggled desperately, lashing the water with its long smooth tail while its enormous mouth opened and closed. Flapping her wings, the owl tugged with all her sinewy strength, and, little by little, raised the struggling bulk out of the water and dragged it into the thicket, where she feasted.

While she was thus pleasantly engaged, the owl castle in the tree-top was threatened. Aroused by the early heat a seven-foot pine snake wound its way among the thickets on a still-hunt for food. When the snake reached the foot of the owl-tree, it seemed to sense the presence, high above it, of a nest of eggs and instantly began to climb the trunk, seemingly without an effort, almost in a straight line.

Swift and silent as the intruder's motions had been, they had not escaped the watchful eyes of the male owl, roosting in a nearby pine. Just as the pointed head was about to disappear within the hole, there was a flash of wings and the snake's brown-and-white body was writhing in the owl's punishing talons. Doubling upon itself the snake rattled its glottis to imitate exactly the sound of the rattles of a timber rattlesnake. There are few living things that will interfere with a snake of that size sounding the death-note of the great pit-viper. But as a matter of fact the pine snake has no fangs, and his pretense was but a poor protection against the grim bird in whose talons he struggled. The owl made short work indeed of the harmless bluffing pine snake. By the time the female owl returned all that was left of the invader were short lengths of neatly dressed, firm white meat.

With never a sound the great owl swooped into her nest. That night just as the whippoorwill called in the early dark, something, for which she had waited long and eagerly, stirred against her fierce heart. All that night the new life beneath her feathers pulsed and struggled, until as the dawn came into the sky two downy white owlets freed themselves from the imprisoning shells and, panting and quivering, nestled against the soft breast of their grim mother, who gazed down at them adoringly.

Little Betty was sitting with her mother in church during the wedding of her elder sister. Halfway through the ceremony she noticed mother shedding the maternal tears usual on such occasions, and whispered wonderingly: "Why are you crying, mummy? It's not your wedding!"

Young Earl of Egmont Arrives Back Home

The young Earl of Egmont, son of Alberta's late rancher earl, is back in Calgary among the hometown folks and is seen here at recent cowboy contests.

The Schminkus Detonating Ray

The Schminkus detonating ray, sometimes called the "death ray," the invention of a young German, can explode at a distance ammunition dumps, cartridges, bombs, hand grenades, sea mines, and all similar material in which explosives are used. The ray is expected to make all side arms, machine guns and cannonuseless, as the ammunition can be exploded inside the weapons. The same will apply also to airplanes and tanks, it is believed.

He—"I wasn't going to take any vacation this summer but the boss insisted."

She—"You don't say? How long a vacation did you get?"

He—"As long as it takes to find another job."

Love is never without its shadows of anxiety. We have this treasure in earthen vessels.

Another Trans-Atlantic Aspirant

This is the season for ocean flights and here we see Elvy Kalep Miller who wants to make a record flight from New York to Greece.

Tongue Twisters

Here is a tongue twister to try to say. Of course, it is easy to say once, and slowly, but see how you get on saying it fast lots of times.

He picks up the pitchers and pitches down the pictures.

And now try this one:

Shirley sells seaside shells.

Timothy Thrinkum - Thrankum threaded 3,333 thick and thin thistle threads. If Timothy Thrinkum-Thrankum threaded 3,333 thick and thin thistle threads, where are the 3,333 thick and thin thirstle threads that Timothy Thrinkum-Thrankum threaded?

Here is a nice long tongue-twister for you to try to say six times quickly. You are sure to get in a muddle.

If Hugh chooses tubes of jubes, which will Hugh choose? Will Hugh choose this huge tube?"

They tried to tempt the tattered tramps to take the toothsome tarts.

Where's the Frenchman's farthing Francis Fribble figured on?

The critical cricket critic of Cricklewood criticised the cricket.

DISAPPOINTMENT ..

Welcome disappointment! Thy hand is cold and hard, but it is the hand of a friend. Thy voice is stern and harsh, but it is the voice of a friend. Oh, there is something sublime in calm endurance, something sublime in the resolute, fixed purpose of suffering without complaining, which makes disappointment often better than success.—Longfellow.

ABILITY

The height of ability consists in a thorough knowledge of the real value of things, and of the genius of the age in which we live. To know when to conceal our ability requires no small degree of it.

REFLECTION

Unreflective minds possess thoughts only as a jug does water, by containing them. In a disciplined mind knowledge exists like vital force in the physical frame, ready to be directed to tongue, or hand, or foot, hither, thither, anywhere, and for any use desired.—S. Coley.

DEATH ..

Death is not a break in existence; it is but an intermediate circumstance, a transition from one form of our finite existence to another.—Baron Humboldt.

"Suburbanites are divided into two classes."

"How's that?"

"Those who think they know how to raise children and those who think they know how to raise chickens."

20-Year Search Reveals Meteor

Over $500,000 Spent—Age of Crater Placed at 50,000 Years

For more than twenty years search has been directed toward location of the buried meteorite at Meteor Crater, near Winslow, Arizona.

Reliable estimates place the cost of this search at more than $500,000.

Recently, Meteor Crater Mining & Exploring Company, the present operators, drilled for the meteor at locations recommended as a result of studies conducted during the summer of 1930. These drilling operations have proved the correctness of the results.

"Meteor Crater, which lies in the high plateau of northern Arizona, about twenty miles southwest of Winslow, is a bowl-shaped, almost circular depression about 4,500 feet in diameter and 600 feet deep. The depression is surrounded by the crater rim that stands about 160 feet above the general level of the plateau. Meteor Crater has long been a Mecca for tourists and is visited annually by thousands of people.

"The origin of the crater has for many years been the subject of discussion. Two theories have been regarded as the most probable explanation. The first, not proved correct, held that the crater as formed by a meteorite, or swarm of meteoric material, striking the earth at high velocity, and burying itself. The other theory held that the crater was a result of a 'steam' explosion, attributed to the accumulation of hot solutions or gases."

Briefly, the reports gave the survey results as follows:

"1. Geological examination showed that the crater was meteoric rather than due to a steam explosion. It disclosed evidence that the meteorite still existed at depth in the southwestern part of the crater. Geologic evidence placed the age of the crater to be measurable in terms of thousands of years, probably about 50,000.

"2. The electrical survey located the meteorite in the southwestern part of the crater, and indicated it to consist of a shallow fragmentized zone, surrounding a more concentrated main mass occurring at an effective depth of 700 feet below the present crater floor.

"3. The magnetic survey revealed the presence of a shallow shattered area containing meteoric material above the deeper and more concentrated zone, indicated by the electrical survey."

"The first hole, placed in the centre of the favorable area indicated by the geophysical survey, ran into the zone containing meteoric fragments at a depth of 414 feet. At 675 feet further progress was halted as the drill became lodged in the upper part of the more concentrated meteoric zone. The existence of the meteoric material was further proved by analyses which showed the presence of nickel.

"The second drill hole, as far as it has been carried out, revealed similar conditions to the first.

"These results are evidence of the reliability of modern methods of geophysical prospecting. In the field of ordinary mining exploration, the problems rarely present such difficulties. Such geophysical studies will secure subsurface geologic data that can be obtained in no other way, except at prohibitive cost."

THREE THINGS

Remember, three things come not back:
The arrow sent upon its track—
It will not swerve, it will not stay
Its speed; it flies to wound or slay.

The spoken word so soon forgot
By thee; but it has perished still,
In other hearts 'tis living still,
And doing work for good or ill.

And the lost opportunity
That cometh back no more to thee.
In vain thou weepest, in vain dost yearn,
Those three will nevermore return.
—Constantina E. Brooks

IN THE WOODS

If thou art worn and hard beset
With sorrows that thou wouldst forget—
If thou wouldst read a lesson that will keep
Thy heart from fainting, and thy soul from sleep,
Go to the woods and hills—no tears
Dim the sweet look that Nature wears.
—Longfellow.

TWO WORDS

The heaviest words in our language are the two briefest ones, yes and no. One stands for the surrender of the will, the other for denial; one for gratification, the other for character.—Theodore T. Munger.

GREAT POWER ..

The possession of great powers no doubt carries with it a contempt for mere external show.—Garfield.

"I want to buy a wireless set on the instalment plan," said the customer. "Yes, madam," replied the client; "can you give us references?" "Oh, yes: the last dealer we bought one from will be glad to tell you that there wasn't a single scratch on the cabinet when he took it back!"