And What of the Future?

Man Uses IGY, Satellite to Help Learn of Himself

EDITOR'S NOTE: This is the first in a series of four articles which will discuss man's quest for knowledge about his world and the sky, what makes a satellite stay up, the University of Wisconsin earth satellite project, and what the future and the lump into space may mean for man.

By JOHN DUTTON
(State Journal Staff Writer)

Scientists all over the world are giving the earth and its atmosphere the most complete physical examination it ever has had.

And in doing so, man is taking a basic step toward leaving the earth that has clothed and fed him since he first evolved into the human form more than a million years ago.

A million years ago—and man first began the technological evolution and the development of an insatiable curiosity about his world that may lead him first to other nearby planets, and then to the stars west of the sun.

They Wondered

Early men, we can be sure, must have wondered why the darkness came; they must have wondered what the stars were; and they must have wondered about the changing seasons and the violent thunderstorms.

And man today still is wondering about his world — and now about his universe; and still more, his part in the vast darkness of infinite space.

Although early civilizations knew more than most laymen would imagine about the movements of the astronomical bodies, they knew little about the earth and its atmosphere.

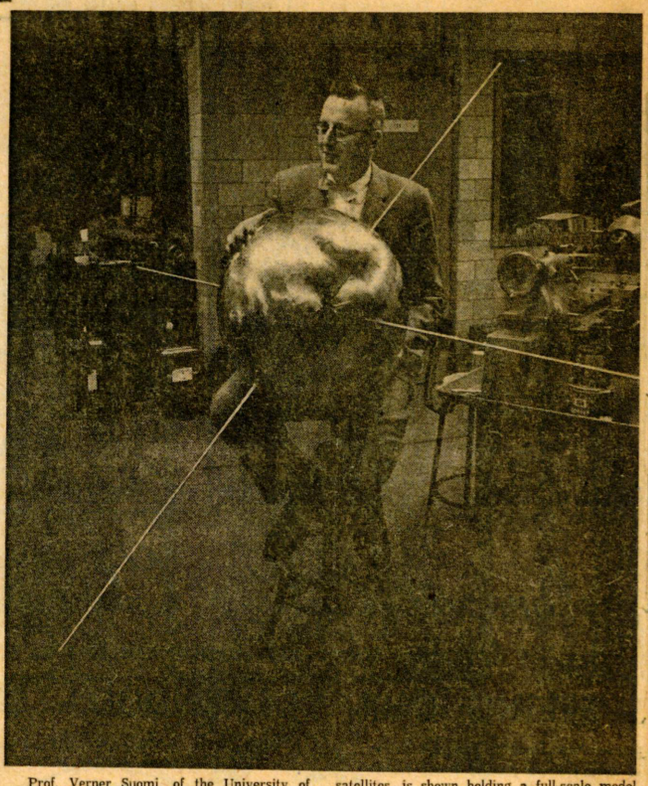
And this is true of man today.

Still Don't Know

There are many things that even today's scientists do not know about our planet, about the rocks beneath us, the oceans that surround our continents, why the hurricanes come, or why the earthquakes shake our houses.

There are many child-like questions that have not been answered:

"Why does the world spin around? What makes the moon stay up? When — and if — will the world end? What makes the earth quake? Why does the compass always point north? What



Prof. Verner Suomi, of the University of Wisconsin meteorology department and leader of a university team building one of the U. S. satellites, is shown holding a full-scale model of the Vanguard satellite.

—State Journal Photo by Edwin Stein

way about our earth — and they give us a hand-hold on space.

Many University of Wisconsin projects in all fields of science are indirectly connected with and will contribute to the IGY.

Two, however, are specifically IGY programs. Dr. George Woollard, chairman of the geophysics section of the geology department, is in charge of an extensive program of geophysical exploration all over the world. His

WOOLLARD

marized in another article on this page.

Prof. Verner Suomi, of the meteorology department, is leading a university team which is constructing the instruments that will be launched sometime next year inside one of the U. S. Vanguard satellites.

Radiation Interest

Suomi long has been interested in the net radiation of the earth —the flow of heat from the sun to the earth and then back to space. His satellite, if all goes as planned, will help take a significant step forward in the study.

The Wisconsin satellite project will be discussed in the third article in this series.

And so we ask, quite naturally, what good is a satellite?

The earth is an awkward thing to study—at least for a man on the earth. It is not small enough that he can look at it like he can a pebble or a bug, nor is it far away, so that it can be studied with telescopes.

'Trees' Block View

So, to use an old quip, man is like the fellow in the middle of the forest who couldn't see the woods because of all the trees.

Man can look at the individual "trees" that make up his environment, but he can't look at the whole "woods" comprising his earth and see how things work together on a world-wide basis.

But the satellites allow him to step off his earth and take this look from afar. They finally will allow him to see the whole earth at once—not just pieces of it.

The satellites will tell us about the shape of the earth—and how far London is from New York, something we don't know exactly today.

Sputnik I Teaches

(Two top U. S. satellites experts said last week that they have learned more about the shape of the earth from the changes in the orbit of Sputnik I than man has found out in the past 2,000 years.)

The satellites will allow us to have a weather station high in the sky that will help us understand better what drives the great "heat" engine that the atmosphere is, and why and how it makes it weather.

The satellites will tell us about the cosmic rays we mentioned, how many of them there are, how strong they are, and how many coming in from outer space are

answer once and for all if they do come from outer space.

The satellites will tell us about the magnetic field of the earth and what effect it may have on weather and on Northern Lights.

Picture of Gravity

They will tell us how many meteorites come rushing into the atmosphere to die a flaming death; they will tell us about how much air there is at high altitudes; and they will give us a world-wide picture of gravity.

And so your next natural question is:

"What good is all this satellite and IGY information?"

There are two answers, both equally important.

The first is that it will lead to a better understanding of the environment in which man lives, and that this will lead to a better life for man. Before man can adapt most efficiently to his environment — or before he can change it—he must understand it.

A Better Life

This answer can best be summed up by saying that the knowledge gained and the technological progress we make to put satellites in the sky will lead to a better life on earth for all of us.

And this knowledge, this technological progress, will lead us eventually to space and the exploration of the universe, and maybe more.

The second answer is harder to understand; it is harder to put down clearly on paper.

Man always has sought knowledge about himself and the things around him. It is the greatness of man that he is curious, and that he is not content until he explains phenomena he has seen.

Explained by Myths

The ancients — like the Greek philosophers — explained these things by myths and tales. We are attempting to explain them with scientific fact.

The scientists working on the IGY projects — and putting satellites in the heavens — are not doing it because of the progress it will bring, but because it will help them understand something about their world.

They are seeking the truth, because to know the truth is a compelling desire.

This then is basic research — and they are motivated by the spirit of inquisitiveness, of curiosity, of wonder that has brought man all his progress.

That is the second answer, and maybe it will be made more clear by an example:

These scientists are much like the mountain climber, who toiled up the mountain just because it was there and to see what was on top.

And when he got up on the peak, he looked down on the clouds and the land around; he stood in the bright sunshine and he felt more powerful, the master of all he could see. He had Nature's challenge, and he had won a victory over Nature.

The mountain climber also felt humble and insignificant on his little perch above the world, but despite his humbleness, he found new courage and new contentment in his greater understanding of Nature.

Learns of Himself

In that hard climb — as with today's scientists—he had learned something of Nature, something about his world, and he had learned something about himself.

So man, in the age of the IGY and satellites, is like the mountain climber.

He will learn much about his world, and he will learn much about—and possibly change—himself.

Hand-Hold on Space

The satellites will tell things that we can find out no other

So the scientists the world over have banded together in a great effort — the International Geophysical Year (IGY), which has been under way since July 1.

Roaming Earth

During this time, the scientists are roaming the face of the earth measuring gravity and exploding dynamite to record the waves traveling through the rocks.

They are camping on glaciers and braving the icy blasts of the Antarctic; they are sending their instruments to the bottom of the ocean floor and bouncing radio waves off electrical layers high in the atmosphere.

They are watching storms on the earth and storms on the face of the sun more closely than ever before; they are studying the magnetic field of the earth and measuring ozone, an important form of oxygen.

The scientists are probing the deep cracks in the earth's crust where earthquakes seem to start, and they are riding floating islands of ice in the Arctic ocean.

Measuring Winds

They are studying cosmic rays — the little atomic particles that crash through the atmosphere, your house, and your skin continually.

They are measuring the winds hundreds of kilometers above the earth, and they are measuring the air currents 3 inches above a corn field.

And possibly man's greatest project in all history — they are sending up man-made moons to circle our earth and tell us what they see on our planet.

The satellites are in one sense the latest and most advanced step in man's efforts since primitive time to understand and to learn about the earth on which he lives; in another sense, they are the first giant step toward the exploration of the universe around us.

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