Is Nature Warning Us Of a New Ice Age?

by Laurence Hecht

Global warming fears aside, all students of climate science know that the Earth is presently in an Ice Age and has been for approximately the past 2 to 2.5 million years. This Ice Age has been characterized by successive advances and retreats of a glacial ice sheet, originating in Greenland and extending across the northern portions of the North American and Eurasian continents. Just 12,000 years ago, the undisputed geological evidence shows that New York, Chicago, and all of North America northward to the Arctic regions were under a sheet of ice, estimated to have been from 1 to 2 miles thick. Mountain glaciers also extended downward from the Rocky Mountains and the Appalachians in regions further to the south than the main glacial mass. A similar situation prevailed over most of Germany, northern France, the British Isles, Scandinavia, Poland and other parts of eastern Europe, and Russia.

Commander John Bortniak, NOAA Corps

Lamplugh Glacier, Glacier Bay, Alaska. In the last Ice Age, North America was under a sheet of ice from the Arctic as far south as Chicago and New York.

Such had been the state of things on Earth for probably at least 100,000 years. Before that, a short period known as an interglacial had allowed for a warm climate somewhat like the present, and before it another extended period of glacial advance. The thaw which produced our present geography—the Great Lakes, the southward flowing Ohio River, and much else that we take for granted—was not completed until about 8,000 to 9,000 years ago, according to the best estimates of geologists

FIGURE 1
The Last Glaciation in North America

Source: U.S. Geological Survey

The maximum extent of glaciation occurred just 18,000 years ago and was known in North America as the Wisconsin. The dotted white areas show the huge glacier that covered the northern area of the continent and parts of the western mountain ranges. The white areas show today's glaciers.

and climatologists. Not only were there changes in the internal geography, but the continental boundaries were also greatly changed during the glacial period. Calculations of the volume of water that must have been contained frozen in the continental glaciers, indicate that the global sea level was lower, by as much as 300 to 400 feet, at times of glacial advance. A glaciation means a sharp fall in sea level, exposing the continental shelf for miles out to sea. Much of the coastal-dwelling civilization of the past 100,000 or more years, thus lies buried offshore beneath hundreds of feet of ocean.

Can this happen again? The most plausible theory of the causes of the Ice Ages, the theory of astronomical determination, suggests that the time is ripe for it to happen sometime soon. A Jan. 11 article in the online edition of the Russian daily *Pravda* was titled "Earth on the Brink of an Ice Age." Many recent signs, including the recent deadly cold wave in Europe, and an extended period of reduced sunspot activity, known as a solar minimum, which can contribute to the onset of glaciation, indicate that the Earth may be headed into a period of serious cooling. Perhaps it will be the beginning of a period of several hundred years' duration, known as a Little Ice Age, perhaps the onset of a full-scale glacial advance to last for another 100,000 years.

Here's what the Russians are talking about.

The Orbital Theory of Climate

The best available theory for explaining the advance and retreat of the northern ice sheets is that they are driven by changes in the orbital relationship of the Earth to the Sun, which affect the amount of solar radiation reaching the high northern regions. There are three major cycles of change in the Sun-Earth relationship, all of them related to the discovery of Johannes Kepler that the orbit of the Earth is not a circle, but an ellipse with a difference between nearest and farthest approach to the Sun of about 3 to 4 million miles.

The first of these cycles, known as the *precession of the equinox,* was known to the ancient Vedic astronomers. It is a cycle of approximately 26,000 years, produced by the wobble of the Earth's axis. Corrected for another phenomenon known as the *advance of the perihelion,* it means that about every 21,000 years, the direction of the tilt of the Earth's axis is such that Summer

FIGURE 2
Orbital Motion of the Earth Around the Sun

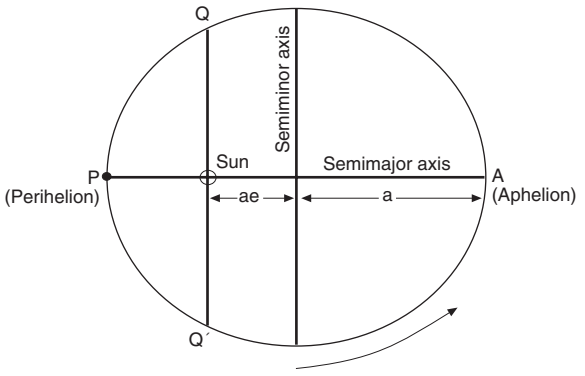
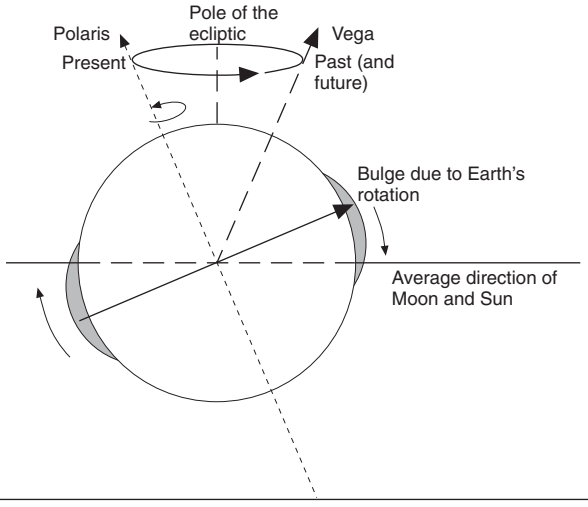


FIGURE 3
Precession and Change of Pole Star



The Earth's spin axis makes a complete rotation around the pole of the ecliptic in a cycle of approximately 26,000 years. The pole star is now Polaris, but about 13,000 years ago, it was Vega. This cycle is adjusted by the advance of the perhihelion, Figure 4.

in the Northern Hemisphere is occurring when Earth finds itself at the point in its orbit most distant from the Sun.

The two other important cycles are: First, the change in the angle of inclination of the Earth's axis, known as *obliquity,* which varies on a 40,000-year cycle from about 22 to 24.5 degrees. Second, the variation in the dimensions of the elliptical orbit itself, which stretches like a rubber band from more like circular to more elliptical. This cycle, known as *ellipticity,* is more complicated to estimate, but peaks about every 100,000 years.

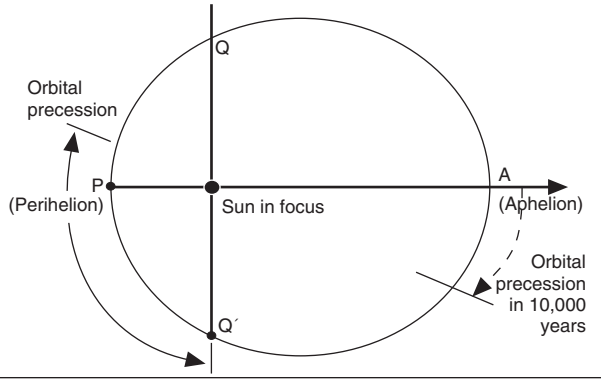
The suggestion of an astronomical climate driver was first advanced in 1830 by the English astronomer John Herschel, son of the German musician Wilhelm Herschel, who emigrated to England in the 18th Century and founded modern observational astronomy. Studies of the advance and retreat of Alpine glaciers next prompted the Swiss-born American scientist Louis Agassiz to suggest that such changes might occur on a broader scale, forming continental ice sheets which could account for many hitherto unexplained geological phenomena.

Attempts at developing an astronomical causation for such large-scale glacial activity were tried by French mathematician Joseph Adhemar (1842) and later in the 19th Century by the Scottish autodidact James Croll. The modern version of the theory originated with the astronomer-meteorologist Vladimir Köppen. Born in St. Petersburg and educated at Heidelberg, Köppen was employed at the German Marine Observatory at Hamburg when he first recognized that it was not an extremely cold Winter, but rather a cool Summer that was required for glacial advance. If, during the short Summers in the high northern latitudes, the amount of solar radiation was insufficient to melt back the snow and ice that had formed over the Winter period, there would be glacial advance. Allow this to continue for year after year, and a sheet of ice might develop its own momentum, utilizing its high reflectivity for sunlight as a protective shield for maintaining cool surrounding airs.

With his son-in-law, Alfred Wegener, better known as the prescient author of the theory of continental drift, the two began to conceptualize the changes in the amount of solar radiation (insolation) which would occur as the three cycles of orbital variation worked together to reinforce or cancel one another.

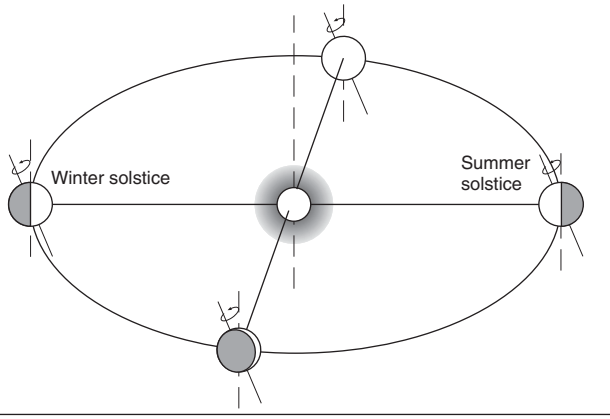
In order to see how a glaciation might begin, conceive of the Earth-Sun relationship as such that while the ellipticity of the orbit is at a maximum (meaning that aphelion is occurring at the greatest possible distance from the Sun), the Earth's axis is so oriented in the precession cycle that Northern Hemisphere Summer is also occurring at aphelion. This is the present orbital position of the Earth with respect to the Sun. The resultant reduction in insolation will then make it possible that the snow and ice accumulation which occurred the previous Winter does not melt back fully. Add to that the effect of a lessened axial tilt (obliquity), which re-

FIGURE 4
Advance of the Perihelion or Orbital Precession



Perturbations in the Earth's orbit, the result of the motion of the other planets (in particular, Jupiter) cause a phenomenon known as the advance of the perihelion or precession of the orbit, in which the complete cycle of precession takes approximately 21,000 years, instead of 26,000.

FIGURE 5
Seasons and Obliquity

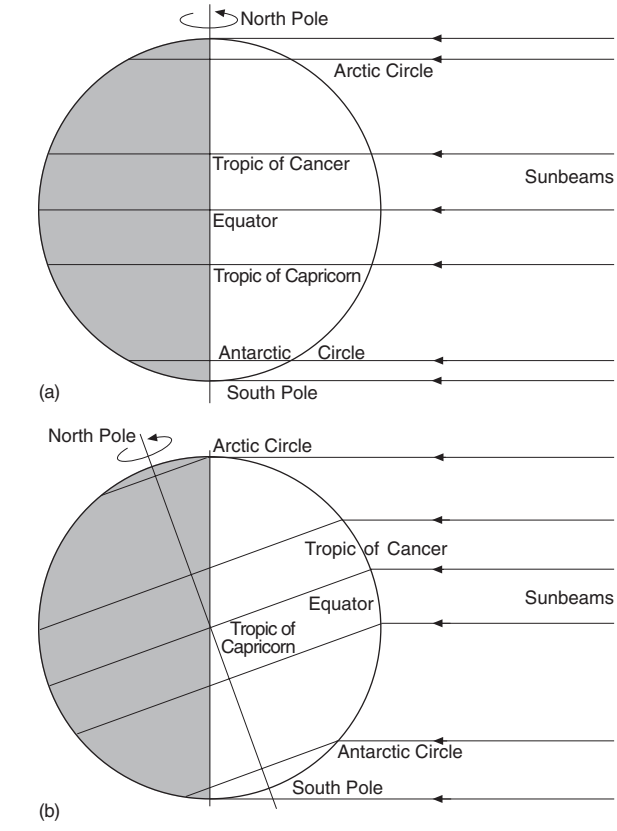


Seasonal change results from the combined effect of the orbital inclination and the yearly revolution of the Earth around the ellipse. When the Earth's spin axis is pointed away from the pole of the ecliptic, the Northern Hemisphere has its shortest day (Winter solstice), while the Southern Hemisphere has its longest day (Summer solstice).

duces the amount of Summer insolation, further contributing to the growth of the ice sheet.

In 1920, Köppen enlisted the support of Serbian mathematician Milutin Milankovitch who worked out the astronomical theory of climate with mathematical

FIGURE 6
Obliquity and Intensity of the Sun's Rays



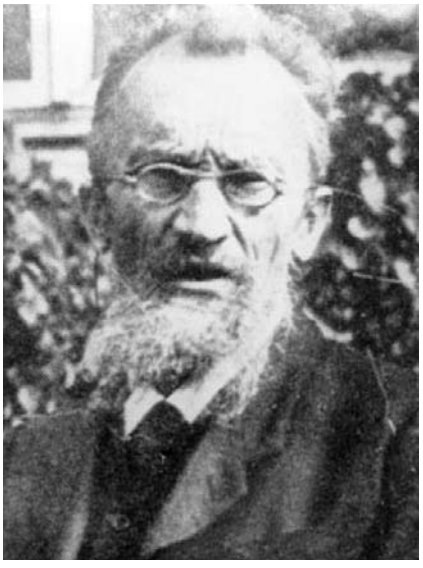
Even without a tilt of the axis, the variation in angle of incidence of the Sun's rays (a) would cause the poles to be cooler. Increasing the angle of obliquity spreads the effect (b)

precision, predicting when the overlying cyclical waves of precession, obliquity, and ellipticity would tend to reinforce or to cancel one another. His results suggested that the 40,000-year cycle would be the dominant one.

Can We Date the Ice Ages?

After improvements in the ability to measure isotope ratios, which came about as a spin-off of the wartime Manhattan project, physical chemist Harold Urey began to examine the possibility that the ratio of the two principal isotopes of oxygen found in the atmosphere might provide a clue as to past temperatures. It was based on the idea that the ratio of the heavier isotope (oxygen-18) to the more prevalent isotope (oxygen-16) found at the sea surface would change depending on the temperature of the ocean water near the surface.

Urey thought that a careful study of the oxygen iso-



Astronomer-meteorologist Vladimir Peter Köppen was the first to recognize that cool Summers were required for glacial advances.

Alfred Wegener Institute

Alfred Wegener, shown here on a Greenland expedition, worked with his father-in-law Köppen. Wegener is known as the founder of the theory of continental drift.

NASA

Physical chemist Harold Urey, a veteran of the Manhattan Project, looked at the ratio of the two main isotopes of oxygen in the shells of sea creatures for clues about past ocean temperatures.

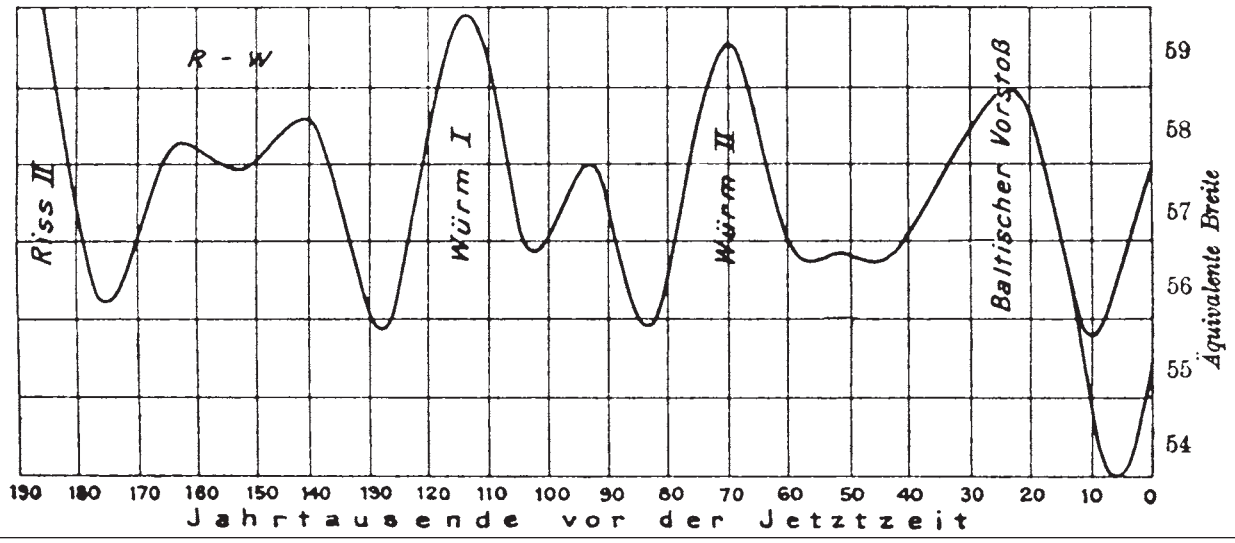
tope ratio in the shells of sea creatures, which build their calcium carbonate shells from oxygen available in the seawater, might serve to indicate the temperature of the water in which they formed. During warmer periods, it was thought, evaporation from the ocean surface would tend to enrich the sea surface water with the heavier isotope of oxygen. Perhaps, Urey reasoned, the isotope ratios found in the layers of discarded shells of sea organisms which form the ocean bottom could thus serve as a record for the past temperatures of the ocean.

The theory is fraught with many ifs, but it was pursued with persistence, starting in the 1950s, by Italian-educated micropaleontologist Cesare Emiliani, a one-time collaboator of Urey at the Argonne Laboratory then associated with University of Chicago. Emiliani identified certain species of small shell-forming sea organisms known as foraminifera, which he thought suitable for oxygen-isotope analysis to determine past climates. The conclusions he drew as to the dating of the ice ages were constantly challenged by leading oceanographers, who found them in contradiction with their studies of ocean bottom cores. The method was also attacked on the grounds that it was not clear that the creatures formed their shells, known as tests, near enough to the surface to reflect changes in isotope ratios.

About 1968, a somewhat new interpretation of the oxygen isotope record was proposed by a young oceanographer and climatologist, Nicholas Shackleton, a Cambridge graduate and great nephew of the famous British Antarctic explorer of the same name. Shackleton proposed that the oxygen-isotope ratio could serve as a proxy, not for temperature but for sea level—the idea being that during periods of glacial advance, when a large volume of ocean water had been taken up into the continental ice sheets, the oxygen-18 ratios of the remaining water would consequently be higher. These might be detected in the foraminifera layers found in the ocean bottom cores. Again there are many ifs, but Shackleton examined isotopic ratios of snows in Alpine and Arctic regions as well as many other factors to bolster his hypothesis.

In the 1970s, a National Science Foundation-funded program of oceanographic studies, known as CLIMAP, collected a large number of sediment cores from different parts of the world's oceans. The program, known as the Decade of the Oceans, was run in conjunction with some flawed statistical approaches to modelling of global atmospheric circulation that had originated in efforts of John von Neumann to use computer modelling for studies of weather modification. However, analysis of the oxygen isotopic ratios of foraminifera found in the undersea cores suggested to a team working at the Lamont-Doherty Geological Laboratory that there was a definite signal of 100,000-year cyclicity. Dr. John

FIGURE 7
Milankovitch's Radiation Curve for the Last 190,000 Years



This radiation curve by Milankovitch was reproduced by Köppen and Wegener in their book Die Klimate der geologischen Vorzeit *(The Climates of the Geological Past), a pioneering wrok in paleoclimatology published in 1924. The horizontal axis shows years (in thousands) from present; the vertical plots fluctuations in radiation.*

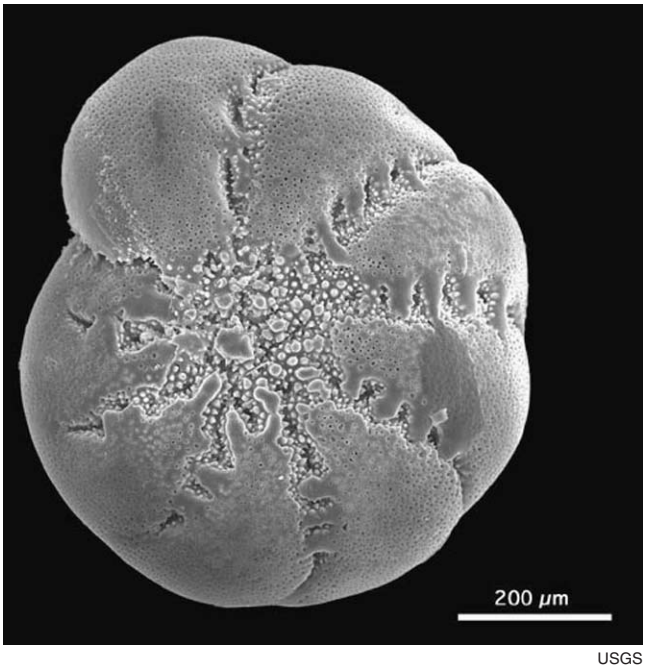
Imbrie, who ran the computer programs analyzing the data, was the first to hypothesize that the periodicities were caused by the Milankovitch orbital cycles.

A landmark paper by Hays, Imbrie and Shackleton, published in the December 1976 issue of *Science* magazine ("Variations in the Earth's Orbit: Pacemaker of the Ice Ages"), argued that the advance and retreat of the ice sheets was triggered by the changes in the Earth's orbital parameters. Other factors might also be present to reinforce these relatively small changes in solar radiation, but these were the pacemaker. By the theory of the orbital cycles, the evidence from the undersea cores explained that a major glaciation would be set off about every 100,000 years, followed by a short period known as an interglacial, a melt back lasting about 10,000 to 12,000 years. By the calculations of astronomers, the present interglacial, which has lasted about 11,000 years, is due to end any time. Indeed we have been in a period of long-term cooling for more than 6,000 years. The maximum Summer temperature experienced in Europe over the last 10,000 years occurred about 6000 B.C. Over North America, where the process of glacial retreat lagged somewhat, the maximum was reached by about 4000 B.C. These estimates, based on a vast array of evidence from geology, botany, and many other fields are consistent with the orbital theory of climate, for the Northern Hemisphere Summer would have been occurring at a point in Earth's orbit much nearer to the Sun than at present.

At Köppen's request, Serbian mathematician Milutin Milankovitch worked out the astronomical theory of climate with mathematical precision.

Where Global Warming Came From

The onset of a glaciation leading to the formation of a new ice sheet can be very sudden, according to the paleoclimatic evidence. Shifts from warm to cold phases may also come on surprisingly fast, as occurred during the recent



USGS

An electron-microscope view of a common foraminifera, Elphidium excavatum clavatum, found off the coast of Long Island, New York. The foraminifera shells were used in oxygen-isotope analysis.

period known as the Little Ice Age that persisted from about 1300 to 1850, and may be occurring now. If the theory of orbital determination is correct, we should thus take the threat of a new ice age very seriously. And for a short time in the 1970s, we did. However, other forces were at work. The intent of the shapers of global policy grouped around the banner of Anglo-Dutch financial oligarchy, was to use the thaw in U.S.-Soviet relations that had been signalled by the limited nuclear Test Ban Treaty of 1963 to accomplish the phased destruction of the scientific research capabilities of the leading powers, especially the United States.

The manipulation of popular opinion against science, first by the Bertrand Russell-led nuclear weapons test scare, then by a succession of environmental hoaxes originating with the widespread circulation of Rachel Carson's 1962 *Silent Spring,* was to be the leading weapon in this assault on the idea of scientific progress itself.

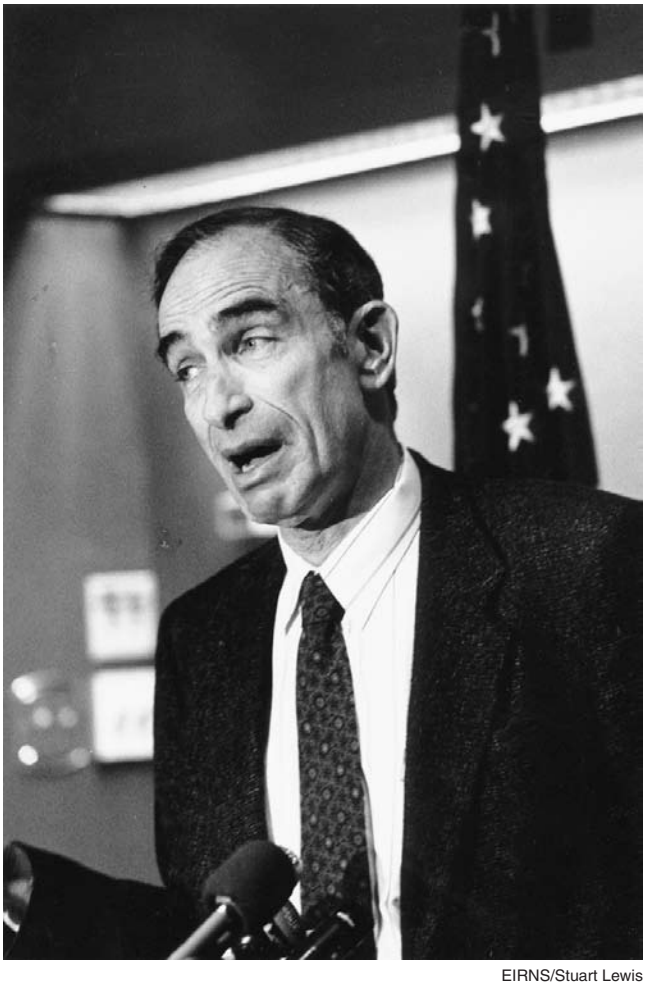
In 1975, a year before the publication of the paper promoting the orbital theory of climate, a conference organized by then president of the American Association for the Advancement of Science, Dame Margaret Mead, had sealed the fate of the astronomical theory of climate. Mead and conference co-organizer William Kellogg (a climate scientist from RAND and later NCAR, the National Center for Atmospheric Research) had determined that the now well-known theory of carbon dioxide-induced global warming was to become the official interpretation of climate phenomena. Scares about a new Ice Age were all very well, but to really channel popular opinion against scientific development, it was much more effective to blame modern industrial activity—the carbon dioxide produced from burning of fossil fuels—for the danger.

Titled "The Atmosphere: Endangered and Endangering," the conference theme was that scientists must not worry so much about accuracy and complex ideas, but streamline, simplify, and if necessary distort their results in order to more effectively mobilize policy makers and public opinion against the alleged dangers of greenhouse gases. It was a naked attempt to misuse science to drive the real agenda of reducing population by stopping the spread of scientific and industrial progress. Among the leading participants were three top students of Malthusian Paul Ehrlich. One of them, Stanford University climatologist and global warming scaremonger Stephen Schneider, later became notorious by carrying the spirit of the conference into a 1989 interview with *Discover* magazine: "To capture the public imagination, we have to offer up some scary scenarios, make simplified dramatic statements and little mention of any doubts one might have," Schneider said. "Each of us has to decide the right balance between being effective, and being honest."

This was the origin of Al Gore's campaign. Prior to that, the theory of anthropogenic global warming was no more than an also-ran. Although the notion that the carbon dioxide output of human industry might affect global climate had been proposed in the 1890s, repeated attempts to measure its effects had shown no significant influence. To generate a global warming scare required a mobilization of resources and funding to universities and institutions on an unprecedented scale. By the early 1990s expenditures to aid the scare were reaching into the billions of dollars a year; from 2001 to 2007 annual government funding for to the global warming scare industry had reached $5 billion.

It's Over Now

A brief episode of warming over some parts of the globe from about the mid-1970s to 1998 helped to feed the scare among a gullible and increasingly science-deprived population. That is now over. In the decade



EIRNS/Stuart Lewis

Malthusian Paul Ehrlich and his co-thinkers were the initiating force behind the global warming scare. Ehrlich's prophetically wrong book, The Population Bomb, *appeared in 1968.*

since 1998, the averaged global temperature has fallen about 0.6 degrees C, cancelling the entire increase in average temperature that had been claimed for the prior century, based on microwave sensor satellite data from the Marshall Spaceflight Center analyzed by Drs. John Christie and Roy Spencer at the University of Alabama in Huntsville. Recently, the index of sunspot activity, a measure which correlates with the output of heat radiation from the Sun, has fallen to lows not seen since 1913.

Apart from changes in the orbital configuration, the output of the Sun itself affects climate, both directly as heat and through indirect means. For example, the solar wind, the output of charged particles from the Sun, affects the influx of cosmic rays. Cosmic rays, it has recently been demonstrated, may play a crucial part in generating the seed crystals around which clouds form. More cosmic radiation entering the Earth's atmosphere, because of a weaker Sun, may mean more cloud cover and more global cooling.

The Sun is known to go through 11-year cycles of increase and decrease in its output. But the recent cycle has been so weak that some specialists fear we are entering another Dalton Minimum, the period from 1790 to 1830, in the midst of the Little Ice Age, when sunspot activity was at a similar low. Astronomer Khabibullo Abdusamatov of Russia's Pulkovo Observatory predicted in 2005 that solar activity was about to decline, and a new cooling would ensue. Last year, Russian Academician Dr. Oleg Sorokhtin advised the world to "stock up on fur coats." Sorokhtin predicted the occurrence of a solar minimum by the year 2040, and a prolonged period of glaciation following.

The intent of the global warming scare is to reduce world population. That is the stated intent of its initiators and of such important promoters of this and related anti-science scares as the World Wildlife Fund, founded by Britain's Malthusian Prince Philip and former Nazi SS officer Prince Bernhard of the Netherlands.

Isn't it time to stop being a sucker for the fear-mongering of people with another agenda—a very evil agenda—whose end result will be the reduction of world population from its current level of 5 to 6 billion to less than 2 billion souls, with the concomitant dissolution into perpetual war, famine, and human misery that such a plan must entail? A return to the American System concept of science-driven progress will assure us that we have the best available means to meet any future challenge to human survival, whether from climate change, new disease organisms, or some threat as yet unforeseen.

Laurence Hecht is Editor-in-chief of 21st Century Science & Technology.

For Further Information

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"The Coming (or Present) Ice Age," by Laurence Hecht, www.21stcenturysciencetech.com/Articles%202005/ComingPresentIceAge.pdf

"CO_2: The Greatest Scientific Scandal of Our Time," by Zbigniew Jaworowski, www.21stcentury sciencetech.com/Articles%202007/ 20_1-2_CO2_Scandal.pdf

"Where the Global Warming Hoax Was Born" by Marjorie Mazel Hecht, www.21stcenturysciencetech.com/Articles%202007/GWHoaxBorn.pdf