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WEATHER

# Little prospect of new Ice Age

by Geoffrey E. Hill

During the First World War, L. F. Richardson, a young British meteorologist-mathematician, who had volunteered as an ambulance driver in France, conducted his research on weather forecasting by using the laws of physics applied to air movements.

His tediously produced manuscript, lost in a German overrun, was found after the war under a coal pile in a house where he was quartered. In 1922 he finally published his trial forecast method, a dismal failure. He had envisioned, if his method were successful, a large room with rows upon rows of mechanical calculators each operated by an individual, and the results if performed soon enough, might provide a useful weather forecast.

More than 50 years later, the reasonable dreams of a very capable scientist have been far exceeded. We have on hand electronic computers of every increasing capacity and speed, available to predict the weather routinely by extensive, complicated mathematical formulations. Although we still complain often about weather forecasts, they are vastly superior to what was available 20 years ago; let alone 50 or 100.

When we peer perishably into the future, on any subject, two things come into mind. One is that the seeds of future events are often, but not always, in our midst. The other is that the seeds of many possible outcomes are present, but who knows which ones will yield the fruit of the future?

Upon searching for present trends, from which we might assess the future, there is a tendency to believe in "onward and upward" forever. Yet many aspects of the world in which we live occur in cycles, such as the economy, the level of world belligerency, and climate. Other aspects do seem to go onward and upward, for example energy consumption, population, and taxes. Even these items may yet turn out to be of a cyclic nature, over a very long period of time.

So, with the foregoing in mind, here is a forecast for those who live by centuries: "For the next hundred years it will be slightly warmer, with local areas of much warmer temperature; visibility lowering generally in haze and smoke; precipitation remaining about normal with the usual variations in location and duration; some local flooding in low lying areas such as New York and Miami. For the details of my forecast, we will keep you informed three to six months in advance, for unexpected changes, such as a colder than normal winter. For great detail, we will issue bulletins for the weather expected two weeks in advance. And that completes my forecast; have a good century."

This "enlightened" forecast is based upon the following ideas, which are, of course, subject to possible gross errors just as with L. F. Richardson over 50 years ago, when forecasting weather was little better than guesswork.

The expected increase in temperature arises from an increase in energy consumption, which could be, in the next 25 years, several times higher than at present. That trend will likely continue well into the next century.

Our greatest change in weather here in Cache Valley will be due to air pollution. With our small enclosed airspace, pollution will easily reach, especially in winter, the worst present day levels observed elsewhere. Just as with the Logan-Smithfield highway-strip development, it will be too late to prevent heavy pollution by the time its onslaught is recognized. (We could prevent this outcome, but it is very doubtful we will.)

The flooding mentioned in the forecast will be due not from excessive rains, but from a partial melting of the polar ice caps. It is widely believed among scientists that a worldwide temperature change of a few degrees is sufficient to cause melting of the ice caps. How long it would take is uncertain, but the required temperature increase is likely to occur in the future.

In trying to prevent such a gradual but yet relatively rapid catastrophe, we will surely try to get rid of unwanted heat from the earth. It seems there is little prospect of a forthcoming ice age, but rather the opposite.

The ability to provide forecasts at various levels of detail, will come from technology, which undoubtedly will continue its rapid advance. Moderate advances in understanding the physics of weather, and great advances in computer technology and use of satellites can be expected in the next 100 years.

Geoffrey Hill is an associate professor of meteorology at Utah State University. His main work involves weather modification research at the Utah Water Research Laboratory. He has been with USU for three years. Prior to coming here, he was at Penn State University and taught undergraduate meteorology at Lowell Technical Institute, Lowell, Mass. He was also a researcher at the U.S. Air Force Cambridge Research Center in Massachusetts. He received his bachelors and masters degrees from Massachusetts Institute of Technology (MIT) and took his doctorate in 1972 from Penn State.