

heat to space. These cloud effects are each roughly 10 times bigger than the man-made greenhouse effect projected for the next century.

“When the earth heats up in the first stages of greenhouse warming, the balance of the cloud effects shifts. The shift is hard to determine because we are trying to calculate small man-made changes within large natural climate factors. Does the cloud effect shift in a direction to amplify the greenhouse warming, or cut it down? Different groups get answers that differ by 300% on this question.

“In addition, oceans play an important role in the greenhouse effect. The oceans absorb and store up large amounts of heat. Consequently, the greenhouse forecasts are affected by ocean currents, which carry huge volumes of water and heat from one part of the globe to another. In one representative case, the calculations showed that when ocean currents are included, the global warming is decreased by 1°C—a significant decrease.

“In particular, the Antarctic Ocean hardly warms at all, and may cool slightly. This diminishes the probability of a breakup of the West Antarctic ice sheet, accompanied by a rise of sea levels and flooding of coastal cities all over the world.

“To handle the oceans requires more observation of ocean currents and temperatures, more scientific manpower, and also an enormous increase in computing power. The forecasters break up the Earth into large areas, up to 500 miles across, in order to complete their calculations in reasonable time. But the Gulf Stream which controls the climate of Western Europe is less than 100 miles wide at some points. A 100-year forecast that takes months now would take decades with 100-mile areas and ocean currents properly included. Yet including the effect of ocean currents is essential.”

On the poor quality of regional forecasts, Jastrow points out that “useful greenhouse forecasts have to predict not only global temperature trends but also regional changes. Regional climate changes are often very different from global trends. For example, in the 1970s and 1980s, when the world as a whole became warmer, England and Europe became colder.”

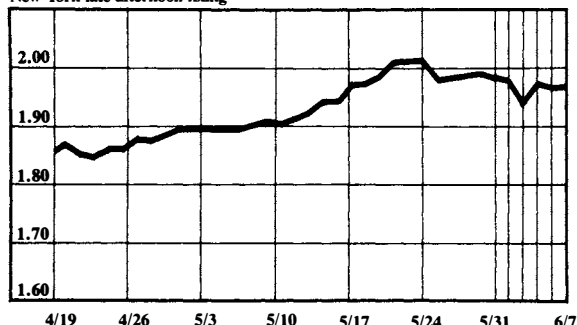
According to Jastrow, “unfortunately, the current greenhouse forecasts do very poorly on regional forecasts. In the United States, in forecasts of the effect of the greenhouse warming in three important regions—California, the Southeast, and the Great Lakes—some greenhouse forecasts predicted substantial *decreases* in summer rainfall, while others predicted substantial *increases*.”

Jastrow also emphasized that the reported increase in the Earth’s temperature for the past 100 years could be attributed to causes other than the “greenhouse effect.” He stated, “Changes in climate occur without any obvious cause. Dr. Hansen did a trial 100-year computer run and found that it is possible for the Earth’s temperature to change by as much as 0.4°C over 25 years as a result of natural variability—nearly enough to account for the observed 0.5°C change in the Earth’s temperature increase observed on the Earth.”

## Currency Rates

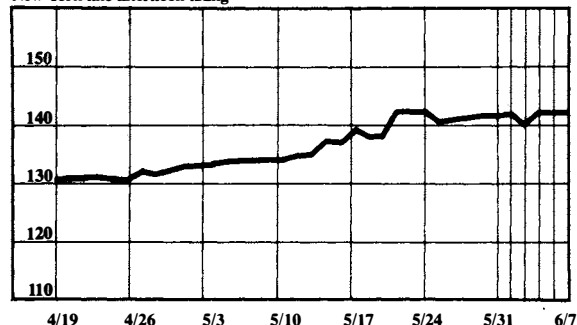
### The dollar in deutschemarks

New York late afternoon fixing



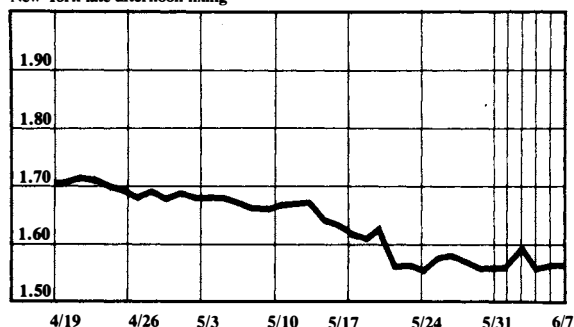
### The dollar in yen

New York late afternoon fixing



### The British pound in dollars

New York late afternoon fixing



### The dollar in Swiss francs

New York late afternoon fixing

