A FURTHER COMMENT ON THE GOVERNMENT'S GRANTS TO UNIVERSITIES AND INDUSTRY

In the last issue I wrote about the government's grants to Universities and Industry to study and develop solar energy. The tone and spirit of the work of those with grants is very much like what I imagine you would find if the Ford Motor Company were given the job of studying Chevrolet cars.

IMPARTIAL TESTS

If Ford were given the job of studying Chevrolet cars and reporting to the american public the results of their study, I am sure that many men, test drivers, comfort experts, efficiency engineers, longevity experts would be assigned to this project. A large amount of money would be set aside for this serious question. If they were given the position of impartial tester I am sure they would play the role to the last serious words of their last expert. What would they discover? That the Chevrolet was a piece of junk that should be dismantled, garaged, or burned? No. of course not. The reports carefully worded by committees to strain out any nuances of individual opinion, would find great promise in many of the features of the Chevrolet. In interviews some of the members of the Ford research team would nod their heads, "Yes, in 20 years we feel that the automobile industry will definitely be ready for the chevrolet. For clearly many of its features are beneficial and much needed by the public" and, sir, can you tell us what you have chosen after your long study of the Ford and the Chevrolet. "Well, Hal, with today's options in the automobile field, I'll have to say that the car I have found to be feasible is the Ford. Though, of course, I'll grant you that someday my kids will probably be driving Chevrolets."

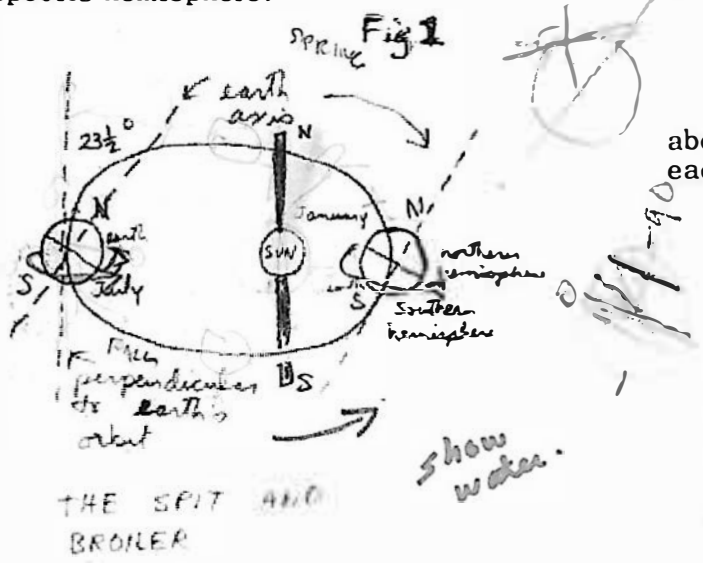
For some reason, this brand of shit works quite well on the american public.

Different layers of the sun are at different temperatures, but the sun radiates heat much like a body at 10,000 degrees F. Not all of the sun's radiation reaches the earth. The short ultraviolet rays are largely absorbed by O3 - ozone - in the upper atmosphere and much of the radiation at other wave lengths is absorbed depending on one's altitude and the condition of the atmosphere. If it is heavily cloudy very little of the sun's radiation reaches the earth.

The path of the earth around the sun is an elipse. The sun is at one end of the foci. The elipse is almost a circle, it is not a very pronounced elipse. The closest that we come to the sun is 91,350,000 miles and the farthest 94,455,000 miles. This small difference in distance of 3.4% makes an appreciable difference of about 7% in the intensity of the radiation since this decreases with the square of the distance.

The earth is closest to the sun in January and farthest away in July. As the earth draws closer to the sun it speeds up. This is the half of its eliptical path where the southern hemisphere is slanted at the sun and consequently the summers in the southern hemisphere and the winters in the northern hemisphere are shorter and warmer than the corresponding seasons in the opposite hemisphere.

Fig 1



You don't find this imbalance between the seasons of opposite hemispheres easy to detect in climatological data of the two hemispheres because the southern hemisphere is much more completely covered by water than the northern hemisphere and this evens out temperatures from one season to the next.

Of the year's 365 days the sun is in the northern hemisphere for about 186 days and in the southern hemisphere for the remaining 179 days.

It is quite a difficult matter to understand geometrical relationships between the sun and the earth - the daily rotation. the yearly journey around the sun, the tilt of the earth's axis that creates our seasons.

THE SUN

THE EARTH IS AN ORANGE AND THE SUN A GRAPEFRUIT?

I have always found it difficult to imagine the earth as an orange moving around the sun which is a grapefruit, the orange spinning as it moves. How could our world. which all of us who live on it can see is flat be, instead, like an orange? Faith in science. geography, Magellan and the shadow you see cast on the moon as the earth eclipses it. And how could the sun which all of us can see is a tiny spot this big ● (if your eye is 14 inches from this page) be the big yellow grapefruit?

Perhaps this was the first trick of science - if you can soften people's brains to where they will say the earth is round instead of what obviously appears to them when they step out and look at it, then they are ready to believe anything. (I owe this observation to Clark Richert who has often brought up the point that the earth is flat instead of r[illegible])

MORNING FRONT WINDSHIELD - EVENING BACK WINDSHIELD

The earth is spattered by meteorites as it makes its year-long tours around the sun. It is going very fast and just like rain drops on a car more meteorites hit the front of the earth than the back. More meteorites fall in the morning than in the evening because in the morning you have been spun to the leading side of the earth as it circles the sun.

23½ DEGREE TILT

The table lists approximately how far above or below the equator the sun is on each month:

Jan.	20	-20 degrees
Feb.	20	-11 "
Mar.	20	- 0 "
April	20	11 "
May	20	20 "
June	20	23 "
July	20	21 "
Aug.	20	13 "
Sept.	20	1 "
Oct.	20	- 10 "
Nov.	20	- 20 "
Dec.	20	- 23 "

You can see that the sun lingers at its highest position, hardly changing in the sky for two months, then rushes through the fall towards winter where it will again linger.

The sun follows a giant spiral in our sky. Each day it cuts a new thread winding its way up or down. The threads are closest together at the sun's upper and lower limits and farthest apart midway between.

Almost anything that fluctuates between two extremes lingers at the extremes and rushes between them.

AUTUMN ON URANUS

Other planets in our solar system have completely different relationships with the sun. Venus and Jupiter have their equators almost parallel with the plane of their orbit and, thus, could have warm and cold times of the year only if their orbits about the sun were eccentric and they moved significantly closer and farther away during the course of a year.

Venus' orbit is an even better circle than the earth's, but Jupiter's distance from the sun varies enough to change the intensity of radiation by almost 20%.

Uranus' equator is tilted all of 98 deg. to the plane of its orbit. Its year is about 80 earth years long and the tilt of its equator causes extremes of season one would not soon forget.

A SHADOW GIVES THE DATE

From a photograph of a building on a sunny day with clear shadows the day of the year can be found by examining the positions of the shadows. There may be confusion as to whether the position of a shadow indicates a day in the summer or a day in the spring and the same confusion could exist between days in the spring and summer. An extremely accurate film could distinguish since in one case the sun is slowly rising in the sky and in the other case it is slowly sinking.