

If I may be permitted to choose the order, I think I will ask Dr. Clark, who had previously inquired about coming to Washington, if he would like to come forward for just a moment.

Dr. Clark, we are happy to have you here. We don't know the gist of your testimony, but whatever it is, I am sure it will be welcome. You may address the committee.

**STATEMENT OF DR. WILLIAM D. CLARK, TECHNICAL DIRECTOR,
DYNA-THERM CORP.**

Dr. CLARK. In view of the shortage of time, I will make it as brief as possible, which is sort of akin to trying to explain nuclear physics in 5 minutes.

Mr. BROWN. We appreciate that.

Dr. CLARK. I have been engaged many years in research involving the use of cryogenic hydrogen as a fuel for internal combustion engines and for small powerplants.

This came about as part of my work at Los Alamos Scientific Laboratory when we were speculating on how we might apply atomic energy to small powerplants such as automobiles.

It became apparent quickly that we could not foresee having 50 million small reactors on the Nation's highways in automobiles in the near future.

The nature of atomic energy is such it lends itself only to large powerplants. The only reasonable route seemed to be the construction of large nuclear powerplants, the storing of the energy from these large nuclear powerplants and some intermediate substance which could be distributed throughout the United States in smaller powerplants such as for automobiles. The plant came out to be in electrolysis of water and the distribution of cryogenic hydrogen as fuel.

Hydrogen, as you know, joins combination with oxygen in the air and the product is water. There are no pollutants involved at all.

Now, admittedly, this is a far out concept. This will take years and years of research.

The role of the Federal Government, in my opinion, should be the funding of some of this research.

Even if the programs of Mr. Fuller and Mr. Grant are 100 percent successful, and we succeed in generating a device we can place onto an automobile, that would result in stoichiometric reaction between gasoline and air which would mean of course that the products would be carbon dioxide, gas and water; the amount of carbon dioxide, gas and water we would be dumping into the atmosphere is small in itself. In itself it would become a pollutant in the greenhouse effect with large amounts of CO₂ in the air, and would affect the entire temperature of the earth.

These are briefly the points I wish to make to the committee. Being a technical man, I am interested in research and development. I feel that the Federal Government should establish some research program to investigate the entire energy picture.

With regard to the systems approach that the gentleman from Aerojet was speaking of, the fact is that when man uses energy there will be a waste. The laws of thermodynamics demand that, but by careful management we can arrange this waste to be in such a form that we can best handle it.