Colman McCarthy Post 11/20/73

Letting the Sun Shine In

Two years ago this month, writing in The Smithsonian magazine, environmentalist Wilson Clark sounded a note that has the ring of this morning's front page:

Energy, the handmaiden of man's progress through the centuries, is in the deepest trouble. Demand in the United States for all sources of energy is rising at a steady five per cent, and demand for electricity alone is skyrocketing at nine per cent per year—it is doubling every decade. Continuation of this trend is clearly impossible, given the current means of obtaining energy. In a few decades there will be no oil for conversion to electricity or for transportation, nor will there be any natural gas, the cleanest burning fossil fuel . . . Thus the energy crisis, one that has little to do with summertime difficulties of power companies or the political considerations of importing Mideast oil. It requires recognition of the fact that our energy resources are dwindling, the bitter realization that at some not-so-distant hour the party will be over.

The significance of Clark's article was not just that it had the jump on today's headlines but that it focused on the potential uses of solar energy. Clark proposed solar energy as one of the major solutions to the energy

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alarm. It was possible to dismiss his view two years ago as fanciful dreaming, another one of those distant stars —like steam-powered cars, protein from petroleum — that occasionally shoots through the sky of American technology. But now, two years later, solar energy is being taken seriously. In Congress last week, the Solar Heating and Cooling demonstration act of 1973 had 170 co-sponsors. It offers a $50 million research program to show in three to five years that solar energy is practical and economical.

By definition, solar energy is the power of the sun. At its simplest, this can be demonstrated when sunlight streams through the window of a house, warming the room beyond the normal temperature. At its most complex, solar energy can be used in processes to generate electricity, to heat and air condition buildings, to generate furnaces that can reach 4,000 degrees. "Much of this is complex technology," says Clark, a writer ("Energy For Survival" to be published by Doubleday next year) and consultant for the Environmental Policy Center, "but much of it is basically simple. For example, to heat a house or small office building, glass collectors are built on the roof or sides to trap the heat from the sun's rays. This technology has been used for years in private houses and office buildings. The experiments proved workable and the designs were perfected. But the initial cost was high, so the idea did not spread. But the costs would not be high in the long run." The latter is a hard concept in America where we live short run: discarding cars in a couple of years, throwing away paper and metals used but once, tearing down usable office buildings. So little is built for permanence that much of the economy depends of wastefulness. But once a solar energy unit is installed, it can work for decades.

Clark recently found examples of this in Florida where solar hot water heaters built in the 1920s are still working well today. A reason the solar heaters did not spread nationally was the turn to natural gas and oil in the 1930s; the market on solar heating trailed off. But now, 40 years later, when gas and oil are trailing off, the sensible economics of solar heating still persists. The high initial cost is easily offset by the low lifetime operating costs. For example, a University of Florida survey of solar hot water heaters reported a homeowner in Ft. Lauderdale who installed a 180 gallon tank for $1,500, an unusually expensive unit. Despite this, he expects to save more than $175 per year in prevailing electricity costs. Thus, in less than 10 years he will make up the $1,500 investment, and thereafter have almost free hot water heating.

When he first began researching solar energy, Clark believed, like most people, that it meant only building the technology to trap sunlight. "It's much more than that," he now says. "Before the last few decades of large exploitation of fossil fuels, our food system was based on solar energy, not oil energy. Currently, our supply of food is precarious because the agricultural system is heavily dependent on oil. It takes, for example, about ten calories of oil to give us one calorie of food. Huge amounts of oil are used not just for the planting and harvesting machines, but oil is also used to make the synthetic fertilizers and pesticides. It need not be this way. On the farms, rather than making our synthetic chemicals from oil, we should be letting solar energy trigger the production of chemical nutrients in the agricultural system. Right now, we dismiss organic farmers as health food nuts, but we forget that their farming methods use only a fraction of the energy used in the centralized farming practices of agribusiness. I'm not pushing organic farming of itself; I'm only for maintaining our current level of productivity without excessive use of oil. There is a lot of potential solar energy in agriculture that we don't use. Solar energy, for example, makes the chemicals in plants that could reduce our dependence on synthetic chemicals now made from oil. In a solar-based agricultural cycle, animals eat the plants and produce manure for fertilizer, rather than the current system which depends on fertilizer made from dwindling fossil fuels. I'm no alarmist, but unless we begin now to change over, we will face serious food shortages soon." Clark is not alone in his assessment.

How soon could the nation begin using solar energy in a large way? Clark believes two decades, but he makes some presumptions. One is that we will begin getting leadership

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from the White House and business—not pep talk chatter about lowering the speed limit and thermostats. Solar energy has been mentioned in presidential messages but an urgency is lacking. We are mistaken to think that once the gas and oil run out, then we can switch over immediately to sun power. It doesn't work that way because fossil fuel must first be used to build the solar equipment. If we are short of fossil fuels and keep wasting it at the current rate of profligacy, then we will have none to build economically feasible solar systems. We will be out in the cold in more ways than one.

Rep. George P. Miller (D-Calif.),

chairman of the House Committee on Science and Astronautics, said recently that many scientists and engineers dismiss solar energy "because they think it too far out or conceptually inefficient by current engineering standards. To my mind, however, we cannot afford the luxury of this easy attitude. The stakes are too high. Moreover . . . the nation today depends on a host of operating technologies which were quite unknown only 25 years ago."