

Ordinary Rocks Seen As Future Source Of Nuclear Fuel

New York (Scientific American Feature) - Nuclear reactors that produce more fuel than they consume make it feasible to "burn the rocks," that is, to utilize the vast supply of uranium and thorium contained not in rich ores but in ordinary rocks such as granite, according to Alvin M. Weinberg, director of the Oak Ridge National Laboratory.

"Even if scientists fail in their current efforts to meet the energy needs of future generations by learning how to 'burn' the sea," he says, "another energy source about as abundant as close at hand. This resource consists of the enormous quantities of uranium and thorium dispersed in trace amounts throughout the rocky crust of the earth. To extract the energy the rocks contain we can draw upon existing technology. Nuclear reactors that operate on the controlled fission of the heavy elements are already generating electrical power. We need only to perfect the breeder reactor - the reactor that 'breeds' more nuclear fuel than it consumes - and we shall literally be able to 'burn the rocks.'

Could Multiply Material

"The realization that an essentially inexhaustible source of energy lies almost within our grasp has come surprisingly late in the evolution of nuclear power. It was not until 1955, at the first Geneva Conference on the Peaceful Uses of Atomic Energy, that Harrison Brown and L. T. Sullivan of the California Institute of Technology demonstrated that the trace amounts of radioactive elements present in the granite of the continents could vastly multiply the supply of fissionable material accessible in ores. In consequence of this and subsequent studies there is no longer any doubt that nuclear breeding offers a long-term solution to society's energy problems.

"Breeder reactors have been built or are under construction in the U. S., Great Britain and the U.S.S.R. The first, the Experimental Breeder Reactor No. 1 at the National Reactor Testing Station in Arco, Idaho, was also the first reactor in the world to generate electricity, about 200 kilowatts. The U.S.S.R. has built two breeders at Obninsk, some 100 miles from Moscow. And last November the Dounreay reactor, the first breeder in Great Britain, began to operate on low power. A second U. S. reactor, now nearing completion, is designed to yield 62,500 kilowatts of heat and 15,000 kilowatts of electricity and is about the same size as the Dounreay reactor. The smaller U.S.S.R. reactor is rated at 100 kilowatts of heat and the larger 5,000 kilowatts.

"It seems obvious that in the long run the world will be able to use breeder energy only if it is cheaper, more abundant or more accessible than any other energy source. One of the most serious potential competitors is solar energy. But the diluteness and unpredictability of sunlight argue against it as a primary energy-source in large power stations especially because such a station would involve a formidable capital investment. It is estimated that solar energy will require an initial investment of from \$1,000 to \$2,000 per kilowatt. To compete successfully, an alternative energy system should cost less than, say, \$1,500 per kilowatt. Here breeder reactors have a marked advantage, for their capital cost should be no more than \$750 per kilowatt even if their fertile material comes from low-grade sources such as granite. This estimate drops to about

\$200 to \$300 per kilowatt if the reactor is started with cheap uranium from high-grade ores and kept burning with the relatively expensive materials from the low-grade sources.

"As academicians N. N. Bogolyubov, head of the Institute of Theoretical Physics at the Soviet Joint Nuclear Center, said to me recently, 'breeding constitutes a trivial solution to man's ultimate energy problem.' Perhaps it is because of the essential simplicity implied by the word 'trivial' that those of us who are interested in breeding find it such an exciting technological development."

MacArthur Still On Serious List

New York (UPI) - Gen. Douglas MacArthur continues to show moderate improvement but still remains on the serious list, a spokesman for Lenox Hill hospital reported Wednesday night.

MacArthur, 80, entered the

hospital Jan. 29 for treatment of a urological ailment and will undergo surgery for an enlarged prostate gland when his condition permits.

Haiti and Liberia are the world's two Negro republics.

Lexington, Va. (UPI) - Former President Truman will be the keynote speaker May 2 at a mock Democratic National Convention staged each presidential year by Washington & Lee University.

Quotes From the News

By United Press International

Milwaukee, Wis. - Quartermaster 1-c William Floyd, stating that he and two other seamen were safe even though their sub lost nearly all its mooring lines in gale-tossed Milwaukee Harbor:

"We aren't in any danger, we're just cold and uncomfortable and it's hard to get around down here in the dark."

Atlanta - Mrs. Rosemary Brown, of East Point, Ga., fighting back tears at a juvenile home where she found her four-year-old daughter Wanda who had been missing most of the day:

"Come on, Wanda, let's go home."

Los Angeles - Dr. R. Bernard Finch, after being asked by the district attorney prosecuting him for murder whether the "last time" he had seen a shaving kit and Carole Tregoff at the death scene was when he threw Carole the kit and told her to run:

"Yes, they left together."

Chicago - Burglar Richard Morrison, who blew the whistle on police who cooperated with him in his looting, promising to cooperate with a grand jury investigating police corruption:

"I don't believe I would have started all this if I had known it would go this far, but now that it has I'm glad."

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