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SCIENCE

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BREAKTHROUGH:

Now, Isolate Plasmid DNA in 5 hours!

The classic way of isolating plasmid DNA from bacterial lysates has been by centrifugation in cesium chloride gradients for 24-60 hours.

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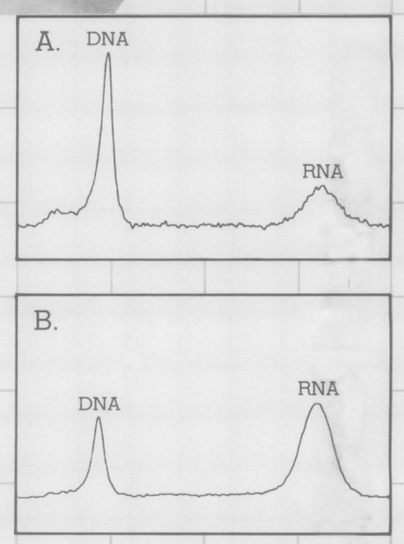
A paper describing the method has been submitted for publication. For a reprint, write Beckman Instruments, Inc., Spinco Division, Dept. 962, 1050 Page Mill Road, Palo Alto, CA 94304.



Densitometer tracings of an autoradiograph showing the relative amounts of nucleic acids in the plasmid DNA band isolated (A) by new 5-hour two-step gradient method, and (B) by conventional 48-hour equilibrium gradient method. The nucleic acids were restriction endonuclease-cleaved, alkaline phosphatase-treated, ^{32}P-5′-end-labeled, and electrophoresed before autoradiography.

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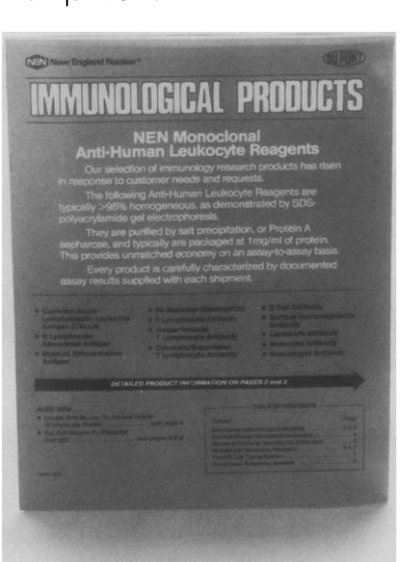

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Volume 223, No. 4632

SCIENCE

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COVER

Idealized cycle of Neogene sedimentation on the U.S. Atlantic continental margin; deposition is a direct response to fluctuations in (top left) sea levels, (top right) climates, and (bottom left) continental shelf water masses. The first three stages reflect warming climates through a sea-level transgression associated with deglaciation and increased interaction of the Gulf Stream with the configuration of the continental margin, the accentuated nutrient-rich waters, and phosphate deposition. Stage four (bottom right) reflects cold climates and sea-level low-stands of glacial maximums. Phosphate deposition = P, dark blue dots; carbonate deposition = C, white dots; and terrigenous deposition = T, brown dots. See page 123. [Painting by Whiting M. Toler, Washington, North Carolina

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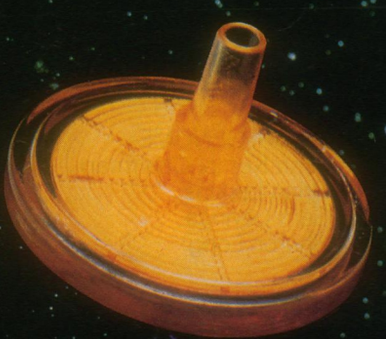

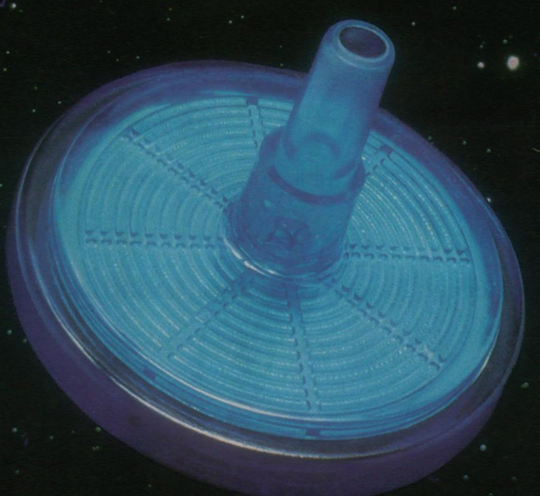

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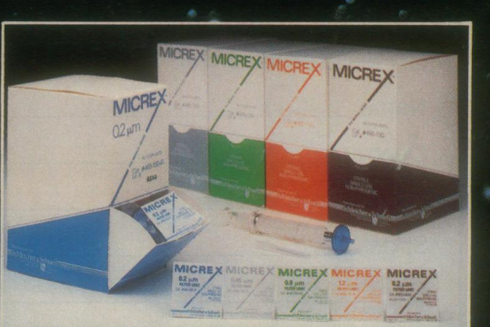

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Rudi Jaenisch, University of Hamburg

Session Topics & Speakers:

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Garry Felsenfeld
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Poster Sessions: ADVANCES IN RECOMBINANT DNA RESEARCH

Participants are invited to submit abstracts for the poster sessions. These abstracts will be reviewed up until the time of the meeting; however, only those accepted by Dec. 15 will be published in the journal, DNA. Contact Dr. Steven Nordeen, (919) 966-5396.

Organized by Scherago Associates, Inc., in conjunction with the journal, DNA, and Genetic Engineering News, published by Mary Ann Liebert, Inc.

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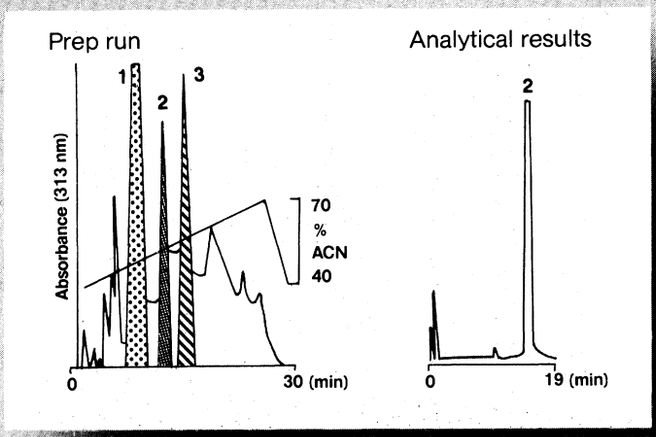

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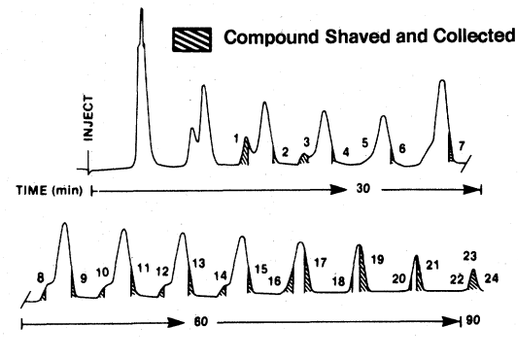

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Detector:	RI

[1] *Journal of Liquid Chromatography* **4(3)** 525-532, (1981); *Journal of Organic Chemistry,* **46,** 3062, 1981

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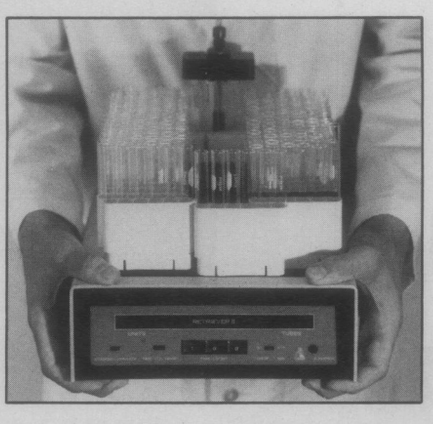

1 ml increments, if you're using it with an ISCO WIZ pump. An LED display shows the number of units in the tube being filled as well as the number of tubes already filled. The entire top, including the tube racks, lifts off for washing or for fraction processing and storing.

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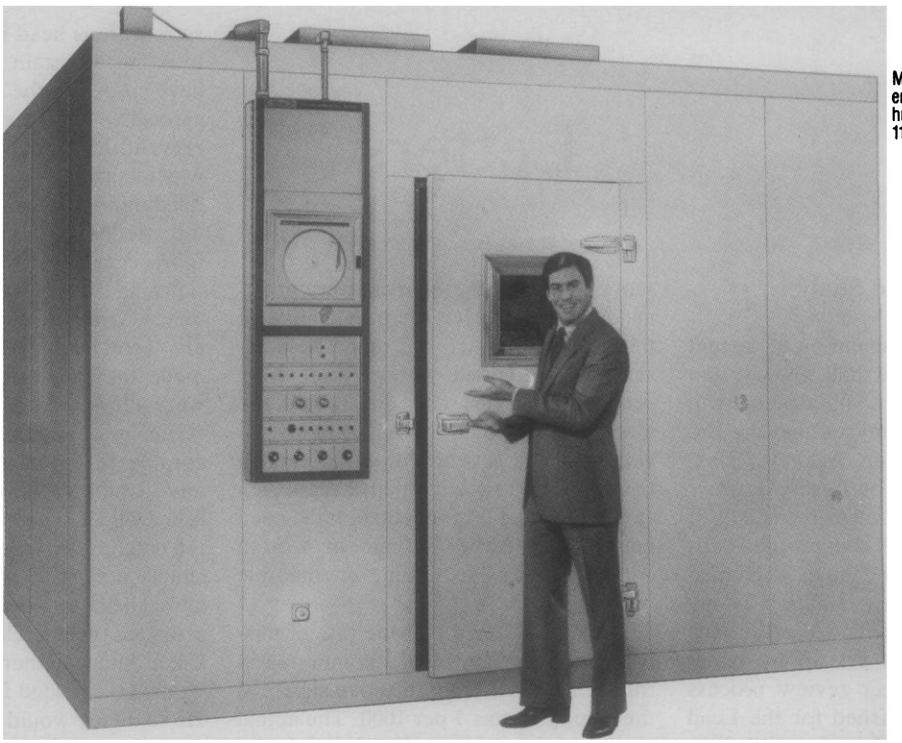

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Bottom, Type STC 30 mL 0.1 or 0.2 membrane

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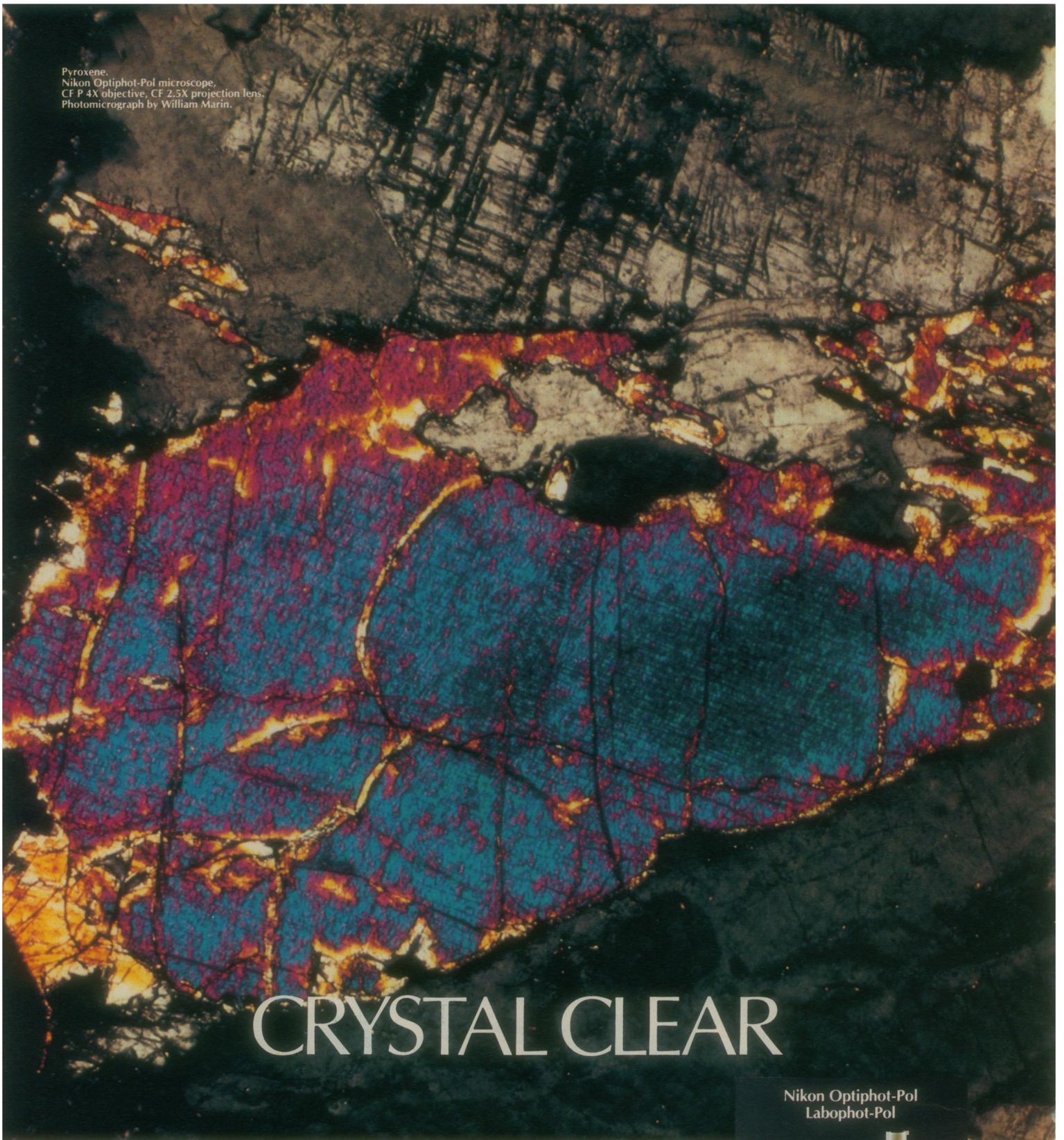

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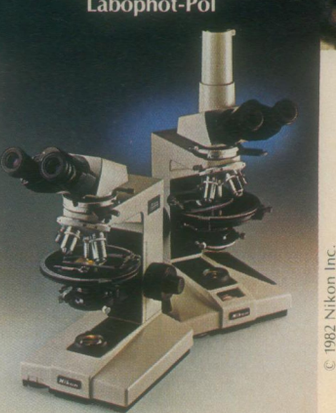


For demonstration circle reader service number 50
For information circle reader service number 51

13 January 1984, Volume 223, Number 4632 **SCIENCE**

Progress Toward Energy Security

Iran's repeated threats to close the Strait of Hormuz will probably come to naught, but the unexpected often happens in the Middle East with consequent impact on the world's economy. How would the United States fare in the event of partial disruption of petroleum imports? Is there progress toward lessening intermediate-term dependence on uncertain supplies?

The answer to the first question is that the United States is in much better shape to cope with a disruption than it was in 1978, and effects on the price of fuel would not be so great. Since the last crisis, we have made considerable progress toward decreasing imports and building a strategic reserve of oil. As a result of conservation, more efficient energy use, and substitution of other sources, consumption of petroleum has decreased from an average of 18.4 million barrels per day (mbd) to 15.2 mbd. Domestic production of oil increased with the completion of the Alaskan pipeline. Net imports of oil and its products have diminished from 8.0 mbd in 1978 to about 4.3 mbd this year. The strategic reserve now contains nearly 400 million barrels, and it could be tapped at the rate of 1.7 mbd. In addition, a current surplus of producing capacity for natural gas could be tapped to replace some oil products; substitutions equivalent to nearly 1.0 mbd would be feasible—some quickly, others after a delay. In sum, U.S. import of oil would drop to a tiny fraction of their level in 1978. An interruption of supplies would fall much more heavily on other countries than on us. However, they would also fare better than in 1978 since our demand would be much less than it was then.

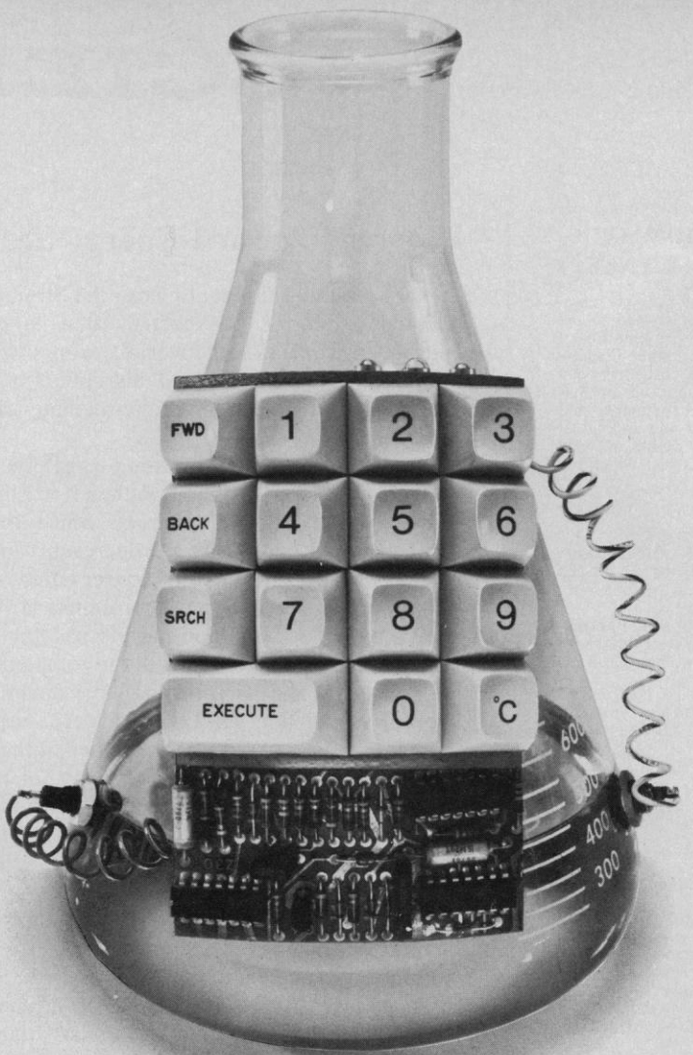
Progress in achieving greater intermediate-term energy security has not been so impressive. There is a government-sponsored Synthetic Fuels Corporation, but its achievements have not been outstanding. Insofar as there has been progress, it has largely emanated from private industry. The most significant advances have come in the development of better ways of using coal.

At present about 68 percent of U.S. energy is derived from petroleum and natural gas. During the next 10 years domestic production of these will drop. The leading source of alternative energy is coal. Thus, improvements in methods of using coal are particularly welcome. The best news involves the gasification of coal. The Tennessee Eastman plant at Kingsport is on stream. It uses synthesis gas ($CO + H_2$) derived from coal to produce methanol or acetic anhydride; in principle the synthesis gas could be used to create other petrochemicals. The gasification process used at Kingsport was developed by Texaco and will probably be employed on a large scale one day to produce feedstock for all manner of hydrocarbons. Three other gasification plants will probably be on-line in 1984, including one at Cool Water, California, that uses the Texaco process. The Great Plains plant in South Dakota has Lurgi-type reactors. An Allis-Chalmers low-Btu demonstration plant is located at Wood River, Illinois.

Altogether these coal gasification plants would produce only the equivalent in energy of 30,000 barrels of oil a day. However, they will provide industry with valuable learning experiences. Were an urgent need to arise for large-scale expansion of gasification, the lessons learned from the new plants would cut several years from the time otherwise needed to design, build, and bring into production new facilities.

For many years shale oil has been touted as an answer to America's needs for liquid fuels. The day of fulfillment is distant, but Union Oil is completing a 10,000-barrel-a-day module that might serve as a prototype for large-scale expansion. Union Oil has a government guarantee of a price of $42 a barrel and may or may not make a profit at that price.

The ability of the United States to cope with an interruption of petroleum has been much improved. Some progress has been made in developing fossil fuel sources for intermediate-term needs, but ultimately the pace must be accelerated.—PHILIP H. ABELSON



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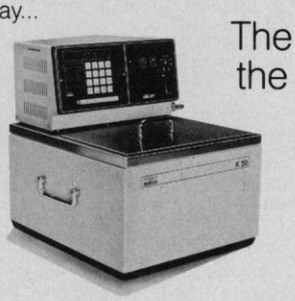

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