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COVER: The exotic, serpentine stem of the monkey ladder vine, found in the Amazon jungle, is but one of hundreds of thousands of tree, plant, fern and fungus species found throughout the world's tropical forests. Many of these forests are currently being razed to provide both developed and developing countries with raw materials, food and fuel, but some botanists are studying tropical forests in the hope of saving at least some of them. See p. 362. (Photo: Jacques Jangoux, from GARDEN magazine, New York Botanical Garden)

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LETTERS

Thoughts on icebergs

I read with great interest "Is there an iceberg in your future" by Kendrick Frazier (SN: 11/5/77, p. 298). However I am missing in that article any proposition of how the driving team break the speed of that iceberg.

The article says that five hours after starting the iceberg would attain its speed of one knot a day. But how long will it take to reduce that speed to zero and how will that be done? The speed is so slow that the eye may hardly notice any movement when looking at it. But nevertheless the iceberg must be stopped at its mooring point; otherwise that great mass will crush slowly but inevitably against any barrier and destroy it with great force. It also may be necessary to stop it during transportation, even anchoring it, to refuel the tug boats.

Has anyone given a thought to that problem?

Bernard Foster
Bronx, N.Y.

Intead of towing the iceberg, has anyone considered melting the ice *in situ* in the Antarctic with heat supplied by an atomic-fuelled ship moored there and then transporting the obtained water in oil tankers? This would eliminate the need of finding an iceberg suitable for towing as well as the staggering problems posed by the towing.

Alexander Hammid
New York, N.Y.

Why, in all that has been published in SCIENCE NEWS and elsewhere about the transport of Antarctic icebergs, has no one mentioned the possible use of sail? It would seem that an appropriate array of sturdily rigged tall masts, tended by crews living aboard in portable cabins, might make effective use of the Antarctic winds which would pursue the tow for perhaps a third of its journey.

H. M. Davis
Chapel Hill, N.C.

The most economical, efficient and elegant means of transporting icebergs is *not* with tugboats but, rather, by underwater sailing—slow but powerful. Giant sails set by ocean currents at some depth. Perhaps one or two small trim tugs would keep the iceberg aligned. A few microcomputer pilots on the sailing units would automatically keep them in proper trim, as would a submersible vehicle for tending the submerged sail control equipment. Ocean currents are cheaper than any oil.

Of a secondary nature, blankets, plastic sheets and foam are all potentially subject to failure as the ice melts and their underwater surfaces wrinkle. Successful underwater insulators include various separable bladders, such as ping pong balls and air filled rubber or plastic hose (large diameter—at least 10 cm and probably 100 cm). There must be provision for melted water to escape, otherwise flexing, folding and separation of the insulating surface will result in loss of insulating effect. I vote for long (200 meters), inflatable, tough plastic sacks 1 meter in diameter, with no seal between adjoining tubes (or sacks). Water can then pass out; the buoyancy of the sacks will keep water from coming in toward the iceberg. They should be changeable (as a tire is) when one is broken. They would be installed empty and filled entirely from the surface, with no need for divers below. Periodic inspection would check for failure.

Darrell Preble
Jonesboro, Ga.

Regarding towing Antarctic icebergs, why tow them long distances? Utilizing surplus whaling ships as ice crushing factories and surplus tankers as crushed ice bulk carriers would seem to be a more economical and rational approach.

Douglas L. Tompkins
Northbrook, Ill.

I wonder whether the engineers who are contemplating towing an iceberg have had the experience as a child of leaving a steel runner sled on a frozen pond only to find the runners buried in the ice the next morning.

It is the thawing of ice under pressure that makes ice skating possible because of the lubricating effect between runners and ice.

A steel cable used for towing would soon slice off the top of the iceberg at the pressure needed to tow the millions of tons for a year.

Robert F. Myers
Hillsboro, Ore.

Having read of plans to tow icebergs to arid countries to provide fresh water, I cannot help but wonder why not use supertankers filled at fresh water sources like the Amazon, Mississippi, etc.?

No new technology would be required and there are no massive problems to overcome.

Fred J. Hartman
Silver Spring, Md.

In the article on icebergs, one paragraph talked about the amount of water that could be gotten from an iceberg "... perhaps 1 km long, 400 m wide and 250 m thick. Such an iceberg would contain 100 million cubic meters of ice (about 22 gallons of water)...." Twenty-two gallons of water out of all that ice just doesn't seem correct. At that rate, no way could towing icebergs be profitable.

Jan E. Weinstein
Redlands, Calif.

(Reader Weinstein is, of course, correct. The amount is 22 billion gallons of water.—Ed.)