

lap sufficiently one can form a canal with reasonably smooth sides. Thus harbors can be carved out in a way adapted to the nature of the terrain. A long row of such explosions could produce sea-level canals cutting across sizable bodies of land.

One obvious question is the expense of such an operation. According to statements of the Atomic Energy Commission a nuclear explosion can be performed at the approximate cost of \$1 million. Kiloton explosions are somewhat less expensive while megaton explosions will cost a little more. In actual fact these two explosions (megaton vs kiloton), which will move masses of earth in the ratio of approximately a thousand to one, can be delivered at a cost ratio of only two to one.* From this it is obvious that in a bigger explosion we will pay considerably less for moving one cubic yard. The cost will be as little as 2 cents per cubic yard in the megaton explosion, while in the kiloton explosion we are faced with an expense of \$10 per cubic yard. The conventional cost of excavation is about \$1 per cubic yard. Thus, nuclear explosions would be more economic at the present time in case explosions of 50 kilotons or more are employed. In the future, smaller nuclear explosions will become economically usable.

The creation of a harbor or a canal of this type will make it necessary to evacuate people to a distance that may vary between 3 and 15 miles, according to the size of the explosion. In case appropriately clean nuclear explosives are developed it will be possible to return into the neighborhood of the explosion site immediately after the explosion has been performed. A reasonably but not completely clean explosion was tried in Nevada last

*It is entirely possible that with progressing technologies and great demand these costs will be very substantially reduced.