

(Continued from p. 204)

and other major works) for irrigation water in the main irrigation districts.

However, it is against the more expensive stored rain or bore water, paid for entirely by the farmer, that desalting has to compete. Solar stills suitable for watering livestock need to produce between 200 and 2,000 gallons a day if they are to be practical for use in the field. Stills already built span this range. *W. A. Scholes*

FROM U.S.S.R.

Resins in the Mines

Plastic reinforced with fiberglass has lately come into use in the Soviet mining industry as a substitute for timber supports in mines. High-strength beams are made of glass and synthetic polyester resins, a combination that is both non-corroding and fire-proof. They are manufactured by the Lisachansk chemical works in Donbas.

Polyester resin is also applied as a protective coating to reinforced concrete structures, for concrete is subject to rapid deterioration from waters containing acids and salts.

Pipes made of fiberglass and polyester resin are replacing metal pipes in the sinking of mine shafts by the freezing method, which is used when the soil is wet and sandy. In this process, a low-temperature salt solution, or brine, is pumped through polyester pipes into the walls of the shaft, freezing the sand and water into a solid icy armor two to four meters thick.

Synthetic resins have also helped mine builders in developing entirely new methods of bringing watery sands under control. One method is simply the pumping of resin into the sand. Since it does not mix with water, the resin acts as a kind of liquid "piston", forcing the water out of the tiniest pores and cracks. Another employs formaldehyde resin to glue the shifting particles into a solid mass. Within 70 minutes after this resin and its hardeners have been pumped into the ground, it is as hard as concrete.

Another resin, epoxy, makes it possible to glue together underground reinforced concrete structures. Epoxy is best used in combination with another resin, such as furan, to reduce its viscosity. To this paste can be added sand, graphite and soot, to make the material less responsive to temperature change. One can so choose the ratio of these additives that the parameters of the material will vary according to temperature exactly as concrete does. Such a joint is stronger than the material being glued together. And the paste can be used to bind wet as well as dry concrete. *E. S. Gruzinov*

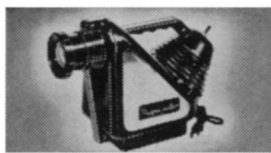
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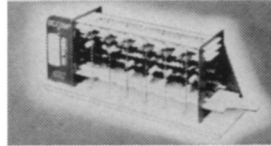
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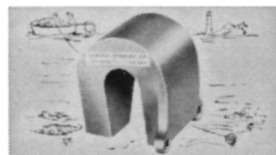
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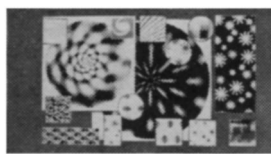
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