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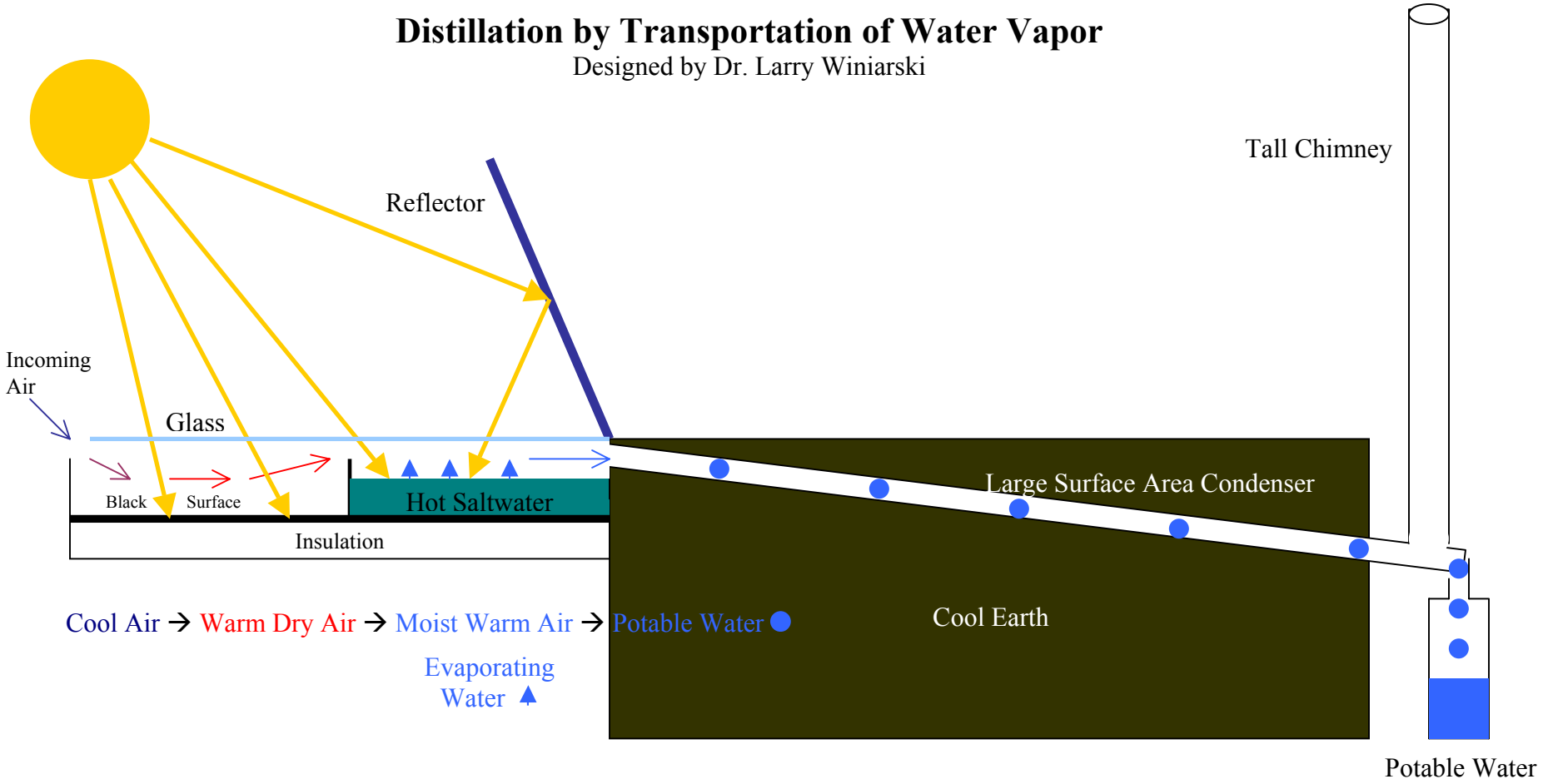
Distillation by Transportation of Water Vapor

Designed by Dr. Larry Winiarski



Two-Stage Distillation

The distillation of brackish water is a two-stage process. Water is encouraged to evaporate and is then condensed. Sealing water inside an airtight vessel results in almost immediate saturation of the inside air. Until the water vapor is condensed, distillation cannot occur. In a classic still, the condensing surface is warm and production of potable water occurs at a reduced rate.

By transporting clean water vapor to a cool condensing surface Dr. Winiarski sidesteps this problem. In his design, ambient air is warmed which improves its ability to absorb water vapor. Condensation occurs underground, stripping the moving air of its moisture. Both the large surface area and the cooling of the earth result in more efficient condensation. The tall chimney acts as the engine, moving air through the system. Air moving up the chimney is dry, having deposited the potable water into a sealed receptacle.

It is important not to reduce airflow. If condensation is seen above the evaporation tray, it is necessary to increase airflow, moving the moist air into the condenser. As well, the condensing surface needs to be sufficiently large to strip moisture from the air so that it is not leaving through the chimney.

Dr. Winiarski has commented that engineers are often attracted to improving the active part of a system. This tendency can be seen in cooking stove design. Improving the efficiency of heat transfer to the pot very effectively reduces fuel use. However, more attention has been paid to increasing combustion efficiency. In the case of distillation, making water warm is relatively easy. It is by encouraging condensation that system efficiency is significantly improved. Perhaps male engineers are more naturally drawn to yang solutions instead of yin.