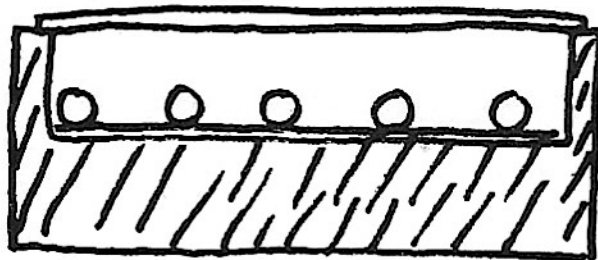
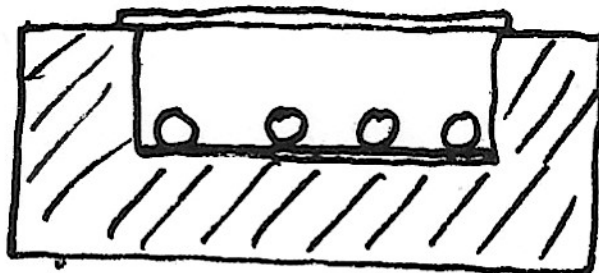


--Figure 4--

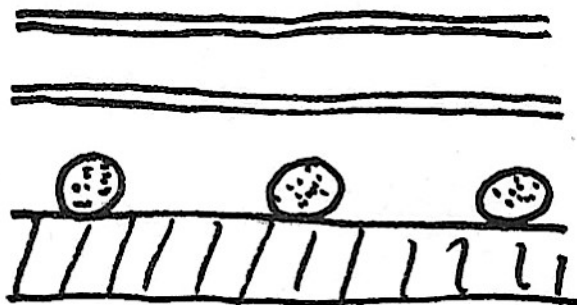


--Figure 5--



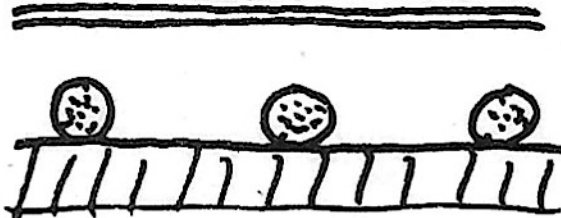
(4) & (5) If you are exposing a certain area to the sun it is best to make the side insulation thin, perhaps 1", rather than thick since the area is more useful in picking up heat itself rather than protecting the loss of heat picked up somewhere else.

--Figure 6--

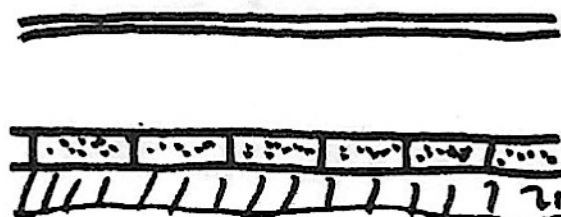


(6) & (7) Sometimes (6) is better than (7)- sometimes (7) is better than (6). Generally, if the collector temperature is more than 100 degrees F, hotter than outside (6) double glazing is best.

--Figure 7--

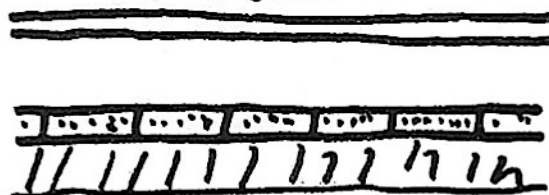


--Figure 8--

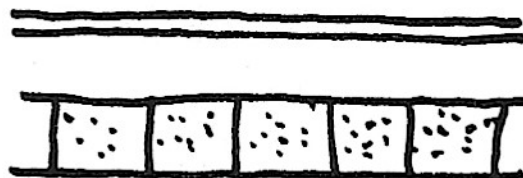


(8) & (7) Generally (8) is better than (7) since there is liquid circulating directly behind the collecting plate everywhere.

--Figure 9--



--Figure 10--



(9) & (10) Generally (9) will be a better collector than (10). This is because collectors grow cold or fall asleep when the sun goes behind a cloud or during the night. A heavy collector with a large mass of water has a great deal of heat to lose as it assumes the temperature of the air around it. Then when the sun comes up it takes a long time to wake up, for its mass must be warmed up above the useful collecting temperature before you circulate the liquid through it.

Each layer of water 3/16" thick weighs approximately 1 lb. If a collector has much more mass than this it is probably too heavy to be effective on days when the sunlight is intermittent.

In trying to decide the best kind of heat collector to use all this advice may be wisely disregarded if a collector that does not follow these lines is cheap and/or easy to build.

TOOLS, GOD, LIFE

In science fiction stories a common theme is the revolt of the machines against their masters.

What if life as we know it today - man, plants, animals, bugs - were at one time the hand tools and production tools of an entirely different kind of life form. Today we have tools that are evolving at an extraordinary rate. What if we are from an earlier family of such tools who revolted against this different life form? If our tools and machinery today did revolt and over-powered us, do you imagine they would think about us after they got busy with whatever pliers, axles, ball bearings would do on their own? Would metal things with electric circuits and atomic energy sources even notice weak fleshy animals?

People interested in wind generators, solar heatings, organic gardening, are often suspicious of recent technology. To what lengths must you go to free yourself from dependence on new technological devices that have been introduced. When are you free from such devices? When they are not visible? Underground wiring as a solution to the problem of electrical generation?

Is it possible to achieve a great independence from the horrors of modern industrial society by selecting certain of this horrible society's products and using them to your advantage to set up an independent homestead? What if you decided that copper is a material best left in the ground - can you use steel instead of copper even after you are informed by the steel producers that they could not run their mines, smelters, etc., without themselves using copper?

We have produced a great appendage to the natural world about which we expend a great deal of an essentially new kind of concern, for now, apparently, it is under our control.

One certain filter to insure against the presence or dependence of something felt to be dangerous or lethal in the makeup of an item is to go back in time before the suspect item was invented and only use things constructed before that time.

How much more exciting it is for someone today to come upon designs that answer needs that have existed a long time, but which could have been explained to and implemented by someone in one day in 1850: Something someone could have produced in an existing shop then! Unfortunately today this is not a very widespread opinion - most innovations are judged by how many other innovations they are dependent on. The more they buttress or hang on one another the more their creators assure one another of their value.

"bring in some cyclotrons, computers and satellites and we'll check this baby out."

It would be interesting to date the earliest appropriate date for a technological idea - where it could have appeared as the next step. Such recent innovations as microcircuits for computers and other electronic equipment clearly could not have occurred in the last century for they are absolutely dependent on the technology which immediately preceded them. Another fairly recent idea - the vise grip pliers - could have been made and appreciated 100 years ago after a few moments demonstration and explanation.

How deep into history could you carry an idea and have those who saw it say, "of course, why didn't I think of that."

This kind of emphasis would dampen the enormous rush into new scientific fields where people rightly expect the pickings in new ideas will be easy and would encourage contemplation of older more basic problems.

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