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[ZOMEWORKS]

ANTARCTIC HEAT COLLECTOR

Surfaces with different orientations have different climates. Heat collectors copy their orientations from warm parts of the planet. A south wall collector in Albuquerque is parallel to the earth's horizon at a point about 700 miles north of the antarctic. The closest land, Dougherty Island.

It, therefore, receives plenty of winter sun but little during our summer. A collector tilted 45 degrees in Albuquerque is parallel to the horizon at a point 1200 miles north of Easter Island in the pacific.

THE VALUE OF ORIENTATION

A surface intercepts the greatest possible amount of sunshine when it is oriented perpendicular to the sun's rays.

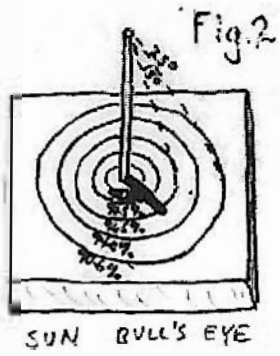
The following table lists the % of possible sunshine intercepted by a plane misaligned the given number of degrees:

0 degrees	100%
5 "	99.6%
10 "	98.5%
15 "	96.5%
20 "	94.0%
25 "	90.6%
30 "	86.6%
35 "	81.9%
40 "	76.6%
45 "	70.7%
50 "	64.3%
55 "	57.4%
60 "	50%
65 "	42.3%
70 "	34.2%
75 "	25.8%
80 "	17.4%
85 "	8.7%
90 "	0%

Evidently for orienting planes to receive sunlight pretty close is close enough. For if your angle is off as much as 25 degrees you still are intercepting over 90% of the possible.

An interesting tool to have when investigating the exposure of a given plane to sunlight is a bull's eye with a rod sticking out of it that reads by the shadow cast from the rod (which is called a gnomon) the efficiency of the orientation.

Fig.2



The sun moves in the sky during the day. The orientation of a plane with respect to the sun therefore changes continuously. I will talk about this later in a chapter that includes the subject of tracking.

SHADOWS

After dawn the helicopters took off from the base and headed down the valley. Their gigantic shrouds billowed as they were towed through the air.

The shadows passed like ominous dreams over the streets and rooftops of the town. No one looked up - the noise of the helicopters was deafening. On the outskirts of town the helicopters wheeled and took up stationary positions - you could see the crew men struggling with the lines as the shrouds were lowered still farther.

A large white patch of frost and snow, an island of grey and white amid greenish brown, marked their target.

A method of non-violent control for dissidents who were disconnecting from the power system and going solar.

No solar energy if you are in the shade. The used helicopters of previous wars were now a familiar sight.

Of course, the enraged people in the shadows had first shot at the helicopters, but the helicopters were so heavily armed it was no battle.

A few weeks in the shade and the solar houses were out of commission. A chill like that which you find in a deep shaded valley. The plants in the greenhouses going yellow like grass under a board.

People couldn't take it for long, the chilliness and the continual throbbing roar of the helicopters. The bored crewmen showering you with wrappers, orange peels, and soft drink cans out of their craft. The sight of the machine guns with whose performance they were all familiar after watching ten years of war on television.

THE SUN RIOTS

The chief of police in a southwestern city is talking on the telephone to the city maintenance department - "I want reflective blinds on every god damned window and if you can't get enough of them then tape tinfoil over the rest of the windows, now! Before that damn sun comes up again."

The bottom offices of City Hall and the police department have been gutted by fire - black streaks surround the windows which are now opaque and shiny with aluminum foil. The police are still unable to confiscate mirrors, the matter is in the courts.

A week earlier at a demonstration a large van driven next to the crowd - the driver, a swarthy man of about 40, opened the back doors and began passing out foot square mirrors. "Give 'em some sunshine."

With the rationing of gasoline this extravagant use of fuel was insult added to injury.

The local governments used the shrouds skillfully, shading a house, a demonstration or even, as in the case of X, a family picnic for as little as 10 minutes would often bring results.

What about the reflective fishnet that could anchor from satellites like a fishing net on its buoys. The terminology of megatons of TNT survived, but now it was a measure of energy reflected away rather than dropped in.

Evidently fear that they wouldn't be able to reel it in and it might get off target had made the service hesitate to use the big shrouds.

A few dozen mirrors began playing beams of sunlight on a police car that had been dogging the rear end of the demonstration. The officers were caught by surprise. The driver managed to back the car down the street, but not before his partner, panicked by the glare and the rapidly rising temperature, had jumped out and run. More and more mirrors were out in the crowd now. The crowd glinted like a bank of crystals.

It couldn't reach the police car which had found protection behind a drive-up liquor store. The man with the van now stood on top of it. An old bread delivery van, "Let's burn it up" Yeh - this."

His voice is hoarse and breaking. A few mirrors flit across the van and the man on top. More focus on the tin side. The man climbs off. People are pulling the last mirrors from inside the van as others begin to focus on it. There are 800 mirrors out in the street.

The crowd is silent. The blob of brilliant light on the side of the truck is fringed with trembling squares of light flitting in and out of target..You can hardly hear a noise. Then the sheet metal side of the van oil cans as the metal swells. A few more moments and smoke appears - the crowd has results. That was at 11:00 AM, by dark there have been 100 fires.

No one on foot has been burned - too hard to follow u man on foot. Rows of smoking cars --the ashes of a flag at City Hall.

It's the office buildings - the windows above the street - the crowd focuses through one window after another - the curtains go fast.

The police appear with arc welders masks. They fire on the demonstrators. The demonstrators disperse, but the light keeps coming. More mirrors appear on the street - funny shaped mirrors, mirrors with ornamental frames, tiny pocket mirrors in the hands of children.

Smoke is seen from another part of town.

Television crews arrive. The footage in the evening news across the nation is over exposed. An occasional clear image and then the picture goes white and overexposed.

The mirror crowds are completely silent-moving everywhere on foot. A secretary at City Hall, "They just looked so funny --a whole crowd of them standing just as still as could be holding on to those mirrors and then pretty soon the store across the street was burning."

"When they started coming our way they just glinted and shined like a drawer full of diamonds - when they steadied down again we got out of there fast because they were burning up Capt. Garcia's office downstairs.

"Get those damned kids with the mirrors off the street."

"But officers, I'm just usin' this mirror 'cause I'm combin' my hair, no law against combin' your hair is there?"

Dozens of youths in the street combing their hair peering into gigantic foot square mirrors.

SECOND SUN

Recently the government gave AD Little a grant of $200,000 to study and evaluate the plan of Peter Glaser to orbit a large satellite which would collect solar energy away from the inconsistancies of the earth's atmosphere and the inconvenience of night time, and would beam the energy back to earth as microwaves.

Certainly it is an ambitious scheme that would require much ingenuity and dedication to succeed. I wonder if the attention given to this plan and now even the money spent on studying it is not very definite evidence that our society has gone crazy. Of course, it's true that if you examine the uses made of modern technology you hardly need further evidence that things are screwy.

What is this really about? Are we that short of energy? Why not burn wood? Wouldn't it be cheaper to build collectors on the ground and accept a little cloudiness and the occurrance of nighttime?

I don't think these projects have anything to do with energy shortages. There seem to be projects which could be the realization of immense dreums.

Once they are spoken about they begin to collect enormous armies bent upon seeing them occur - here a member of the army contributes enthusiasm, here an arm, here a skillful tongue, here a prodigious ability with mathematics. Once they are going they produce a profound effect on those involved. It is as if the entire world were transformed into a gigantic darkened movie theatre where thousands have conspired together to remove the day to day world --with its logic its pleasures, and pains, etc. (cars parked on the street, dirty socks, cumulus clouds, shrubs with dead branches, birds) and instead, project in front of all of them the Big Dream. And it must be good stuff for it answers all problems.

THE DREAM

Why not build a second sun that can beam its energy right through the clouds - and at night too. Why not build a sun that you own? Think of it.

Why settle for a sun that goes out at night and is interrupted by clouds? Why be dependent on a sun with an uncertain past? Who owns that thing anyway?

Why not build one yourself and know how and why it works? Never mind that it only relays the other sun's energy. Why not have a sun that you can control from a console like a stereo set of TV set? Why not have a sun that is your friend? That you can turn off and on. Why not make a sun, that would burn up other people if they were bad - you could decide if they were bad and your sun, controlled by your console, could take care of the rest. Why go backwards in work with solar energy so that you end up like an old farmer farming the sky worrying about the weather. Why not transform the sun itself into a commodity, like a big tank of propane?

Books:

Atmospheres
Richard M. Goody
James CG Walker
Prentice-Hall, Inc..

This is an excellent book that discusses the climates and ntmospheres of other planets.

Sun, Earth, Time and Man
Harrison
Rand McNally - 1960

Solar Radiation
edited by N. Robinson
Elsevier Publishing Company

NEXT ISSUE: Day Chahroudi's "Biosphere"