



Curiosity of the day:

ICE

The doctor in the big city hospital wiped his brow, which was dripping with sweat. They were ten stories up from the ground, and all the heat of the city street below came up in waves. Sometimes he thought that the walls were shimmering, it was so hot. More than a hundred degrees outside, and at least a hundred and ten inside. The fans on the ceiling didn't help; all they did was move the hot air around.



The sweat just stayed on your skin, in beads.

And however much the heat made him suffer, it was twice as bad for his patients, who were lying on their beds, with nothing but a sheet to cover them. The beds were soaked with sweat, too. It was like lying on a warm wet blanket. It was awful. Some of them had fevers, and there was no way to keep their temperature down. Those people might not live through the day.

"Nurse," he said, "do we have any word yet from Mr. Anderson?"

"Yes," she said. "A train car is coming in from Saratoga. It should be here by this afternoon."

"Thank God," said the doctor. "Please make sure the team is ready. We will need four men for the icehouse and another four for chipping.

One hundred and sixty-four patients," he said, reckoning up the numbers, "ten pounds a day. Tell the men they will need to chip two tons to get us through the rest of today and tomorrow."

"Yes, doctor," said the nurse, and she looked at him

with worry in her eyes. "Doctor, are you all right?"

"Only this infernal heat," he said, and went back to his rounds.

That was what it was like if you were in a big city hospital in 1880. Please try to imagine. There was no such thing as air conditioning. If it was hot outside, it would eventually get hot inside too – very hot. And suppose you were ill. Suppose you were burning up with fever inside. How could the doctors cool you down? Water wouldn't work, not if the weather was humid

and sticky. Water will cool you off only if it can evaporate on your skin. But it won't do that if the air around you is already soaked full of water. There will be no room for the new water to squeeze in. So it just lies on your hot skin, getting warm itself, and making you wet and miserable instead of dry and miserable.

The only thing they could use was *ice*. That's right: hospitals everywhere in the country kept ice on hand, to ease the suffering of sick people, and to help break their fevers. Where did they get the ice from? They had no way to make the ice mechanically or chemically. They had to get the ice from nature, from high mountains that were always covered with snow and ice, or from ponds and lakes that froze over in the winter.

"But that's only good for the winter!" you might say. "How could that work in the summer?"

Well, let's see. You are a boy out on a big lake in New Hampshire, in December. The temperature has been under twenty degrees for weeks. The surface of the lake is frozen solid, three feet thick. On most days that would mean you would be out with your friends, playing ice hockey. But not today. There's work for you today.

"Okay, Joey, that's a load," says your father. "Go drag it on over to the horses."

Your legs are good and sore from dragging sledges of ice all day long. You yourself are going to get as strong as a horse, but right now you wish you could take a break.

"All right, Dad, we got it," you say, and you and a couple of your buddies, with ropes slung from your shoulders, drag a wooden sledge on

runners, heaped up with blocks of ice, toward where some men are near the shore, with a big cart harnessed to a team of draft horses.

"There'll be a lot of ice cream this summer!" one of the men calls out, to cheer you up, but for all that you're tired, you're proud of the work you've been doing. He takes his pair of tongs, that look like an enormous pair of scissors with spikes on the insides, and with them he "grabs" a block of ice, sixty or seventy pounds of it, and

heaves it up onto the cart, where he places it carefully, block by block, in neat rows. "What's your favorite?" he laughs.

"Peach!" you say.

"Strawberry!" says another boy.

"Blueberry!"

"Tomato!"

Yes, some people did make tomato ice cream. Don't ask me; I've never

tasted it.

"But wouldn't the ice melt as soon as the spring came?" you ask. "All the snow and ice are gone by April, where we live."

Yes, it would melt, if you left it outside. But you wouldn't leave it outside. You would bring it into a special building called an *icehouse*. Here's how it worked. You would build a building in the shade, low to the ground, and if possible you'd build it out of the side of a hill, so that it would be sheltered from the heat. Have you ever gone down into the basement of a house in the summer and noticed that it was cool down there? That is not just because the sun isn't beating down on the basement directly. It has to do with how heat is *conducted*: how it moves or doesn't move from one place to another.

If *you* put a strip of copper on your driveway in the middle of the summer, and the sun shines

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on it, it will get very hot, very fast. The metal *conducts* heat. The same strip of metal will get very cold in the winter, very fast, for the same reason. Heat goes right through it. But if you put a board of wood on your driveway, it will not get very hot in the summer or very cold in the winter. Wood is a poor conductor of heat. That means it is a good *insulator*. Ordinary earth – dirt – is also a good insulator. What that means is this. When you pack something around with a lot of dirt or with something like wood, it is *insulated* – it becomes like an *island*. It's an island of cold or cool when everything around it is hot, or it's an island of warm, when everything around it is cold; it all depends on what you want.

So the men would take the blocks of ice to the icehouse. There they would pack the blocks, one by one, separating them with sawdust, which was a good dry insulator, keeping the cold inside, and keeping the blocks from melting a little and freezing. It meant that you could take out one block at a time, instead of having an enormous mountain of solid ice, which would be nearly useless to anybody. Where would they get the sawdust? From a sawdust factory? No, there wasn't anything like that. People found uses for everything. That included the dust from the wood, when in your factories or your sawmill you turned big logs of wood into boards and planks. You'd sweep the dust into bags for use later on. A good icehouse might contain *two or three*

thousand tons of ice.

But how did they get the blocks of ice from the lakes and ponds in the first place? Well, that was a difficult job, and sometimes dangerous. A team of men would go out and drill holes, by hand of course, into the ice, and then they used special ice saws to cut the ice, and tongs to grasp the ice and heave it onto the frozen surface. Hard work, but in those days unless you were very rich you were used to hard work; everybody took it for granted.

Hospitals were regular buyers of ice, lots of it. And so were people in the southern states, where the ponds and lakes never froze to begin with! Ice-men in the north would sell their ice and transport it by train down to Georgia and Florida and places like that, of course in cars that they would insulate with straw and sawdust, so that the ice would get to its destination before it turned back into water.



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