

ARGUMENTS

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Nibbles on Marmy's 'Knibbling Pin'

JUST WHAT is this "knibbling pin" that Marmaduke tells about (POWER, January, p. 142)? No one in our plant seems to know the answer.

H W HOLCOMBE
Los Alamos, N. M.

EDITOR'S NOTE: When we checked this query with Marmy, he blasted: "Even a knucklehead can find out what a knibbling pin is—just look in the dictionary, and make damn sure that you're careful to pronounce the K!"

NOW aren't they known as nibbling pins? (For Arguments we're striving!) I think perhaps "ka-nibble" wins: As in the word "conniving." C ANKERS Yonkers, N. Y.

I'M WILLING to bet a bottle of Sandpaper Gin that Marmy will be in the Navy a long time before he ever tells us what a knibbling pin is! GEORGE BUNKE Philadelphia, Pa.

YOU EDITORS must really be naive to ask Marmaduke, "What is a knibbling pin" (POWER, April, p. 144).

Before becoming landlocked in Minnesota I carried a knibbling pin with me on the old 502's in round-the-world service and on 535's in the Pacific run. In fact, I've seen knibbling pins in most any establishment from Sauciohall Street in Glasgow to the Tan Jon Pagar in Singapore.

But before you can really appreciate one you must have come the long way via Slivowitz, Tuhorg, Aquovii, Pisco. S H KRONA Canby, Minn.

Readers Explain Meaning of 'Critical Pressure'

LET ME EXPLAIN why steam cannot form above critical pressure of 3206 psi (POWER, Apr. p. 188):

At the critical pressure, surface energy (energy per unit area) equals zero. Heat of vaporization and surface tension also equal zero. Ordinarily, evaporation takes place when a molecule of liquid has enough energy to escape through the liquid surface. If temperature is sufficiently high, kinetic energies of translation of the molecules exceed the maximum attraction between them. A liquid state is then impossible.

Forces of attraction and repulsion are equal at the critical temperature. Pressure existing at this temperature is the critical pressure. Above critical temperature the liquid state is impossible for a single component, and increasing pressure only compresses the vapor, which retains all the properties characteristic of the gaseous state.

H B WAYNE Brooklyn, N. Y.

HERE ARE several reasons why steam can't form above 3206 psi, in answer to Kuchinsky's request in April.

(1) Highest vapor pressure that water can exert is its critical pressure. (2) Boiling cannot occur above 3206 psi. (3) There is no change in enthalpy between liquid and vapor phases, hence

no latent heat of vaporization above 3206 psi. (4) Increasing pressure at saturation temperature decreases the difference in density between steam and water until the water level disappears. (5) Above the critical pressure, the substance is merely referred to as "fluid." There is no distinction between liquid and vapor phases.

J L COWAN Solway, N. Y.

IN ANSWER to the question about critical steam pressure, consider the usual procedure for bringing up steam in a boiler. Water is heated with no gain in pressure until it reaches saturation temperature. More heat increases pressure and temperature along the saturation line, up to the critical temperature. Above this point, liquid phase cannot exist regardless of pressure; 3206 psi is corresponding pressure at the critical temperature.

Instead of bringing up steam in the usual manner, you might fill the boiler, close the vents, and pump up pressure higher than the critical point. Upon heating this high-pressure water to critical temperature, you note an interesting phenomenon. The water suddenly changes to steam, and no amount of compression can condense the vapor.

In passing, I would like to inquire

whether this type of knowledge, or lack of it, really has any effect on normal plant operating efficiency?

H HOLCOMBE Los Alamos, N. M.

REGARDING Kuchinsky's question about why steam can't form above 3206 psi, here are reasons I would give:

Without a water or liquid state in the boiler there is no free surface from which steam can be vaporized because there is no latent heat of vaporization. Above 3206 psi, the only change that additional heat or firing can make is to increase pressure and temperature.

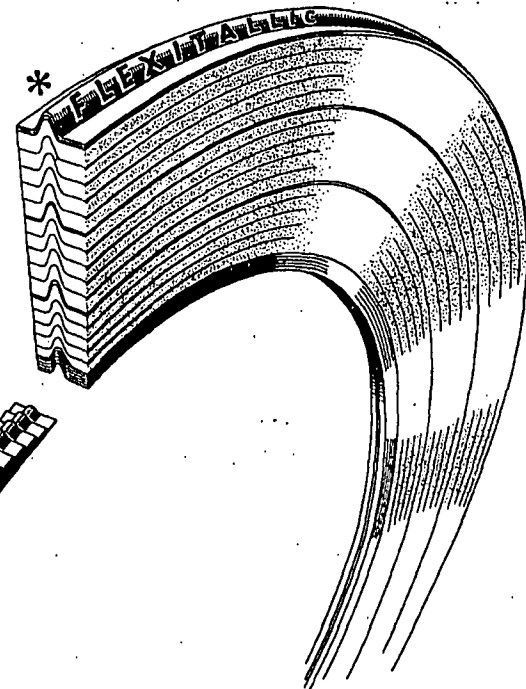
A BELTON Montreal, P. Q.

Thermometer Test

METROD T Trail suggests for checking thermometers (POWER, Feb. p. 129) is all very well if the water is relatively pure and elevation is not enough above sea level to affect boiling point.

For example, on the upper floors of Empire State Building, in New York City, water open to the atmosphere boils at approximately 210 F. Cook a piece of meat in it, and the temperature drops. Throw in a handful of salt, and up it goes, above the 212 F mark.

ART CANNON
Laurence Harbor, N. J.



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