in the air is due to the glycerine still remaining in the coating, absorbing moisture and being prevented from hardening. In the case of the cold water spray, the cooling effect of the spray congealing or hardening the glycerine, overcomes its tendency to absorb moisture.

The use of ozone or ozonated air, we have found to be of little avail, beside costing too much for any benefit which might be derived. While text books tell us that the ozone (O_3) returns to the oxygen state (O_2) at 300 deg. fahr., our experience has been that at even 150 deg. fahr., it no longer has the oxidizing effect of nascent oxygen.

We have also tried desiccating water out of materials by means of electricity, the wet materials being placed in 1 in. thick layers between wire grilles or mats wired up as electric conductors, but the cost of the work is out of all proportion and the action is slow.

Superheating gas, air or steam is very much the same thing if the steam comes to the heater above 212 deg. fahr., or in other words, has the heat latent.

In the case of three outfits of the same size, one heating producer gas, one air and one acetic acid vapor, the delivery temperature in each case being 1000 deg. fahr., allowing for the fact that the acetic acid steam entered the heater at 212 deg. and the air and gas entered their heaters at 70 deg., the fuel consumption was as near identical as it well could be.

In the case, however, which we have recently had put up to us of heating air from 200 to 350 deg. fahr., the entering air carrying 300 gr. of water vapor per cu. ft., the heater capacity required is 16 times what it would be if the air were dry.

Superheated air, like superheated steam, loses its heat very rapidly if the greatest precaution is not taken.

At 400 to 450 deg. fahr., we have found the transmission losses from black iron ducts to be about 2.8 B.t.u. per sq. ft. per hour per deg. At the same temperature, with 3 in. of magnesia block and 1 in. of asbestos plaster, the loss ran 1.3 B.t.u. per sq. ft. per deg. per hour. At 600 to 800 deg. fahr., the loss from bare pipe ran 3 B.t.u. and with 3 in. magnesia and 1 in. plaster, it ran 1.5 B.t.u. per sq. ft. per degree.

It is therefore necessary to proportion the air supply piping quite carefully. The higher the velocity and the greater the volume of air passing through the duct, the less the temperature loss. It varies inversely as the velocity and the square of the volume of air passing through the duct.

Therefore the trunk line should be carried intact as far as possible and then if possible the branches all taken off together. The velocities should be kept as high as the predetermined horsepower limits for the fan will allow.

Of course, the higher the working temperature in the system the more unstable the air in it and to effectively control the distribution of the air and the maintenance of an equable temperature throughout the system requires a slight static maintained pressure in the oven or drier. I do not believe that in such a system a uniform temperature can be maintained without this pressure. The nearer the system can be adjusted to a state of static balance and still be on the plus side, the better.

We have adjusted driers or ovens 300 ft. long, 9 ft. wide and 14 ft. high so that with a working temperature of 237 deg. fahr., there was less than 1 deg. difference from floor to ceiling and from one end to the other, with 7000 cu. ft. of air per min. passing through. The hot air was admitted at the floor from 60 openings at 400 deg., and 60 vents at the ceiling carried off the gases. The doors to the oven were air locks so that there were no leaks. Fine mesh screens on the air opening tended to kill the velocity of incoming hot air and to distribute it over the floor.

When the ovens were closed so that the static pressure was maintained, the upward motion of the hot air from the floor was quite even throughout the horizontal area of the oven. With the doors open so that the static condition was removed, the hot air rose in separate currents.

These ovens were used to dry cloth in festoons or loops 11 ft. long suspended from sticks on a traveling chain at the top of the oven. The traveling chain tended to give a certain swaying motion to the cloth and any undue currents of air in the oven would cause the loops of cloth to touch each other. On account of the sticky coating and the static electricity it carried, if two loops touched at one point, they ran together nearly to the top. For this reason the air passing through the oven had to be under absolute control.

In the case of heavy material, or solid material piled on racks or cars, or suspended by rods, the motion of the air is not so important except as to its dust-carrying propensity, but the admission of the air at the floor is just as essential, as is also the slight static or plenum pressure, for the sake of even distribution and temperature. Also the light and heavy gases are forced out.

In a direct gas-flame-heated japan oven, the heavy gas given off has a chance sometimes to accumulate in the corners at the floor and is highly explosive. The temperatures in such an oven may vary from 1200 deg. at the flame to as low as 250 deg. in the corners near the floor.

In the case of a battery of cloth-impregnating towers, the cloth was drawn through pans at the base of the towers, thence traveled upward vertically, 40 ft., where it passed over rollers and returned to the bottom to be dipped again, the process being repeated. Six coats were to be applied in this way in rapid succession, and each coat dried during the time of one trip to the top of the tower and back. Of course it had to be sufficiently dry when it reached the top so that it would not stick to the roller.

The time for drying each coat was about 6 min. The minimum temperature required to do this was within 10 deg. of the ignition temperature of the compound (360 deg. fahr.). Radiant heat could not give an even heat throughout the tower, within the range; therefore we forced hot air in at the base.

We estimated the aspiring effect of the tower and closed in the top, leaving slots for the cloth to pass through and allowing for the gases to pass with a slight pressure. On trial we had to cut these slots down much smaller than the theoretical figures indicated, in order to hold the static pressure, but when this was adjusted, the