

METEOROLOGY

Humidity and Weather

Cardboard Santa Claus Weatherman is simple weather instrument that you can make yourself. He lowers hand when weather is wet, raises it on dry days.

By **MARTHA G. MORROW**

► WE ALL talk about the humidity. We complain when the air is hot and humid; we rejoice when it is cold and dry.

Before leaving home in the morning, many of us take a careful look outside to see if clouds indicate rain sometime during the day.

Others check the weather forecast in the paper or over the radio before deciding whether to carry an umbrella or bother with a raincoat.

Although much detailed information must be collected throughout the country before weather experts can accurately foretell when it will rain or fog will form, a few simple gadgets can be kept around the house to indicate at a glance whether the air is dry or moist.

These home humidity indicators do not show what the weather will be like tomorrow or even later in the day, but just what it is like now. By checking them frequently, you can discover whether the air is becoming drier or more humid, and thus get a clue to the future.

Human hair is extremely sensitive to changes in humidity, altering its length to correspond with such changes. The change in length becomes pronounced when the hair's natural oils and fats are removed.

Natural blond hair that is not artificially waved and has never been dyed shows the greatest uniformity of change. A change of relative humidity from 0% to 100% causes chemically cleaned human hair to extend from 1.5% to 2.5% beyond its original length.

Use Human Hair

You can make a simple humidity indicator from a long strand of blond hair, an eyelet and pin that slips into it nicely, and two pieces of fairly stiff cardboard. A pair of scissors and a little glue are your tools.

The hair is the most important item, so make certain it is naturally blond and has never been given a permanent wave. The next time your long-haired friend has just shampooed her hair, ask permission to cut off several strands—this will save cleaning it. Get as long strands as possible and soak them for about two hours in carbon tetrachloride, then rinse in distilled water such as that used in an automobile battery, or use filtered rainwater.

To be sure the hair stays straight, dry

under light tension. Paper clips are about the right weight, so attach one to each end of the hair, being careful to touch the hair only at the ends as you work. String the hair across two well-dusted books standing upright. When dry, fold the strands in a clean piece of paper and put aside until needed.

Make Santa

Since Christmas is almost here, it would be appropriate to give your indicator a holiday motif, so make a Santa Claus—his arm will be your humidity indicator—and an evergreen tree as the background.

First sketch on cardboard a Christmas tree about ten inches high. Use a green crayon freely and paste on a few ornaments for gayety. Draw the back of a jolly Santa Claus (minus his right arm) about eight inches high, put a few toys at his feet, and color him red. Cut out in one piece.

Elsewhere on the cardboard draw Santa's outstretched arm and mark an "X" on both the arm and shoulder where the two should

be pinned together. Extend the arm beyond the shoulder a bit to give the proper counter-balance so that the arm will not be too heavy. Color and cut it out.

Use Pin

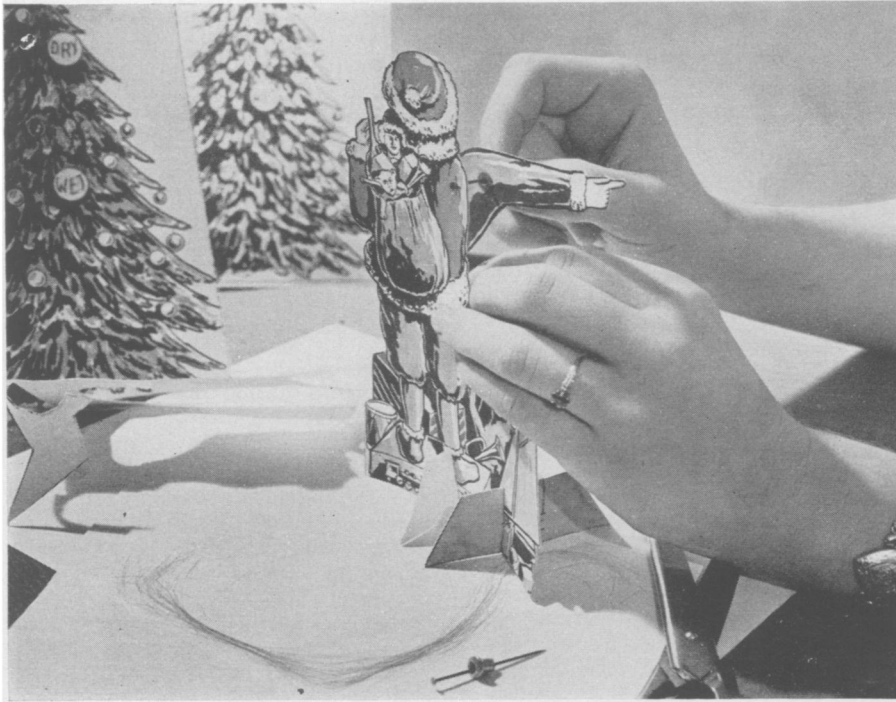
Stick a pin into the arm at "X" and work it around until the hole is just large enough for a tiny eyelet to slip into place. Run the pin through the eyelet, swing the arm around several times and notice the position of the arm when it comes to rest. It should point a bit downward. If it points upward, cut off a bit of the counterbalance; if it points straight down, add a bit.

Prop the Christmas tree from the rear so it will stand by itself. Cut out two cardboard strips to hold Santa and the tree together, making two thin slots about a half inch apart in each base, in the tree and in the toys at Santa's feet. Fit Santa into the base so he will stand up.

Now work with the hair. Grease and perspiration from your fingers, even though you may have just washed them, will keep the hair from reacting effectively, so hold the hair only at the ends. Remove the eyelet from the arm, and from the uncolored side thread a single hair through the hole in the cardboard, letting about half an inch of hair come through.



AGAINST DAMPNESS—Moisture-indicating pellets are used in caps for up-to-the-minute salt shakers and cookie jars. Granules which change color with humidity are sealed in moisture-proof containers for machine parts and scientific instruments.



PUTTING SANTA TOGETHER—Notice particularly Santa's arm properly counterbalanced. The pin is run through Santa's shoulder, then through the eyelet which acts as a bearing to help the arm swing freely.

Push the small end of the eyelet into the hole from the side you colored. Wind the hair under the head of the eyelet and push firmly into place. Glue the cardboard and eyelet together by placing a speck of glue behind the eyelet head. Let dry thoroughly.

Stick the pin into Santa's shoulder, then through the eyelet. Hold the hair by its loose end, tug a bit to be sure it is anchored securely, and wind twice around the part of the eyelet extending from the back of Santa's arm, winding clockwise (the way the hands of your clock turn). Bring the hair down to the base and anchor firmly by slipping it into a tiny slit cut in the cardboard base beneath the arm; pull the hair just enough for the arm to extend straight out from the body.

Slip the Christmas tree into place behind Santa Claus. Push the pin from Santa's shoulder and arm into the cardboard at one side of the tree. Check the hair and arm arrangement. The hair should touch nothing from the place where it leaves the eyelet until it fits into the slot at the base: be sure it is not wrapped around the pin. Slip the eyelet along the pin until the arm hangs free and about an equal distance from Santa and the tree.

Now Test

Now test your hair indicator. Place it on a shelf, windowsill or some other safe place in the bathroom, close the window and door firmly, and run piping hot water into the tub or shower. The cut-out was designed

so that as the humidity increases and the hair from the eyelet to the base becomes longer, the pointing arm would swing down. Mark on the tree the place where the hand points for 100% humidity such as you have when the mirror becomes fogged. The next time the air is extremely dry, mark the place on the tree to which the hand points, and your indicator is complete.

Change Color

Humidity may not only be indicated by a physical change such as elongation of a strand of hair, but also by a chemical change like a difference in color. Cobalt chloride, sometimes used as "magic ink," changes from a deep blue to pale pink as it becomes more moist. A dark blue when dry, it becomes a light blue at 20% relative humidity, lavender at about 30% and pink at 40%.

Silica gel and alumina, both of which readily pick up moisture from the air and cling to it until the moisture is driven out by heat, are used as carriers for the tell-tale cobalt chloride. When so much moisture has been absorbed that they appear quite pale, the granules or pellets are placed in a warm oven and the moisture driven off until they are once again quite blue.

Salt-shaker caps containing pellets of alumina impregnated with cobalt chloride will be a favorite Christmas item this year in some areas. Salt will pour freely until the pellets turn pink; dried out in the oven

the protective pellets are ready to go to work again. Likewise up-to-the-minute cookie jars have caps containing pellets that catch the moisture and signal when they need to be dried out.

Silica gel impregnated with cobalt chloride is helping our troops overseas. Sealed in moisture-vapor-proof containers for machine parts and scientific instruments, they make sure the contents reach our soldiers and sailors factory fresh, free from rust and corrosion, mildew and mold. These same granules played a large part in preserving our "mothball fleet" so it would be ready for service when needed. Since rust and corrosion do not occur in atmosphere containing less than 30% relative humidity, the tell-tale color indicates a dangerous leak or tear in the transparent packaging or wrapper.

Santa Claus, with a properly counterbalanced arm, has been worked out for you by Science Service. For the nominal fee of 50 cents you will receive the two drawings on cardboard, processed human hair, pin and eyelet needed to make your own humidity indicator, as well as some granules that change color with moisture. Just write Science News Letter, 1719 N St., N.W., Washington 6, D. C., and ask for the kit on Humidity.

Science News Letter, December 16, 1950

PALEONTOLOGY

Fossils of Wyoming Like South American Fish

► IN DIM ages 55,000,000 years ago, when vast areas of North America were lakes, the western plains were the homes of fish now found only in the Southern Hemisphere, Smithsonian Institution scientists report.

"Important discoveries" of ancient fish fossils were made this summer at the Green River formation near Fossil, Wyo., by Dr. David H. Dunkle of the Smithsonian and Dr. Bobb Schaeffer of the American Museum of Natural History.

The paleontologists found fossils of fish very similar to those caught in the Great Lakes today. Other specimens, however, showed that the lakes which covered parts of what are now Wyoming, Colorado and Utah were once quite warm.

"There is no reason to believe," Dr. Dunkle said, "that the climate differed materially from that found in the region today. During so long a period as 6,000,000 years (while the lakes existed), there naturally would be many fluctuations in climate with extended periods when the water would be fairly warm."

The prehistoric lakes, probably two in Wyoming and one covering western Colorado and northeastern Utah, were surrounded by volcanic mountain ranges. Eruptions showered volcanic ash into the lakes, killing fish in great numbers. The fish settled into the mud, sand and ash of the lake bottoms and their remains were pressed into shale and sandstone fossils.

Science News Letter, December 16, 1950