

SCIENCE TELLS US

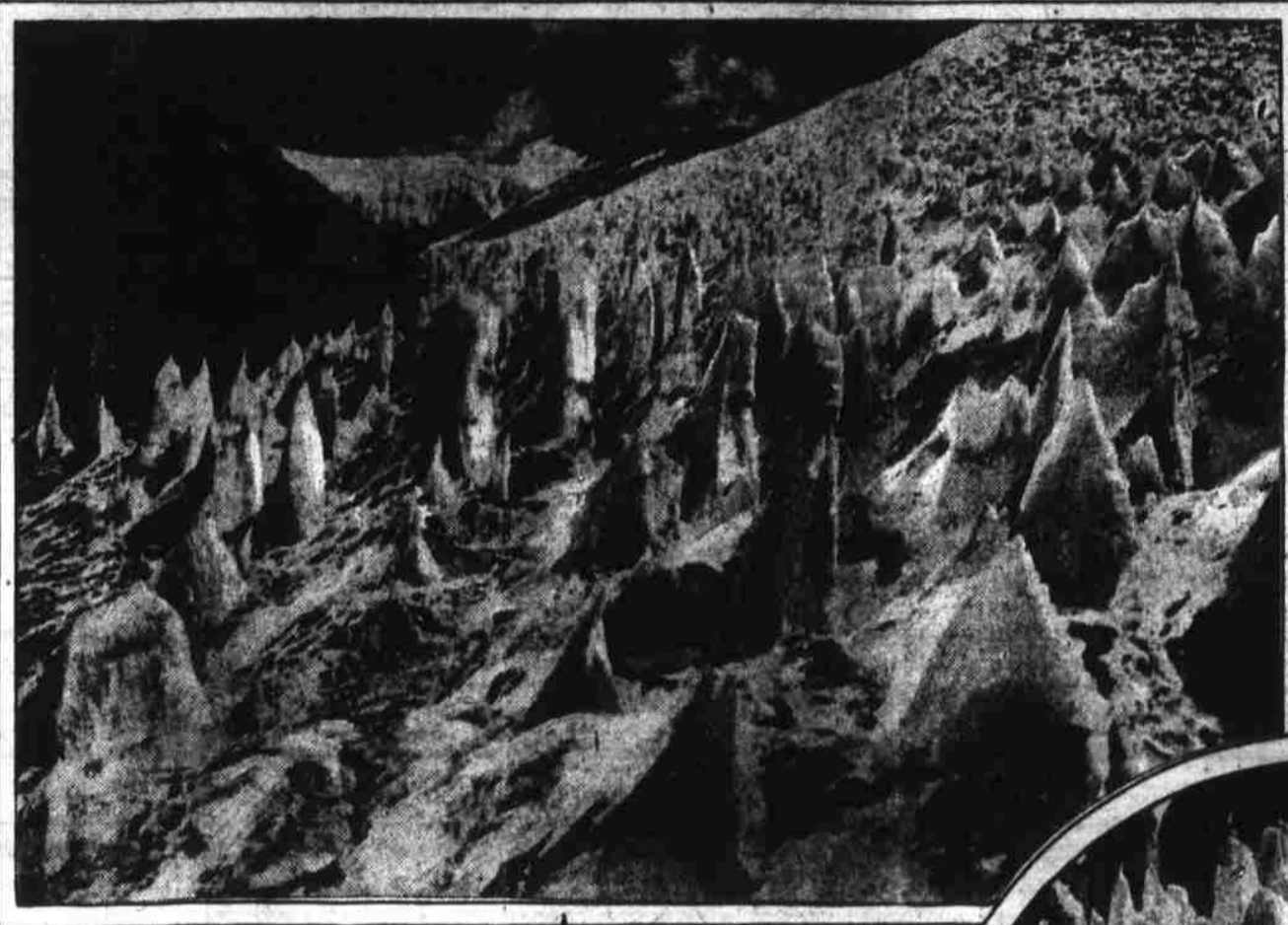
By René Bache

Mystery of Snow Images of Andes Sought by Weather Bureau

THE United States Weather Bureau is puzzled about something, and it will thank anybody who can explain it. In the higher Andes of Argentina and Chile, within a very limited region, where there is a polar climate in which no human beings can dwell, the so-called Snow Penitents assemble.

The traveler comes unexpectedly upon a great throng of them, gathered on the barren slope of a mountain peak. Seen from a little distance, they have the appearance of a crowd of hooded monks, all in white and kneeling in serried lines. It is a remarkable illusion, for the "monks" are not human at all, nor alive. Each one of them is a block of snow and ice. But what is the meaning of this curious phenomenon? How are the snow figures fashioned? And why are they found in that particular region and nowhere else in the world? Nobody can say. One theory is that the fallen snow may be of uneven density, and that the powerful rays of an overhead sun first melt those parts of it around the denser spots, leaving the latter still frozen, to assume the form of snow men.

As the snow continues to melt water trickling down the blocks may help to deepen the surrounding hollows, while prevented from accumulating in the latter by the slope of the mountain. The arrangement of the white figures in rows may be explained by the slope, the water all draining in one direction. This, however, is only one of several theories offered in explanation of the "Snow of the Penitents," as it is called in that part of the world. The facts in the case are still undetermined.



Some of the fantastic shapes assumed by the snow of the Andes

Days on Other Planets

HOW long is a day on the sun? It seems an odd question, considering that what we call the day is made by the sun. How can it be otherwise than day all the time on the solar luminary?

That, however, is merely our planetary viewpoint of the matter. In a broader sense of the term, a day means one complete revolution of a celestial body. The sun revolves on its axis, just as the earth does, turning around once in 25 1/2 hours. Its day, in other words, is 25 1/2 hours long.

Astronomers would like to know how long the planet Mercury's day is, but they haven't been able to find out. They are equally at a loss to know the day's length on Venus. The latter—twin of the earth in size, and the only planet besides our own that is believed to be inhabited—is so covered with a veil of clouds that the telescope can't see any fixed point on its surface by which to determine the rate of its rotation.

The Martian day is six hours longer than ours. That of Jupiter is slightly less than ten hours long, and the length of Saturn's day is ten and three-tenths hours.

But when it comes to Uranus and Nep-

tune, the two outermost and most distant of the sun's eight planets, the astronomers are again puzzled. They do not know the rate at which either of them revolves.

It takes the earth 365 days to make a complete journey around the sun, which we call a year. Mercury's year is only eighty-eight days long. That of Venus is 225 days. The Martian year is 687 days long. That of Jupiter is twelve times as long as our year; that of Saturn over twenty-nine times as long; that of Uranus eighty-four times as long, and that of Neptune 165 times as long, or 60,181 days.

If (as seems altogether likely) the sun is revolving about some stupendous star in space, it may require goodness knows how many millions of years to make the circuit once—in other words, to fill out a single solar year.

X-Ray Shoe Fits

THE average woman ambitious of "style," particularly if young, seems likely to continue to select her shoes for prettiness rather than for fit. As the French say, one must suffer to be beautiful, and such penalties as corns and bunions are therefore to be borne with patience.

Nevertheless, many manufacturers of shoes today are turning out footwear—mostly, it is true, for men—in response to a demand for boots that fit the feet. The war lent important help in this direction, because the Government made an elaborate and scientific inquiry into the subject, and as a result our fighting men had their shoes prescribed for them. No soldier was permitted to choose them for himself.

Retailers actually have accepted the idea that feet ought not to be required to fit shoes. In a way, we Americans have practiced foot-deformation as persistently as the Chinese, with the difference that in China only the women and those of the upper class follow that custom. On this account few of us have normally shaped feet. Commonly the toes are crowded together; they have not had room in which to spread naturally.

The newest idea, already adopted by a few shoe dealers, is to use an X-ray machine of special pattern for determining fit. The customer, trying on a pair of shoes, stands on a platform and looks through a sort of hood at his own feet. He sees the outline of the shoes and the bones of his feet. If the bones of his toes are at all cramped or twisted, the fact is instantly apparent. The toes should show themselves spread out flat without jamming, and preferably with a little space between the big toe and the next one. A pair of shoes that stands this test cannot fail to be comfortable.

The Movie Camera as a Sculptor

THE movie picture appears in a new role, thanks to the ingenious invention of Marcus C. Hopkins, of Falls Church, Va. It undertakes the business of sculpture.

Suppose you wish to have a bust of yourself executed. The camera will do the work, with the help of simple mechanical apparatus, and the resulting three-dimensional portrait is certain to be absolutely correct and lifelike. It must be lifelike because its correctness is mathematical and not subject to the errors of a sculptor's eye.

You seat yourself in a chair which rests upon a small circular revolving platform, your head being secured immovably by a bracket contrivance similar to that used in old-fashioned photographic studios.

The studio is dark. A strong beam of light is directed upon your head and shoulders by a projecting lantern. But half the beam is masked by a sharp-edged diaphragm, so that a shadow line, likewise sharp-edged, can be made to fall vertically upon your person.

The platform on which you are sitting is made to revolve with a steady movement by an electric motor, and as you revolve with it a fixed movie camera takes on a film a series of pictures at the rate of thirty a second. One complete revolution of the platform is made in twelve seconds, the result being 360 pictures, or one for each degree of a full circle.

When the resulting photographic film is fed into an ordinary projecting machine, and the pictures are thrown upon a white surface, the shadow-like alters and zigzags rapidly to represent the 360 equidistant points of view.

But, for the purposes of the new "photo-sculpture" this is not desired. The gearing of the projecting machine is so adjusted that when one image is projected it will remain stationary for a while, whereupon the next image is projected, and so on. One sees that the images will be a series of irregular shadow-edges representing the contours of your head and shoulders as viewed from 360 equidistant points of a full circle.

So much to start with. The rest of the process is accomplished by the use of the familiar contrivance called a "pantograph," but with a novel application of its principle.

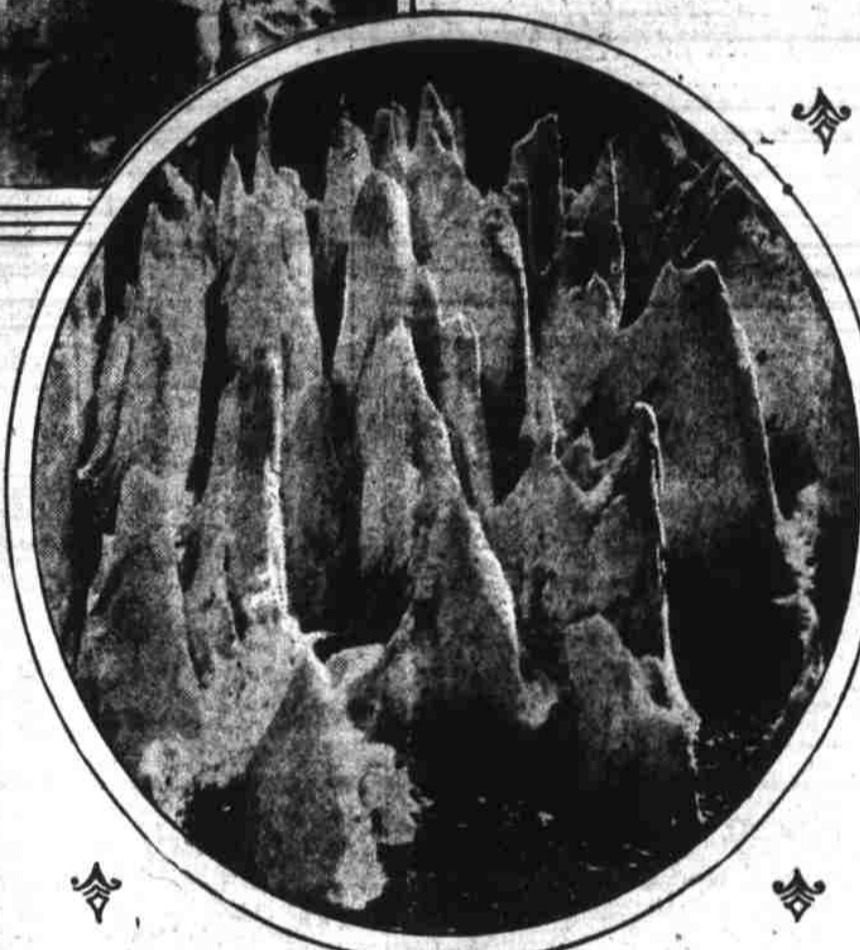
One may find a pantograph in the office of any mechanical draftsman. It is used ordinarily for enlarging or reducing the scale of drawings. When the lines of the original drawing are followed by a "dry-point" (which makes no noise), a pencil carried by an arm of the machine makes an exact copy on the scale for which the apparatus is adjusted.

The photosculptor stands in front of the white wall on which a shadow image has been thrown and follows the edge of it with a steel point. In this case, however, the copying instrument carried by the pantograph arm is not a pencil, but a rapidly revolving cutting tool, which bites into a block of plaster of paris mounted on a turntable. It cuts a contour line exactly corresponding to the shadow-edge.

This accomplished, the shadow image next in order is projected upon the wall; the turntable carrying the plaster block is revolved one degree and the process is repeated. When the turntable has been turned full-circle and the cutting tool has reproduced in the plaster all the 360 contour lines, the block will be a perfect copy of your head and shoulders. All it will then need is a careful "retouching" with the chisel, corresponding to the finishing which a photographer bestows upon a portrait negative.

From the plaster bust thus produced a replica in marble or bronze can be easily made by the method which sculptors ordinarily employ. You will then have a likeness of yourself—a three-dimensional photograph, as it were—absolutely lifelike and correct.

One advantage claimed for the method is that it saves you a whole lot of time and bother. Instead of having to give the sculptor a series of tiresome sittings while he models your image in clay, you need only to occupy the revolving chair for twelve brief seconds. Machinery does the rest. The process is rapid and inexpensive, and it ought to reduce the high price of portrait sculpture amazingly.



Like veiled figures, they seem to march down the mountain side

Suitcase as a Weapon



IN THESE lawless days nobody is safe from being held up almost any time by a highwayman. Especially when traveling, it is important to be prepared against such dangers.

Why not carry a pistol in one's traveling-bag? A ripe idea. But, unfortunately, the bandit does not give one time to open the bag and get the weapon out.

This difficulty, however, is entirely overcome by a contrivance which Oscar V. Hargrave, of Malden, Mass., has newly patented.

It is a suitcase with a box compartment in one corner, just beneath the top. In this compartment an automatic pistol is secured in fixed position. The trigger is connected by a pivoted lever with a small ring which emerges through a hole in the top of the suitcase beneath the handle.

In front of the pistol muzzle is a round opening at the end of the suitcase which may be concealed by a leather flap.

Suppose that the person carrying the suitcase is held up. He turns the business end of the bag toward the unsuspecting robber, passes a finger through the above-mentioned ring—without changing his grasp on the suitcase handle, mind you—gives it a pull, and, bang!

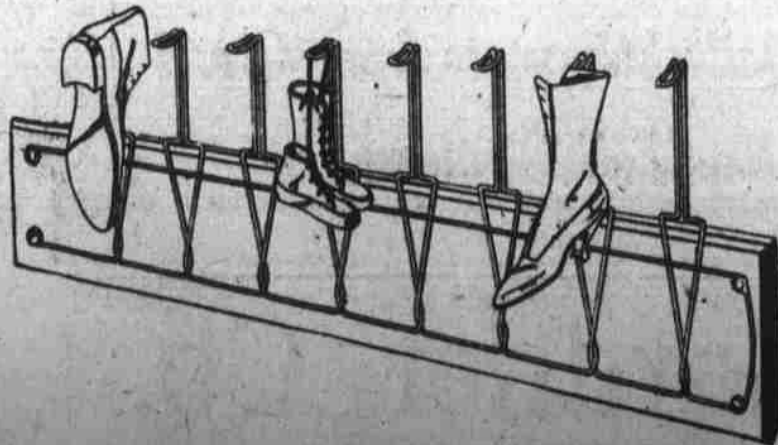
If the aim is good the highwayman is "out" right there. But even though not killed or wounded, he will probably be frightened away.

Handy Rack for Shoes

SHOES are bothersome things to dispose of. Shelves are not convenient places on which to put them, and if scattered about on the closet floor they look disorderly. Why not a shoe rack?

A woman, Florence E. Sanders, of Benson, Minn., seems to have the right idea. For one point, the kind of rack designed by her has the merit of simplicity. All that is needed is a board and a single length of stiff wire. The board is nailed to the closet door or wall. The arrangement of the wire (with

eyes formed of loops, for screws, at the ends of the board) is far better described by the picture than by words. Along the top are the shoe-hooks, which may support the shoes by being thrust into the latter, or by a top-button pushed through the hook, or by tied shoe laces hung over the hook. This is a mere detail. The point is that such a contrivance gets the shoes out of the way and renders them get-at-able when they are wanted. It also helps them to retain their shape.



Voices of Trees

TREES whisper in the summer breeze.

We have all heard them do it. Different kinds of trees have different and characteristic voices. There is a muffled plaint of the oak in a wintry blast, unlike the sibilant sigh of the pine. Pine trees are especially vocal, thanks to their myriads of "needles," which produce cooing notes when a breeze sweeps through them. Similar notes are sounded in the winter time by bare twigs and even branches. Naturally the pine needles give a smaller range of high-pitched notes than do the twigs and branches of oaks.

Prof. W. J. Humphreys, of the United States Weather Bureau, says that as the cooing whistles of pine needles or the numerous twigs of the oak blend into a sound of considerable volume, so do the whisperings of many trees blend into the well-known murmur of the forest. Often, particularly in a pine forest, in a leeward valley, one hears a low-sighing or moaning noise, which, as the wind over the crest grows to a gale, swells to a cataract roar that is awe-inspiring. It is an instance of the combined effect of multitudes of cooing whistles. The storm wind in winter, when one is glad to be safe indoors, has many voices and some musical notes. At the height of its fury it seems actually to howl about the chimneys and rooftops. These sounds are due to eddies in the moving air, attributable to interruptions of the air currents by the edges of the roof and other obstacles.

Marriage of Wrens

"LITTLE birds in their nests agree." So likewise do their parents, presumably. But there has been much speculation as to whether pairs of birds, once married, do or do not perpetuate the wedded relation from year to year.

How about the house-wren? It is a gentle and virtuous bird, almost semi-domesticated, as one might say, inasmuch as it customarily builds its nest in or about human habitations. People who have watched the habits of house-wrens have often been heard to say that they were sure the same pairs returned to the same nesting places season after season. They were proclaimed as models of marital constancy.

However, Mr. S. Prentiss Baldwin, of Cleveland, who for many years has made the trapping and banding of birds his special hobby (afterward releasing them to be subsequently retrapped perhaps and identified), has found that house-wrens are no more reliable in their conjugal relations than folks. In some instances these relations are perpetuated from season to season; but often it happens that a house-wren, male or female, indulges in a violent flirtation, even making a bluff at starting housekeeping, and then making final choice of another mate. Divorces occur. A gentleman house-wren may marry, rear a family and then leave his wife, going off with another lady house-wren and setting up an establishment with her. Whereupon there is nothing for the deserted female to do but get another husband.

Comfort for Car Nappers

AT THIS warm season of the year, when traveling by train, one often sees fellow passengers trying to sleep, with handkerchiefs or newspapers spread over their faces for a protection against light-glare, dust and flies. Nothing could be less picturesque.

Why not invent something better that will accomplish the same purpose and be not quite so unattractive? John C. Jennings, of Kansas City, Kan., thinks he has done so. Simply described, it is a pillow in a pillow-case, the latter having a good-sized

flap-extension, to the outer corners of which are attached two tapes terminating in loops.

When the sleepy passenger puts the pillow behind his head, adjusting it properly, the flap falls over his face and the tape-loops drop into his lap. Passing his hands through the loops he thereby makes sure that the flap will not slip off or be blown off, and he can comfortably doze in safety from cinders and bugs, while enjoying a measure of privacy as regards other occupants of the car or persons passing through.



Vast Bullion Supply

THERE is now stored in the new building of the Assay Office on Wall street, New York, more than a billion dollars' worth of gold bullion, by far the greatest quantity of gold ever accumulated in one place anywhere in the world. The famous treasure of King Midas was trifling compared with it. The bullion is kept in steel vaults of the most up-to-date construction, which extend seventy feet below the level of the street and forty feet below the water level. Uncle Sam has always prided himself on maintaining equipments for the handling of money metals and for their cottage into

money superior to those of any other country in the world. Hence the recent introduction of electric furnaces in the Philadelphia Mint. One of these furnaces, rated at eight kilowatts, will melt 1000 ounces of silver in an eight-hour day. Another, a one-ton Remmert, is equivalent for dealing with bronze ingots to seven of the gas furnaces formerly used, which required for their operation seven melters and four helpers. This new electric furnace requires only three melters and six helpers for melting, preparing and delivering the metal to the coining department.