

SCIENCE AND NEAR-SCIENCE UP-TO-DATE

Why Stars Twinkle in the Sky



HOW often you may have heard a little child ask: "What makes the stars twinkle?" Perhaps you answered with a bit of verse or poetic fancy, not knowing the real scientific reason.

Here it is:

Although we live upon its surface, we are not outside the earth, but at the bottom of a sea of air which forms the earth's outermost crust and extends above our heads to a height of many miles. We cannot see the stars save as we look through this atmosphere, and the light which comes through it is bent and oftentimes distorted so as to present serious obstacles to any accurate telescopic study of the heavenly bodies.

Frequently this disturbance is visible to the naked eye, and the stars are said to

twinkle—i. e., to quiver and change color many times a second, solely in consequence of a disturbed condition of the air and not from anything which goes on in the star.

The effect is more marked low down in the sky than in the zenith. It is worth knowing that the planets show very little of it, because the light they send to earth comes from a disk of sensible area, while a star, being much smaller and farther from the earth, has its disk reduced practically to a mere point whose light is more readily affected by local disturbances in the atmosphere than is the broader beam which comes from the planet's disk.

At all times, whether the stars twinkle or not, their light is bent in its passage through the atmosphere so that the stars appear to stand higher up in the sky than their true positions.

To the atmosphere, with its suspended vapor and dust, is due, also, that lengthening of day that we call twilight. Have you ever seen the twilight arch rise up in the eastern sky just after sunset? Look for it from a hilltop or some other place with an open view to the east.

Earwig Type Most Maligned Insect

THE earwig, one of the most familiar types of insect life found in garden and field, has been much maligned. So says W. Harold S. Cheavin, F. R. M. S., a well-known British scientist.

A great dislike for the earwig has existed for centuries because of belief that it delights to creep into the human ear and cause death. The name, says Professor Cheavin, probably helps to keep alive this idea, which is absurd to entomologists. He contends that insects considerably smaller than the earwig would have trouble in entering the human ear, and in nearly every attempt would fail. The earwig is a fourth of an inch long.

That it is chiefly responsible for damage to pet plants is another absurd idea about this insect, says Professor Cheavin. Research proves that it is a boon, and not a pest, feeding largely on aphides and plant lice, and preferring dead insects to fruit or vegetables.

You May Not Know

AN IMPLEMENT has been patented for slicing a boiled egg evenly.

CEYLON produces sixteen varieties of palms from which sugar may be obtained.

WOVEN wire poles for electric wires or lights have been invented by a Chicagoan.

A PATENT has been granted for a canister in which teas or coffees can be accurately blended by an amateur.

PITCHBLEND has been discovered in India and a syndicate has been formed to exploit the deposits for radium.

NEW form of railroad ticket, by being punched a few times, can be made to serve for 300 different stations.

FROM France comes a two-pronged hat-pin, the prongs being so shaped as to act as springs to hold it in place.

COIN in the slot machine has been invented for checking umbrellas, canes or small packages in public places.

IN A famous German animal park there have been erected life-size models of the huge beasts of prehistoric times.

OF GERMAN invention is an electric blue printing apparatus that so reflects the rays from an arc lamp that all parts of the print are illuminated evenly.

Do Brain Waves REALLY Exist?

THERE is absolutely no scientific proof of the existence of "brain waves." None of the people who accept their existence ever has been able even to suggest what material they might be composed of.

These two statements were made by Sir Ray Bankester in the course of a discussion of his findings on this subject recently. His opinions, he asserts, are being accepted by the thinking men and women of the world everywhere.

There is no apparatus in connection with the human brain which can reasonably be supposed to act as a "detector" and convert supposed brain waves into a sensible form, as is necessary in the operation of wireless telegraphy. Moreover, supposing that there is some undiscovered detector apparatus, like the Marconi coherer, acting so as to receive the undiscovered but assumed brain waves discharged intermittently by a distant brain, what agreement has been made between the owner of one brain and the owner of another corresponding to the Morse alphabet?

Without some such code the brain waves could convey no such information, and yet none of those who think they have received "telepathic" communications profess to have any knowledge of a code, or to be able to interpret intermittent signaling by brain waves.

"It appears now," said Sir Ray Bankester, "that, though some of the believers in telepathy have entertained the notion that the sense organs and the substance of the brain are acted on by imaginary brain waves emanating from distant brains, yet that the late Mr. F. Myers and other leading believers in 'telepathy' disavow altogether any explanation of 'telepathy' as arising from the action of waves or impulses upon the sense organs or physical structures of the recipient. The orthodox appears to be now

that there is something called 'spirit' independent of matter and its associated modes of motion, and that 'telepathy' is due to the communication of spirits with spirits in their own unknown ways.

There does not seem to be much for a reasonable man to say when such assumptions are made, except that they are assumptions and altogether unwarranted assumptions. Are the statements as to facts which are said to necessitate the supposition that one human mind can communicate with another without making use of the ordinary channels of the senses sufficiently well supported to warrant their acceptance? They are of two distinct groups:

"A record of experiments on persons in which the aim was to transfer selected images from an initiating to a receiving mind by mere thought, and without any appeal to the sense organs. The reality of the transfer is estimated by comparing the number of identities obtained in the thought of the initiator and the guess of the receiver with those which would be obtained by mere coincidence in a long series of trials.

"It is a curious and significant fact that in a long series of experiments in this thought transference it was found that when the persons acting as initiator and receiver respectively were in separate rooms the guess of the receiver as to what had been thought of by the initiator was not more frequently correct than was to be expected by unbiased coincidence, but when the receiver and the initiator were in the same room ninety successes were recorded in 617 trials, where, as if due to unbiased coincidence, there should have been only eight.

"The stories of apparitions of distant persons to their friends, either at some very critical moment, or at or soon after death, are credible in so far as they record the occurrence now and then of such hallucinations."

Comfortable Homes for Snakes



YOU recently learned that at the national cement show held in Chicago sanitary cement bathtubs were shown—these bathtubs being constructed exclusively for the use of pigs. New information along similar lines has reached America. The government of Brazil maintains at Sao Paulo a snake farm where reptiles are provided with concrete houses.

The snake farm serves the double purpose of providing a supply of material for the production of serum antidote for snake bites and for educating the public to the fact that all snakes are not venomous. A concrete wall high enough to keep the snakes from crawling out surrounds the farm, but it is low enough to allow visitors a chance to see over.

It is by this means that this educational work is carried on. Familiarity breeds contempt here as elsewhere. If you see a snake that you have believed to be a dangerous enemy playing with its master each day you gradually alter your opinion of it.

At any rate that is what has happened and is happening here.

Inside the wall is a water-filled trench, also lined with concrete, while cement walks connect the snake houses. At night the snakes are herded into these double-shaped structures and the doors are closed. In the morning an attendant wakes up the reptiles by prodding them with a stick through a hole in the door, after which the doors are removed and the snakes come out for their morning bath in the trench.

Wasting Our Maple Sugar Material

THE demand for maple sugar in the United States, it is said, is ten times greater than the supply, although this supply is 47,000,000 pounds annually. But then statistics show that only half of the trees available for the purpose are utilized. This means that many of our farmers—even those of Indiana not excepted—are neglecting to take advantage of an important source of income.

Science has turned its inquisitorial eye more than once on the sugar tree, but, so far, has failed to solve its mystery. Investigation has merely recorded certain facts; it has not explained them. It is known, for instance, that the sugar maple is far more particular than the uninitiated suspect. For its sap to flow, nights must be cool, clear and still, with the temperature at least 10 de-

grees below freezing; the days must be warm and sunny, with the temperature rising to 30 degrees above freezing, and, finally, there must be a fall of rain or of snow after four or five successive days of such weather or the sap will cease to flow.

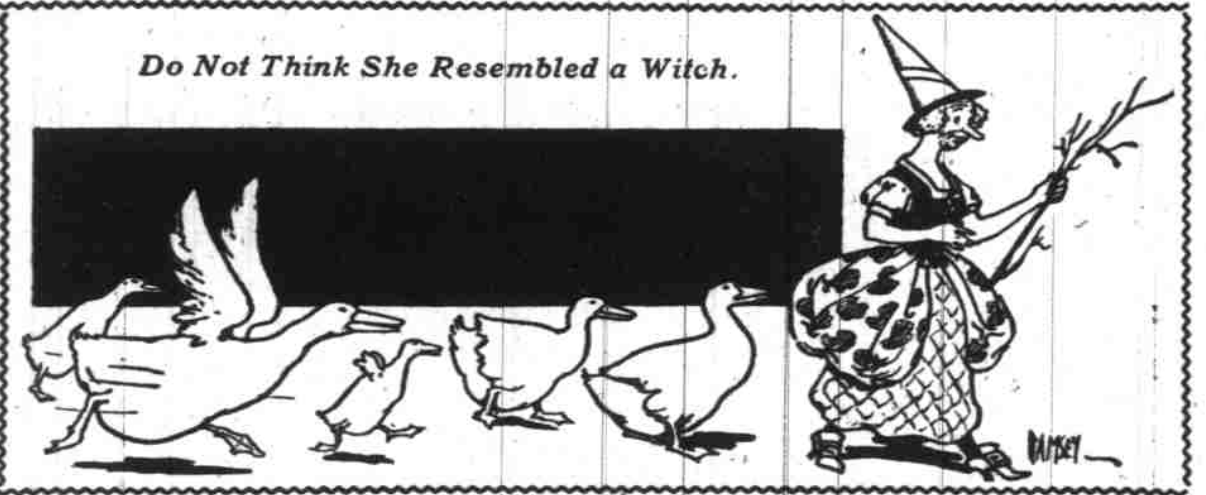
But there is hardly more of a mystery here than there is in the fact that the farmer who has the trees to tap fails to tap them. He needs no demonstration to prove to him that the weather conditions favorable for the flow of sugar sap are favorable for little work about the farm. And he needs, surely, no reminder that an eager and profitable market awaits the product. Why, then, only half the product available is collected, and why half of this natural resource is wasted is perplexing to the ordinary mind.

Mother Goose Not Mere Book Character, but Lived and Breathed

MOTHER GOOSE, joy of our childhood days, was not a creature of story books alone—as you doubtless supposed—but a real flesh and blood woman!

The real name of "Mother Goose" was Elizabeth Foster. Boston has the right to claim her as its own, as she was born there in 1665. She married Isaac Vergoose, otherwise Goose, in 1692. She lived in Boston until the advanced age of 92, kept young and happy reciting nursery rhymes which she composed.

Though she was always fond of telling stories for children she composed these rhymes that bear her name to entertain her own grandchildren. She told them over time and again to the accompaniment of laughter and shouts of joy. It was not until 1719 that her rhymes were collected and published by her son-in-law, Thomas Fleet. These facts are only of value because they make the lovely character of



Do Not Think She Resembled a Witch.

Mother Goose that we know and love more interesting.

The favorite story teller we know wears a large mopcap that hangs down, covering the ears and crowned with a high point.

Her dress is just as odd. It is fashioned of any color silk you like, none too tight and none too long. The skirt is quilted and is ornamented with wide side panniers, while the sleeves have more than their share of

fullness. No hobble skirt for her. Be sure and give her plenty of flare. She wants this to show her white stockings and the black slippers ornamented with silver colonial shoe buckles.

Do not think she resembles a witch; not a bit of it. Though her features are prominent she has a fascinating face and a keen, bright look. She does not carry a broomstick; nothing more nor less than a crook, and goes accompanied by a flock of geese.

Though we may not do her full homage she is the friend of children the world over. There are many languages, but none too many to embrace the "Mother Goose" rhymes. As the children's story lady says, "We all love these nursery rhymes because they have plenty of action. Still they are so childlike in their simplicity. I call her the patron saint of the nursery, and our universal favorite."

Interesting Facts About This Old World of Ours

Asks Physicians to Write in English

THE New York Medical Journal urges physicians to write prescriptions in English, contending that fewer mistakes will be made in putting up medicines. "If a medical substance has any effect except upon the imagination it will have that effect as much when written in English as in perfect Latin," says the periodical. It adds that doctors still write their prescriptions in Latin because their ancestors did so, and perhaps because it impresses the patient, but the names of the drugs now used "look as formidable in English as in Latin."

Bamboo Blooms Every Half Century

CERTAIN species of bamboos flower only once in fifty-five years, and, strangely enough, all the trees in a locality flower about the same time. Those in Burma began flowering last year and now are all in blossom. The last time this species flowered was in 1859-60. They will now die and

those that spring from the seeds born of this flowering will take their places and will not flower until about 1970. They may flower sporadically at other times, but the seed does not mature, for the bamboo cannot fertilize itself.

Radium a Cure For Skin Cancer

RADIUM is an efficient and satisfactory means in the treatment of skin cancer, according to Dr. A. Schuyler Clark of New York, who recently read a paper on this subject before the United Medical Society of that city. He cited many cases in proof of his contention.

The special point made by Dr. Clark was that all the cases treated by the single or massive dose method—that is to say, with one treatment of very high power—healed kindly, and none of them have recurred. He said that many of the cases when treated with repeated small doses either refuse to heal or recur after a short time. The scars left by the healing after one dose are smooth, nearly level, and show a minimum amount of deformity.

Dogs Possess All Human Traits

MRS. E. Y. ELTONHEAD has recently completed an interesting study of human characteristics in dogs. Among her findings are these:

"Grief is a certain characteristic, for many dogs have sought the missing ones and have watched their lives away on the graves of the one to whom their lives were devoted.

"Self-respect is evident to anyone who has made a study of dogs. Frolic and play are developed from puppyhood until real old age stiffens muscles and loss of teeth forbids the carrying of a ball or other plaything.

"Shrewdness is a trait, for where a dog has been a pet and a child enters into the family you will see at once the sulkiness and dislike shown by the usurped one and sometimes even a tendency to revenge on one who caused the change.

"One trait that is especially human is lacking in dogs. They do not pretend to do what they do not feel and mean, and in this mankind can take him as a model with benefit to the world of men.

"Jealousy is a trait met with both in fine and common dogs, and the more loyal the

dog is the more likely he is to be jealous of another dog sharing in the affection of his master and mistress."

Drink Water and Live a Century

A ROUMANIAN scientist claims that anyone can live to be 100 years old, barring accidents, if he drinks enough water. He declares he has discovered that old age is due to a decrease in the amount of water in the system, and that Father Time may be checkmated by systematic water drinking during middle age.

Firearms as War's Greatest Menace

FIREARMS cause the greater part of 3 per cent of the result of stabs by bayonets, swords, lances and the like. In our civil war 90 per cent of gunshot wounds were inflicted by the hand rifle, pistol and revolver, 5 per cent by artillery and about 3 per cent by the bayonet, sword and other cutting instruments.

Some New Facts

BITS of gum camphor kept with silver will prevent the latter becoming dark.

JAPAN recently launched a battleship with all of its engines and guns in place.

AUSTRIA'S population this year has been officially estimated at almost 29,000,000.

A TRIANGULAR tray to hold a piece of apple unharmed in a lunch box has been invented.

THE government of British Honduras is erecting a powerful wireless station at Belize.

PAPER drinking cup that is unfolded by the weight of water flowing into it has been invented.

RUSSIA'S annual production of salt, which a government monopoly controls, exceeds 2,100,000 tons.

SO THAT fish can be boiled thoroughly without losing their form is the purpose of a new wire basket.

THIS year's sugar crop of the Philippines promises to be the greatest in the history of the islands.

FOR indoor target practice a pistol from which a ping pong ball is shot by a spring has been patented.

SIDE wind shields, to be fastened to automobile doors so as to swing with them, are an English invention.

FOR handling freight cars at Cleveland a large railroad has installed electric locomotives which run on separate tracks and push the cars with side arms.