



EDWIN E. SLOSSON, EDITOR
HOWARD D. WHEELER, MANAGER

SCIENCE SERVICE

1701 MASSACHUSETTS AVENUE

TELEPHONE, MAIN 2615

WASHINGTON, D. C.

SCIENCE NEWS BULLETIN

No. 43.

Edited by Watson Davis

January 23, 1922

(Editors: The double spacing of the bulletin, inaugurated this week, is the third improvement in three weeks. In the bulletin you now receive: The latest science news from all parts of the world, advance stories on important scientific meetings, the backbone of a radio column that will interest your readers, a section devoted to agricultural news, and a daily feature or a good supply of fillers in the "Do You Know That"s. We hope you will suggest how we can improve our service further).

SCIENCE OF GROWING THINGS

Agricultural News of the Week

PINES OF NORTHWEST THREATENED BY BLISTER RUST

(By Science Service)

Portland, Ore., Jan. 20.— The white and sugar pine forests of the northwest, valued at \$228,000,000 and containing some 57,000,000,000 feet of lumber, are threatened with destruction. The white pine blister rust, a fungus or parasitic plant disease, has been discovered in British Columbia and all interested in the forests of the west are alarmed at the possibilities of this scourge wiping out the five-needle pines of the west.

This white pine blister disease has heretofore been known only east of Minnesota and in eastern Canada.

Since September when the dreaded disease was first located on Canadian territory, plant disease experts of the state and federal Department of Agriculture have been scouting over the northwest. They have located the rust on Vancouver Island and at Vancouver and Agassiz on the mainland. They have found it on white pine grown from eastern seed. Black currant bushes have been found badly infected.

This Blister Rust attacks the young bark of pines which bear their needles in bundles of five as White pine, Sugar pine, limber pine and Dhotan or Himalayan pine. It also grows on the under sides of the leaves of all kinds of Currants and Gooseberries, both cultivated and wild. Cultivated Black Currants are most often affected.

The disease was brought over from Europe on nursery stock. It is generally distributed in New England and infections have also appeared in the Lake States. It can be controlled only by the removal from infected areas of all Currant and Gooseberry bushes. Diseased pine trees are also to be destroyed when found.

The disease is caused by a fungus which produces sacs or blisters filled with dust-like orange spores on diseased pines.

These spores are blown to currant or gooseberry bushes and infect them, forming a rust on the under sides of the leaves. This rust spreads from these bushes to other currant and gooseberry bushes, and eventually changes into a final stage, the spores from which carry the disease back to five-needled pines. The disease cannot go direct from pine to pine.

Destroying of all cultivated black current bushes and state quarantines against nursery stock that may be affected are the control measures now being considered. A thorough survey to determine the extent of the disease is also contemplated.

INDIAN DANCES AND OPENING OF OBSERVATORY AT SCIENCE MEETING

(By Science Service)

Tucson, Arizona, Jan. 20.- Dances by the Yaqui Indians, exhibits of southwestern animals, insects, plants and minerals, and the opening of the new Steward Observatory of the University of Arizona will be held in connection with the second annual meeting of the Southwestern division of the American Association for the Advancement of Science here January 26 to 28.

In addition to scientific programs on biology, physics, sociology, education and psychology, there will be sessions jointly with the Arizona Archeological Society at which some of the recent archeological researches will be reported.

Sessions will be held at the University of Arizona. The presidential address of Dr. A. E. Douglass will be delivered on Thursday evening.

NEWS OF THE STARSVisitors From Space

By Isabel M. Lewis,
of the U. S. Naval Observatory.
(Science Service)

Anyday a visitor from space may be sighted in the heavens through some astronomer's telescope. The comet may be a stranger coming, so far as we know, for the first time within human range of visibility, or it may be a periodic comet making a stated return visit of homage to the sun.

Visits of periodic comets are usually announced far in advance by the astronomer who has computed the orbits that these erratic travelers will follow. He knows at what time and in what part of the heavens to look for them provided they have traveled according to schedule since their last returns and have not passed too close to a major planet which would seriously affect the form of the earlier orbit.

Several months before the visitor is due at perihelion, the point in its orbit nearest to the sun, a search is made for it in the general direction from which it is expected to return. It is usually picked up at some distance beyond the orbit of Mars when it is a small fuzzy object shorn of the tail in which it glories at perihelion passage. But some small comets never develop this distinctive cometary appendage.

After its discovery is announced the comet is usually kept under observation until it has passed thru perihelion and is far advanced on its outward journey once more. This is for the purpose of obtaining accurate positions upon which the prediction of future returns may be based as well as for learning more of the peculiarities of comets when subject to the disturbing influence of the sun. Comets that approach close to the sun at perihelion passage often exhibit many interesting changes that tell us much concerning the nature of these bodies.

About one hundred orbits of periodic comets have been computed and no comet of short period is likely to escape the eye of the astronomer unless, as sometimes happens, it meets with some catastrophe on one of its trips that changes the form of its orbit radically or sends it out of the solar system altogether.

Three comets out of four, however, are chance visitors that have either come into the solar system from outer space or have periods reckoned in terms of centuries so that to us they are not periodic visitors. The arrival of such a comet is always unexpected and unannounced and like that of other unexpected visitors

NEWS OF THE STARS, (Continued)

frequently arouses considerable excitement.

Three positions of a new comet taken at intervals of a day or so are needed to find its orbit. As soon as these positions are furnished by the observers the computer can tell us after a few hours work when the comet passes perihelion, the position of the perihelion point in the heavens, the distance of the comet from the sun at perihelion passage, the daily motion and the form and size of the orbit. From these elements of the orbit, as they are called, it is possible to issue approximate positions of the comet in the heavens from day to day which will enable the astronomer to follow it with the telescope.

It is quite exceptional for a year to pass without the advent of one or more of these unexpected visitors. It is never known when such a chance visitor will turn out to be one of the show comets of the century, such as Donati's comet of 1858 or the Great Comet of 1882.

STARVATION CHANGES MALE
ANIMAL INTO FEMALE

(By Science Service)

See news

Washington, Jan. 00.- Changing a male animal into a female has been accomplished.

Male newts, fresh water animals that resemble salamanders, have been placed on a starvation diet one spring, fed well the next, and, then, they have become females.

This has been discovered by Christian Champy, French histologist. He starved male newts during the period of their greatest sexual activity. They acquired female characteristics, such as coloration and behavior. The following spring the newts were plentifully supplied with food, and it was found that their male internal organs had changed to a female-like structure which contained true egg cells.

Nature makes this startling transformation, it is believed, because of her desire to provide greater chances of perpetuating the animal when times for it are hard.

BROADCASTSRadio News of the Week.SAN FRANCISCO LIGHT SHIP
TO SEND RADIO FOG SIGNALS

(By Science Service)

San Francisco, Jan. 20.- America's fourth radio fog signal station is being installed on the San Francisco light vessel, to be stationed half way between the Golden Gate and Farallon Isles.

In foggy or hazy weather the sending apparatus will automatically produce wireless signals of 1000 meters wave length. Ships from thirty to a hundred miles away, depending upon the sensitiveness of their receiving apparatus, will be able to locate themselves, if they are equipped with the radio compass.

The operation of the radio compass depends upon the fact that a coil aerial, made of about ten turns of insulated copper wire, four feet square, will receive wireless waves with full force when the plane of the coil is parallel to the direction from which a radio signal emanates, and that the signals practically vanish when the plane of the coil is perpendicular. Such a coil, with dial and pointer, connected to a receiving set, is the radio compass that can determine the direction of any wireless sending station.

The first three radio beacons of the U. S. Lighthouse Service were installed and placed in operation last year in New York harbor on the Ambrose Channel Light Vessel, Fire Island Light Vessel, and Sea Girt Light Station, after development work of experts of the Bureau of Standards. Vessels frequenting New York harbor and the Atlantic coast have installed the radio compass and utilize these precise warning signals by radio.

A group of radio fog signal stations protecting every dangerous point and harbor on the coasts of the Atlantic and the Pacific and the shores of the Great Lakes, is the plan of the Lighthouse Service. The San Francisco station is the second step forward. While officials do not believe that the new system will ever replace the extensive system of sound fog signals, such as sirens, whistles, horns, and bells, they see a future time when the new system will be used to locate vessels in clear weather, at distances beyond the visibility of lights and other object on land.

The mariner does not have to be a radio expert to use the radio compass.

"PELIDISI" TEST TELLS
IF CHILD IS UNDERNOURISHED

(By Science Service)

Washington, Jan. 20.- Weigh your child in kilograms, and multiply the result by ten. Divide the result by the child's sitting height in centimeters, take the cube root of the result, and you will have a figure that will tell you whether your child is properly nourished.

Nutrition

This is how the "Pelidisi" is obtained. Thousands of Austrian children have had their Pelidisi computed. If it was below 94, they were rated as undernourished and the American Relief Administration admitted them to their kitchens where they obtained sufficient food to bring them back to normal. Quite normal and healthy children should have a Pelidisi of 100.

Dr. Clemens Pirquet, professor of pediatrics at the University of Vienna, and Austrian General Commissioner for Children's Relief, worked out this system that can be used by persons with no medical training to rate children according to condition of nourishment. He is now in America to explain the methods used in feeding American food to Austrian children.

That this method will be useful in testing school children of America is the hope of Dr. Pirquet. Experts have recently declared that many rich and well-to-do children are undernourished.

"Austria may be considered as a nutrition laboratory of the biggest dimensions, which works not only for the benefit of the children fed in that laboratory, but for the benefit of the whole world which will profit by the scientific results," he says. "Not only will the medical science profit by it but also educational legislation. I hope that within the next few months a law will be enacted in Austria which will make permanent school kitchens out of the American organization, and I hope that this law will be a model for other countries."

The great American relief kitchens dish out to each Austrian child not so many calories or pounds of food, but exactly 1000 nems each day. "Nem" is the unit for calculating the nutritive value of food by another system, also devised by Dr. Pirquet, devised so that the great relief administration kitchens could provide proper food for the children and keep track of it.

The unit "nem" is an abbreviation of "Nutrition Element Milk" and it stands for the quantity of a foodstuff that has the same nutritive value as one gram of ordinary milk. The Austrian children are given the equivalent nutritive value of one liter, or a little more than a quart, of milk, only once a day. This winter 200,000 are being fed this daily meal by the American Relief Administration.

Earlier the number was as high as 400,000.

A child to retain its weight must have roughly 2000 nem of food; to grow and increase in weight, it requires approximately 3000 nem. The relief administration meal of 1000 nem, costing an average of seven cents, is intended to be supplementary to what the children are able to get at home.

Dr. Pirquet has also devised another system, called the Sacratama, which is used by physicians for a more exact statement of the degree of undernourishment.

All three of these systems are being used by the American Relief Administration in its Russian relief work.

NEW MINERAL FOUND IN ALASKA

(By Science Service)

Washington, Jan. 00.- A new mineral has been found in Alaska. Waldemar T. Schaller of the U. S. Geological Survey has just announced tests on gillespite, the new mineral, which was discovered in a glacial deposit, about a hundred miles southeast of Fairbanks, Alaska, by Frank Gillespie, a miner of Richardson, Alaska. It has a striking red color and a mica-like structure. Chemical tests show it is a silicate of ferrous iron and barium. It is declared that there does not seem to be any group of minerals to which gillespite is closely related.

ALASTRIA, SIMILAR TO SMALLPOX, BEING STUDIED.

(By Science Service)

Washington, Jan. 00.- Alastrin, a disease that resembles smallpox, is now being studied by medical men.

It was reported in epidemic form in 1920 in the Caribbean littoral, Canada and England. In the present state of knowledge of its exact classification, it is being combated and reported as smallpox.

"The disease is very infectious to man; both sexes and all ages are attacked", says Dr. W. C. Rucker of United States Public Health Service. "No racial immunity has been observed. The disease is found in the West Indies, South and Central America, South Africa, the Mediterranean area, and, more recently, in Great Britain. It is probable that the so-called 'Cuban itch' and 'Philippine itch' observed after the War with Spain, the mild form of smallpox prevalent in America, and alastrin are identical. The disease is highly contagious, its causal organism being spread by both direct and indirect vection. Certain observers believe that the disease is

largely spread by the air; but when the enormous number of daily contacts with fellow man is considered, the assumption of this theory to account for the rapid spread and persistence of the disease seems scarcely warranted. Overcrowding helps to spread the disease. The exact classification of alastrim is still the subject of considerable discussion. It may be, and probably is, merely a mitigated form of smallpox, which, in an environment of low racial immunity, incomplete vaccination, or lowered vitality, might regain its lost virulence. It may be that the parasite is a separate species of the parent type. "

"The mortality from alastrim is surprisingly low. The disease is more severe in the unvaccinated and debilitated. Economically, it is important by reason of the rapidity of its spread and the temporary disablement of large numbers of persons.

INSPECTION WAS RIGID IN PRE-HISTORIC FLINT WEAPON FACTORIES

(By Science Service)

New Concord, Ohio, Jan. 20.- Prehistoric man of America, fashioning weapons out of flint, had as rigid a system of inspection as was used in our munition factories of a few years ago, Prof. Leroy Patton, of Muskingum College, here declares.

"Flint which could meet the weapon-making requirements and which occurred in sufficient quantities to supply the needs of the savage tribes was not widely distributed," he says. "Neither could a people, who had no other method of transportation than by man power over forest trails or in birch bark canoes on the rivers, transport any great quantity of raw material from the ledges where it occurs to the widely scattered hunting grounds of the tribes."

Methods of ancient munition making are revealed by recent investigations of the Ohio State Archaeological and Historical Society, which show that the tribes which once inhabited Ohio, the so-called "Mound Builders" got their supply of flint for their arrow heads, spears, and knives from the deposits of flint which occur in the ferriferous limestone of Flint Ridge in Licking and Muskingum Counties.

A great industry flourished there once. Skilled quarrymen, with a patience difficult to appreciate when one finds that their tools were only hammerstones of granite or quartzite with perhaps the aid of wooden or bone wedges, worked out the stone from the ledges. Either the quarrymen or another group of workmen then roughed out the blank forms from which the implements were to be made. This was done in order that imperfections might be discovered and pieces having them dis-

carded and also to save the transportation of useless material.

The roughed out blocks were then taken to the workshops in the vicinity of the quarry and expert workmen fashioned from them leaf-like blades from which, with but little further work, all forms of arrow-points, spear-points, drills, knives and scrapers could be made.

In the workshops another industry was also carried on, namely, that of making cores from which flint knives could be flaked. In many instances the knives were flaked out in the workshops. In other cases the cores were transported to different parts of the country and the knives flaked out as needed.

The flint from Flint Ridge supplied savage tribes all over the territory now occupied by the state of Ohio and in many instances far beyond the borders of the state.

"Primitive man's very existence, both in peace and in war, depended upon the possession of these flint implements. It is probable that our great munition factories of a few years ago were not as important to us as was this ancient munition factory to prehistoric man," says Prof. Patton.

ANTS & TER
MILCH COWS

(By Science Service)

Washington, Jan. 20.- We usually think of man as the originator and sole proprietor of the milch cow, but long before man ever thought of this source of food, the ant was already proficient in the art of keeping and caring for his own particular breed of dairy cattle.

Our ordinary ants have long been known to make use of aphides or plant lice for the sweet fluid, known as "honey-dew", which they produce.

Dr. H. L. McIndoo, of the U. S. Bureau of Entomology, now describes a new kind of "cow", which is employed by the so-called "white ants" in British Guiana. These white ants, or termites, are not really ants at all, but are so called from the similarity of their complex social communities to those of true ants.

The "cows" of these ants are two kinds of beetles, no larger than the head of a pin, which live in the nests of the ants, and provide their hosts with a nutritious substance. They are not actually milked as we milk our cows, but the secretion is apparently passed out from udders upon the surface of the body and is then eaten by the ants.

TWO PAGES OF FILLERS---

OR A DAILY FEATURE---

DO YOU KNOW THAT -

The first navel orange tree planted in the United States is still living. It is located at Riverside, California.

An average of over 140,000 goats are slaughtered each year. The Department of Agriculture says that their meat usually reaches the consumer as lamb or mutton.

Forty per cent of the developed water power of the world is in the United States, where water wheels having a capacity of 9,243,000 horsepower have been installed.

An ordinary house-heating furnace uses twelve to twenty times as much air as coal, by weight.

DO YOU KNOW THAT -

As a single female Hessian fly gives rise in two years to 644,520,375 flies, this pest would make wheat growing impossible were it not for its parasitic enemies and unfavorable weather conditions.

Syria is beginning to use modern agricultural machinery and implements but cheap labor and poverty retard their introduction.

Motor-bus lines since the war have spread over England until it is possible to make trips of a hundred miles at a stretch.

"Therblig" is the name applied to the fundamental motions considered in motion study.

DO YOU KNOW THAT -

Mapping of the soils of this country by the federal government began only twenty years ago.

The bamboo is usually thought of as a stiff, erect reed, but there are many tropical species of bamboo that are scrambling vines.

Austrian railroads have adopted a standard gauge of four feet eight and a half inches. Complete unification will cost nearly \$350,000,000.

When Kings Ptolemy of Egypt and Attalus of Pergamum were bidding against each other for volumes for their respective libraries, works were often interpolated in order to make them larger and so bring a better price.

DO YOU KNOW THAT -

From twenty to twenty-five gallons of 95 per cent alcohol can be obtained from a ton of dry coniferous wood, such as Douglas fir or Southern yellow pine.

The total potential water power of the world is estimated at 439,000,000 horsepower at low water, of which 28,000,000 is in the United States.

Clark University opened this year a graduate school of Geography.

Plans for the new international suspension bridge to connect Detroit, in the United States, with Windsor, across the river in Canada, call for the longest single span in the world, measuring 1802 feet, or twenty-four inches longer than the great cantilever at Quebec.

DO YOU KNOW THAT -

About 1531 bluejays, accused by sportsmen of destroying quails' eggs, were killed in one week by an organized hunt held in California.

A palatable and nutritious table sirup with a pleasant flavor can be made from sugar beets right at home by a Department of Agriculture process.

That residences be equipped with artificial humidifying apparatus so as to maintain a comfortable humidity as well as temperature during the closed season of the year has been suggested by Prof. Emery R. Hayhurst of Ohio State University.

If the ancestry of one individual running back to the twelfth century could be written out, using a square inch to each name, it would occupy something like a fourth of a square mile.

DO YOU KNOW THAT -

Beads, rosaries and other pearl ornaments made in Bethlehem and exported to all parts of the world are fashioned out of refuse, broken pieces and butt ends of mother-of-pearl shells from button factories in the United States.

December 27 of this year marks the centenary of the birth of Pasteur, the father of bacteriology.

A total of 66,793 canaries were imported into the United States during the past fiscal year.

The value of wooden silos can be greatly increased by proper treatment with coal-tar creosote which not only increases the durability of the wood but reduces the tendency of the staves to shrink.
