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### AMERICA GAVE WORLD ITS CHIEF FOOD PLANTS

(By Science Service)

Washington, December 00.— America gave the world its principal food plants. Long before the white man came to America the Indians engaged in intensive agriculture. They raised corn, beans, pumpkins, tobacco and many other edible plants that the rest of the world never knew until Columbus and his followers came here and took them back to Europe.

And every food encountered by the early explorers of North and South America was new to them. There is not the slightest trace that a single cultivated cereal, vegetable, fruit or root crop of the Old World had come to America before the time of the discovery.

Dr. W. E. Safford, of the Bureau of Plant Industry, of the U. S. Department of Agriculture, has come to these conclusions after a study of the origins of our food plants.

In the narratives of Columbus, Captain John Smith, Champlain, and other early explorers he has found descriptions of the food plants that were entirely new to them but which are now the chief sustenance of peoples in remote parts of the world. In prehistoric graves and burial mounds, he has found actual specimens of the most important economic plants. In the desert regions of Peru and our own arid Southwest, these were in a remarkable state of preservation, while the specimens from the rainy regions have persisted only when charred by fire.

Some of the chief American economic plants found their way to other parts of the globe so long ago that the people now cultivating them believe their ancestors always had them, Dr. Safford points out.

"Even botanists have been misled by the very early dissemination of American plants," he says. "Our most important authority on the Gourd family, for instance, gives Asia as the original home of the American squashes and pumpkins. The origin of the common bean (*Phaseolus vulgaris*), cultivated all over North and South America in prehistoric times, has been much discussed, several eminent writers, unhampered by botanical knowledge, confusing it with *faba* of the Romans; others mistaking for it varieties of certain Asiatic cow peas, which resemble it superficially."

"Very recently, a professor in one of our leading universities, eminent as a philologist, but lacking in botanical knowledge, made the astonishing announcement that tobacco, mandioca, peanuts, and other important economic plants of undoubted American origin had been brought to the New World from the Old after the discovery, and he branded Columbus and his companions as liars and impostors."

"Fortunately we know the very plants which Columbus described in his reports. We can identify the bark which he mistook for cinnamon, the wood which he believed to be the precious *lignum aloe*, and the pungent berries he mistook for pepper. In the light of our present knowledge, their original narratives become clear, in spite of the interpolated accounts of fabulous monsters taken from the narratives of Marco Polo and other early explorers, which often rival the Odyssey itself. Even



Champlain's narrative includes tales of mermaids, yet these tales do not invalidate the accuracy of his observations concerning the regions visited by him and the customs of the inhabitants."

Some of the histories which are used as text books scarcely refer to the Indians of our continent, except as an evil which the early settlers had to contend with, Dr. Safford has found. Few of them call attention to the fact that but for the Indians many of the early colonies would have perished.

"John Smith spoke of the generosity of the Virginia Indians in feeding his starving companions," he points out. "Champlain bore witness to the hospitality of the Indians on the coasts of what is now Massachusetts, and if it were not for their Indian neighbors, the first settlers of New England would have died from famine. We are apt to regard the American Indians as perpetually on the war path or on hunting expeditions, not realizing that in many parts of both North and South America they engaged in agriculture, Great valleys, in what is now Ohio were continuous cornfields. There, as in Virginia, the Indians prepared the land, planted and harvested their crops of corn, beans and pumpkins; and laid by their stores for winter."

"The extensive use of tobacco by tribes inhabiting this region is attested by the discovery in prehistoric burial mounds of a great number of pipes, some of remarkable beauty and artistic merit."

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A SAFE AND MERRY CHRISTMAS  
WITH FIREPROOF WHISKERS AND TRIMMINGS

(By Science Service)

A Merry, Fire-Proof Christmas to you!

Dip Santa Claus' whiskers, baby's dresses and the flowing lace curtains in ammonium phosphate solution, stand the Christmas tree in water, dust boric acid on the stuffing material for Santa's rotundity, and on the cotton batting in the snow scene under the tree.

Then it will be less dangerous to have candles on the tree, if you must.

One part of ammonium phosphate, bought at the drug store, dissolved in ten parts of water will fireproof fabric and other absorbent material dipped into it and dried. The ropes of red and green tree trimmings, the green dyed excelsior that represents grass can be insured against fire by this treatment, and probably the dye will not run as the solution will tend to set it. If ammonium phosphate can not be obtained, ask for ammonium sulphate or ammonium chloride. They will do nearly as well.

Crystallized boric acid, otherwise known as boracic acid, is nearly as pretty as artificial snow and it fights fire even more effectively than the feal article. Both the boric acid and the ammonium phosphate stop fire by fusing when heated and coating the burnable fibers. It must be remembered, however, that these substances are fair-weather fire-proofers for indoor use only, and that rain or washing will dissolve out the protecting chemicals.

Planting the Christmas tree in water and giving it a continuous drink will keep it as perk and fresh as a properly treated cut flower. A real lake at the base of the tree will prevent the tree from drying out and becoming especially prepared fuel for a disastrous fire along around the beginning of the New Year.

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## NEWS OF THE STARS

### Giant Stars Less Dense Than Thinnest Air

By Isabel M. Lewis,  
of the U. S. Naval Observatory

(Science Service)

Deep red stars such as Betelguese and Antares, known as super-giants of the universe, are probably the most tenuous of all the heavenly bodies next to the nebulae, and, possibly the comets.

Though Betelguese would fill all the space within the orbit of Mars if placed at the center of our Solar System, and would make over thirty million suns equal to our own in size, it probably does not contain enough material in its enormous bulk to make more than ten or twenty suns equal in mass and density to our sun.

It is a most remarkable and interesting fact that investigations of the relative masses of the stars seem to indicate that all stars contain practically the same quantity of matter, however greatly they may differ in size. As a result there is an enormous difference in the degree of tenuity of the stars.

As the red giant stars gradually contract, in the course of their evolution, they increase in temperature and in density. A gradual change of color also takes place, from red to yellow, and then to white and blue-white, as the evolution progresses.

The hottest of all stellar bodies are the blue-white helium stars which on the one hand are considerably smaller and denser bodies than the red giants, but on the other hand are hotter, larger and less dense than our own rather dwarf-like sun, which is on the descending scale of evolution.

The density of the sun is about 1.4 times that of water. If we assume that the red giant sun Betelguese contains enough gaseous matter to make twenty suns equal to our own in mass and density - a rather extravagant assumption - the density of Betelguese comes out equal to only one-millionth of the density of water. Assuming a smaller mass for Betelguese, we find a still smaller density.

When we recall that the density of the air at sea-level is equal to one eight-hundredth of the density of water, it is evident that Betelguese consists of gases in a far more tenuous state than those in the earth's atmosphere at sea-level, in fact, probably in a more tenuous state than the atmosphere at an elevation of fifty miles or so.

It is doubtful if any of the luminous stars are much denser than our own sun, or much more tenuous than the fiery red giants, such as Betelguese and Antares which are probably in the earliest stages of evolution. Stars of this type then, are the most tenuous of all bodies next to the gaseous nebulae, of which the Great Orion Nebula is an example, and which is estimated to have a density considerably less than one-millionth of that of the earth's atmosphere at sea-level.

### CROP PROTECTORS PLAN ANNUAL MEETING

(By Science Service)

Rochester, December 20.- Protectors of America's crops, the insect fighters, agricultural chemists, and plant disease scientists will join in the first annual meeting of the Crop Protection Institute to be held here on January 12. Experts will discuss the best ways of subjecting the pests that menace our crops to a vigorous chemical warfare and how to cure the vegetable plants that are chronically sick. The Crop Protection Institute is a national organization formed under the auspices of the National Research Council to bring together the scientist and the agriculturist who has the problem to face.



## PROBLEMS OF THE PACIFIC

### How Climate Affects the Pacific Regions

By E. W. Allen,  
Scripps Institution for Biological  
Research, University of California.

(Science Service)

You know how dull and lifeless and generally miserable you are on a hot, sultry day or in a over-crowded, over-heated room. You see magazine and newspaper advertisements that laud the climate of a particular place.

Yet men, unless they have thought a great deal about it, seldom realize that climate affects the personal and world affairs of men. It does, however. Its influences are most profound and far reaching. This particularly true in the Pacific regions.

All authorities agree that tropical climate is physically weakening and enervating and that its influence on mental and moral attributes of human kind is depressing or even destructive. This is especially true of the humid regions and of those individual men or races of men who enter it for the first time. It is certain that tropical regions can not be expected to support either very dense or very diverse populations. But tropical territory is productive of many things which are in great demand by civilized man, in consequence of which there always has been and always will be great temptation to other peoples to coerce the natives into productive labor which outsiders may not safely attempt.

The East Indies, Southern China, nearly all of the Pacific Islands, one-third of Australia and more than two thousand miles of the coast of Central and South America lie in tropical climate. Some of this area lies in lethargic, plethoric splendor, some in desert desolation and relatively little of it offers any inducement to the establishment of civilization. On the other hand it is not likely to afford aggressive opposition to it.

Authorities are equally well agreed that median temperate climate offers best conditions for the physical development of mankind, the cooler temperate being better for his mental and moral development and for the progress of civilization. In accordance with this view large populations appear in various parts of the temperate zones and they develop and use vast energies for their support and increase. The fact that these races of the temperate zones possess and use surplus energies not only for the present but also for satisfying future wants and desires indicates that they are going to make effort, and, when need presses, desperate effort, to find more space in the regions most suited to their necessities. In the South Temperate region of the Pacific there is New Zealand and Australia in undisputed possession of the White race. Chile is under control of the White though mainly inhabited by the Red. China and Japan are in undisputed possession of the Yellow race but both are unendurably crowded.

The west coast of North America is occupied by the White race. Just at present the White race is pinched but not hard pressed for room in regions climatologically suitable for it. A large percentage of the Yellow race requires the same climatic conditions as the White race if it is to thrive. It is hard pressed for room and is steadily exerting increasing pressure for relief. There is no available room for territorial expansion of both races in regions that are favorable.

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DON'T FEEL SORRY FOR THE CHRISTMASS TREE;  
IT MAY BE NURSERY RAISED AND HAPPY WITH CHILDREN

(By Science Service)

Don't join any gloom group that may be trying to form a society for the prevention of cruelty to Christmas trees.

The forests are there to be used, and if, as we utilize the trees, we make it possible by replanting for our children and our children's children to have trees, there is no reason for not having Christmas trees as well as all the lumber we need.

That is the way the scientific forester, the man who grows trees like the farmer grows wheat, looks at this matter of Christmas trees.

While there is still some regrettable ruthless cutting of spruce and fir for the Christmas tree market in Northern states, many Christmas trees are now a by-product of forests. There are small trees in every properly managed woodlot that must be sacrificed so that the others may have room to grow. These make fine Christmas trees.

Christmas trees are also being raised in nurseries. Baby spruce and fir trees are planted by man so that the babies and children of man can have Christmas trees in their nurseries. And a Christmas tree is usually between the ages of five and ten years, just about the age of the child who enjoys Christmas most.

In the future years, it is expected that nearly all of our Christmas trees will be raised by nurserymen at less cost than they can be obtained from the forests.

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PROMINENT SCIENTISTS TO  
ADDRESS TORONTO MEETING

(By Science Service)

Toronto, December 20. Professor William Bateson, of London, eminent pioneer investigator of plant and animal breeding will be among the prominent scientists who will address the meeting of the American Association for the Advancement of Science here, December 27 to 31. It was Prof. Bateson who in 1900 brought to light the work of Mendel, the Austrian monk, who thirty years before had discovered the most fundamental law of heredity which is still basic today. The subject of his address will be "Evolutionary Faith and Modern Doubt."

Dr. L. O. Howard, chief of the Bureau of Entomology of the U. S. Department of Agriculture will deliver the retiring presidential address. Dr. Howard has been a world leader in the science of entomology and he is well-known for his leadership since 1894 of the governmental insect fighting forces, his scientific entomological reports and a popular book that every amateur entomologist treasures.

Sir Adam Beck, head of the Hydro-Electric Commission of Ontario, will tell of the work of the engineers in Canada.

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"BY SCIENCE SERVICE"

Science Service intends that its "by"-line shall be generally accepted as the guarantee of the accuracy of a news story.

The leading scientists of the nation are in effect consulting editors on the staff of Science Service.

Three of the largest scientific societies of America, The American Association for the Advancement of Science, the National Academy of Sciences, the National Research Council have representatives on the board of trustees of Science Service. These trustees, all distinguished scientists, are actively co-operating in the work of Science Service.

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#### ENDOWS WRITING WEATHER STORIES

Worcester, Mass. December 00 (Science Service).-- Writing about the weather has been endowed. Students in American colleges and universities who can write scientific articles about the weather and climate will get paid for them if they are used in the Monthly Review or the Bulletin of the American Meteorological Society. A fellow of the American Meteorological Society has anonymously provided a fund with which to pay one cent a word for original articles and half a cent a word for reviews and abstracts. His object in establishing the fund was to supply enough reviews and abstracts to cover adequately the meteorological contributions published the world over and to help students of meteorology and climatology to pursue their courses so Dr. Charles F. Brooks, secretary of the American Meteorological Society, has announced.

#### "MECHANIC" VS. "ENGINEER"

Chicago, Ill., December 00 (Science Service).-- Defending the word "engineer" is part of the work of the American Association of Engineers, according to C. E. Drayer, secretary. A corporation used "engineer" when it meant "mechanic". The engineers' organization brought about a change in the title. In connection with protecting the competent engineer "from unjust competition of dabblers and quacks" the Association aided in the passing of licensing laws in eight states during the past year.

#### RE-USING MOLDING SANDS

New York, December 00 (Science Service).-- Plans are under way to work out methods of re-using the hundreds of tons of molding and core sands that are used annually in the iron, steel and non-ferrous foundries of this country. Through the cooperation of the American Foundrymen's Association and the National Research Council, committees are considering the reclamation of molding sands and the possibilities of manufacturing synthetic sands.

#### URGES SEALING OF HELIUM GAS FIELDS

Washington, December 00 (Science Service).-- That the Government acquire and seal for future use the best helium-producing gas fields has been recommended to Congress by the National Advisory Committee for Aeronautics.

"The United States has a virtual monopoly of the known sources of supply of helium, and these are limited," says the Committee. "Helium is escaping into the atmosphere at an estimated rate sufficient to fill four large airships weekly. It is the very essence of wisdom and prudence to conserve our large reserves of this safe gas for airships."



DO YOU KNOW THAT -

Fossil remains found in Argentine petroleum deposits support the theory that the oil is of animal origin.

Sulphuric acid is so important in the industries as to justify the saying that the extent of a nation's civilization can be measured by the amount of sulphuric acid its manufacturers.

The silky fiber found in the pods of plants of the milkweed family is sometimes mixed with silk and wool in the manufacture of fabrics.

"Carbide" lamps, now very widely used in American mines, burn acetylene, made within the lamp by the action of water on calcium carbide. They give much more light than the old-fashioned oil lamp, and thus aid the miner in detecting dangerous roof condition -- the most fruitful source of mine accidents.

DO YOU KNOW THAT -

A mil, a unit used in measuring the diameter of wires, is one-thousandth of an inch.

More than a dozen forms of wire-gauze safety lamp, evolved from the lamps invented by Sir Humphry Davy and George Stephenson early in the 19th century, are now in use in mines. None are so safe as the portable electric lamp.

Two of the largest meteors that have been seen falling to the earth landed in Siberia, 135 miles north of Vladivostok on October 18, 1916. They weighed 437 and 125 pounds.

Excessive perspiration results in an increased concentration of the blood and when a quarter of the water of the blood has been lost collapse occurs.

DO YOU KNOW THAT -

Industrial alcohol produced in this country amounted to 178,933,799 gallons in 1918 made principally from blackstrap molasses.

The ninth power of the ninth power of nine is a number of appalling magnitude. Nobody has ever written it out, but it is known to contain 369,693,100 digits, which, if printed 16 to an inch, would extend a distance of about 365 miles. There are more than twice as many digits in the number as there are letters in the whole of the Encyclopaedia Britannica.

Probably the only spider indigenous to the United States whose bite is dangerous to mankind is *Lathrodictus* (or *Latrodictes*) *mactens*, found chiefly in the southern states.

A Siberian ermine wrap may contain 300 skins, and a striped skunk jacket 90 skins.



DO YOU KNOW THAT -

A French authority records that he once found 27 books pierced through by a single bookworm.

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Remains of parrots are found in Indian graves in Chile. The parrot was supposed to communicate to the deceased news of the world from which death had severed him.

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All the plants cultivated in Europe for the sake of their volatile oils will grow readily in some parts of Argentina and experiments show that they will give a yield of oil equal in quantity and quality to the European products.

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California now possesses a vast system of electrical power supply, which includes 7,200 miles of high-tension transmission lines. It is fed from 75 hydro-electric stations, interconnected with 47 steam plants, giving a total output of 785,000 horse-power.

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DO YOU KNOW THAT -

A ton of coal will run an ordinary locomotive from 35 to 50 miles.

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Of the oils used in microscope work, the most difficult to replace with a substitute is cedar-wood oil.

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Artificial digestion experiments show that whale meat is as easily digested as any other meat.

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The highest elevation of the land, Mt. Everest, is 29,000 feet, the lowest known point in the ocean bed, in the Pacific, 31,000 feet. Thus the greatest difference in relief for the whole surface of the globe is somewhat less than 12 miles.

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DO YOU KNOW THAT -

Adhesives are made from starch, sulphite waste liquors, plant constituents, casein and albumin.

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No other word is so often misused in American technical literature as "data". Many of the engineers of this country, though they use this word every day, have not discovered that it is a plural noun. Such solecisms, as "data is", "much data", occur frequently even in U. S. Government publications.

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The faintest stars that can be photographed with the most powerful telescopes under favorable atmospheric conditions are of about the 24th magnitude.

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The British Studbook for horses, begun in 1791, is the chief source of information regarding the evolution, through systematic breeding, of the modern horse.

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