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## SCIENCE NEWS BULLETIN

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### BROADCASTS Radio News of the Week

(By Science Service)

(Editors: There are scores of thousands of amateurs who make wireless their hobby; there are thousands more who are becoming interested practically because of weather and crop report broadcasting, or the music, entertainment, sermons and speeches that can be picked from the ether. Licensed operators who can both send and receive now number more than 15,000. Those who "listen in" with simple and inexpensive apparatus are increasing in numbers with astonishing rapidity. Large business concerns are beginning to direct their branches by radio. We are receiving frequent requests for radio news and information. We believe that there is circulation to be had through the right kind of copy in this field.)

Electrical dealers are being forced to handle radio apparatus because of the rapidly increasing demand, especially from youthful amateurs. These dealers as well as the amateurs are going to be interested in the paper that gives them regular authoritative radio information. Science Service is equipped to deliver just that. We are therefore adding to our Bulletin this week a new department "Broadcasts", devoted to radio news and special informative articles. We hope that you will try out this copy in the form of a regular radio column.)

### 26 AMATEURS BRIDGED ATLANTIC IN RADIO TEST

(By Science Service)

Seated in a small tent at Ardrossan on the coast of Scotland, an American radio amateur spent ten nights listening by lantern light for wireless signals from his brothers in America. His station was hastily constructed, his antenna but twelve feet high yet during the nights of December 7 to 17, Paul F. Godley, special representative of the American Radio Relay League, copied signals from 26 stations owned by private citizens of the United States and Canada.

For the first time privately owned stations have on schedule bridged the Atlantic. These stations were not great corporation or government owned plants with hundreds of horsepower and with towering masts, they were simply stations of the American Radio Relay League, built by their owners and using only one kilowatt (1 1/3 horsepower) at the amateur wave length.

It was a remarkable demonstration of the possibilities of the American short-wave radio outfit when good sending sets, good weather conditions, good luck and a highly skilled receiving operator are combined.

The following stations were heard and definitely identified:

With spark sending sets -

1 ARY, Burlington, Vt.; 1 EDT, Atlantic, Mass; 2 BK, Yonkers, N. Y.; 2 DN, Yonkers, N. Y.; 3 BP, Newmarket, Ontario, Canada;



With tube sending sets -

1 ARY, Burlington, Vt.; 1 BCG, Greenwich, Conn.; 1 BDT, Atlantic, Mass.; 1 BGF, Hartford, Conn.; 1 BKA, Gleenbrook, Conn.; 1 RU, West Hartford, Conn.; 1 RZ, Ridgefield, Conn.; 1 YK, Worcester, Mass.; 1 X, Cambridge, Mass.; 2 EH, Riverhead, New York; 2 FD, N. Y. C.; 2 FP, Brooklyn, N.Y.; 2 ARY, Brooklyn, N.Y.; 2 AJW, Babylon, N.Y.; 2 BL, Riverhead, N.Y.; 3 DH, Princeton, N. J.; 3 FB, Atlantic City, N.J.; 8 BU, Cleveland, Ohio; 8 AC, Washington, Pa.; 8 XV, Pittsburgh, Pa.

Many British amateurs under the guidance of Phillip R. Coursey also listened but their logs are not yet available.

This is the second transatlantic test. The first one a year ago in which no American observer was provided, failed completely.

#### RADIO FOR COAST GUARD BOATS

Washington, Jan. 00 (Science Service).-- Even when plunging through rough seas to a ship in distress, crews of Coast Guard life-saving vessels will in the future be able to talk to their land stations. Through the experimental work of the Bureau of Standards radio laboratory, the new 36 ft. vessels of the Coast Guard are to be equipped with radio telephones which will operate under the severest service conditions. The antennae is of the coil type and the metal hull of the vessel forms one side of the loop. Similarly constructed to those used on our submarines during the war, the antennae will send and receive even when totally submerged.

#### WILL LIVING CAVE MAN BE FOUND IN DARK AFRICA?

(By Science Service)

Paris, Jan. 00.-- In a secluded corner of darkest Africa there will be found someday living representatives of the race of ancient men who are known to modern men by a single clue, the recently discovered skull of Homo rhodesiensis, the new cave man from Rhodesia, South Africa.

This is the startling hope held out by Prof. Marcellin Boule, director of the Institute of Human Paleontology, who discusses this <sup>latest</sup> archeological find in the French magazine, La Nature.

"The physical and pathological characters of this skull found at Broken Hill seem to indicate that the individual to whom it belonged has not been dead for a long time, geologically speaking," he said. The discovery of living members of the ancient race of prehistoric man would be "very extraordinary" says Prof. Boule, but he points out the great zoological discovery of the Okapi, that is believed by many to have come from the same stock as the modern giraffe. This animal, smaller than the giraffe, was unknown until discovered in 1900 by Sir Harry Johnston in Central Africa, where these strange animals have probably lived from time immemorial. From a distance of over 20 feet the Okapi can not be seen in the dense forests of the black continent where it lives.

Prof. Boule says that the new cave man is a close relative of Homo Neanderthalensis, who lived in Europe during the glacial ages and then became extinct, from twenty to twenty-five millenniums ago. Some believe that the new man may prove to be the next grade in human evolution above Neanderthal.

"The two forms are undoubtedly of common origin," says Prof. Boule. "In Europe the Neanderthal man seems to have disappeared suddenly at the end of the glacial period but perhaps he did not experience a total extinction. Perhaps he was able to live in other regions, and Homo Rhodesiensis may reveal to us the persistence in Africa of a type that had become fossil in France a long time before."



In addition to the fact that the skull is in a remarkably fresh state of preservation, the bone having merely lost its animal matter and not having been in the least mineralized, credulity is lent to Prof. Boule's surmise by the fact that the bones of animals found in the cave in the mine of the Rhodesia Broken Hill Development Co., so far as they have been identified, belong to species still living in Rhodesia or to others slightly different from these. From these evidences, it seems that the occupation of the cave may not have been so remote as the Pleistocene period, the geologic age just before the present one.

The nearly complete human skull, the fragment of the upper jaw of another, a sacrum, a tibia, and the two ends of a femur found in the cave, however, have a strange similarity to the ancient remains of man which have been found in river valley deposits and limestone caverns in Asia and Europe.

# DEAD TEETH SUITABLE FOR DEAD MEN ONLY

Release Tuesday, Jan. 10.

By Dr. Walter Venzie  
(Special Science Service Correspondent)

Trenton, Jan. 9.-- "Unhealthy is the tooth that wears a crown!" say the dentists who met this morning for the Third Annual Convention of the American Academy of Applied Dental Science. A proscription was read against much of the gilt ornamentation and modeled bric-a-brac with which civilized man decorates his beaming countenance. Crowns and fixed bridges were designated as bacteria incubators and devitalized or "nerveless" teeth as dangerous sources of chronic infection.

Dr. Bertram Ball of New York City, president, pointed out the great havoc in human life and health which is wrought by infection which enters the blood stream by way of the jaw bones and teeth. "Correction of this will add ten years to the average length of life," he said.

The purpose of the academy, Dr. Ball explained, is to elevate dentistry from a branch of jewelry to a medical science and to turn attention from aesthetic restorations of cracked molars to the general prevention of disease. It is not the acute infections, such as get you up with a yell and send you running to the dentist, that are dangerous, but rather the nests of insidious bacteria which incubate at the roots of teeth without any ringing of bells and distribute their progeny and their poisons throughout the body.

Dr. Henry A. Cotton, medical director of the New Jersey State Hospital and lecturer in psycho-pathology at Princeton University, whose extraordinary success in curing insane patients startled the medical world, gave a demonstration of bacteriological evidence. Dr. Cotton showed that many patients, suffering from what had previously been considered incurable types of insanity, were permanently cured when infected teeth were removed.

Clinicians were busy showing the assembled surgeons how to place dental practice on a basis where it can work for prevention. The teeth are an integral part of the whole body, not merely accessory nut-crackers, and must be treated from the standpoint of general hygiene. Following the suggestion of Dr. Alfred Asgis of New York the new dentists will call themselves "orologists" - mouth specialists.

GOLD BY DREDGING -- A large part of the gold supply of California is now obtained by means of huge dredges, which not only operate in the rivers but also travel across the land. Once floated in an artificial pond, the dredge digs its way through fields, vineyards and orchards, filling in behind it with the "tailings", or refuse gravel. Dredged ground can be restored to arable condition.



NEWS OF THE STARS

Does the Sun Radiate Irregularly?

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

(Science Service)

The rays of the sun may not be equally intense in all directions. By this assumption, fluctuations in the brightness of Saturn's disk as indicated by the measurements made with the photo-electric cell by Dr. Guthnick of the Berlin-Babelsberg Observatory at recent oppositions of this planet to the sun, can be explained satisfactorily.

The sun is surrounded by a coronal envelope that is extremely irregular in outline and apparently not of uniform density in all directions. It retains the same general form and appearance for days or weeks at a time but changes radically in the course of the long sun-spot cycle of about eleven years duration.

Rays passing through different parts of the corona appear to undergo unequal absorption and scattering and emerge unequal in intensity.

As the sun turns on its axis, making one complete revolution in about twenty-six days, a certain shaft of rays will revolve with it striking each of the planets in turn. The interval elapsing from the time when this shaft strikes Saturn until it reaches the earth will depend upon the relative positions of the two planets in their orbits, and can be easily calculated knowing their longitudes and the rate at which the ray is being carried around by the sun's rotation.

Variations in Saturn's brightness were compared with variations in the solar radiation for the earth, as determined at the station of the Astrophysical Observatory of the Smithsonian Institution at Calama, Chili, and the comparison of the two independent series of observations showed that fluctuations in the brightness of Saturn of one per cent corresponded to changes of one per cent in the value of the solar radiation, when allowance was made for the time required for a certain ray to be swept around by the sun's rotation from the position of Saturn to that of the earth.

No relation between the two series of observations can be established if it is assumed that the sun radiates with equal intensity in all directions.

Additional observations of changes in Saturn's brightness will probably be made this winter and spring for several months preceding and following the date of the planet's opposition to the sun which comes in March, to see if the results of previous observations are confirmed.

A similar relationship should be found to exist between variations in the brightness of Jupiter and measured values of the solar radiation for the earth, when the necessary corrections for differences in the position of the earth and Jupiter with respect to the sun have been made.

If such relationships should be definitely established it would be possible to predict in advance, from observations of fluctuations in the brightness of the planets Jupiter and Saturn, changes in the intensity of the solar radiation for the earth. Possibly we shall be able to foretell weather changes due to changes in the intensity of the solar radiation.

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AIR-CARRYING SPIDER.-- The water-spider (*Argyroneta aquatica*), though an air-breathing creature, spends nearly its whole existence in the water. It is enabled to breathe beneath the surface by means of a bubble of air, retained in the long hairs that cover the spider's abdomen. It also weaves a dome-shaped nest under water, attached to some plant, and fills it with air, which the spider carries down from the surface, a bubble at a time.

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## PROBLEMS OF THE PACIFIC

### Natural Resources in the Pacific Area.

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

Aside from air and light the one absolutely essential natural resource for human kind is food, including water. Completely stripped of every other possession it is still possible for man to exist on the earth if minimal quantities of food are available and to thrive if food is abundant. In the world as it exists to-day food may be made available by both direct and indirect methods. The individual may gather all of his food directly from its natural place of production or he may exchange something else for such as may be secured by other individuals. Since all animals either eat vegetation or else eat other animals which depend upon it, it is clear that food resources may be largely stated in terms of plant life.

In only two countries of the Pacific area is there as yet widespread suffering from inadequate food resources. These two countries are Japan and China. Apparently Japan is using all arable land at her disposal, the climate of which is endurable by her people, and she is also making extensive use of freshwater and marine fisheries and marine vegetation. She cannot be regarded as self-supporting in the matter of food and she is distinctly limited in the matter of mineral resources for the support of industries through which she could procure foreign food. China is under even more intense pressure at present but she has larger territories rich in minerals and it is probable that she can find relief for at least one or two more generations if she increases transportation facilities and opens up materials for manufacture.

Australia with her restricted population is able to produce a large surplus of both grain and meat foods. Some of the Pacific Islands can furnish a considerable surplus. Chile and the higher plateaus of other South American countries have been exporting grain and meat foods and it is said that there are extremely rich fishing grounds off the South American coast which have hardly been touched. The west coast of North America is also able to show a large food surplus through much of its extent. As matters now stand the Pacific area is able to produce sufficient foods for its own needs if means can be found for transportation and delivery to individual points of need and it may even spare some to the rest of the world. There is, however, no adequate assurance that this self sufficiency can be maintained for very long.

In the matter of other resources the condition is probably somewhat better. Some authorities mention coal, oil, iron and other mineral resources in China alone which would appear to be enough for the whole Pacific area for some time to come. The west coasts of both North and South America also show vast possibilities in similar lines, not to mention Australia and the Philippines or Siberia. Cotton, hemp, and other valuable fibers are also abundant in the area. Still there are hardly any of these things which can be supposed to be inexhaustible. For most of them there needs to be some careful study of the possibilities of production and then some international agreement similar to that which has been so successful in handling fur seals for regulation and conservation in the most favorable localities. Under present conditions of world affairs it is not possible without risk of serious injury to ourselves and our posterity to leave natural resources anywhere subject to reckless exploitation.

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NIAGARA FALLS MOVING.-- The edge of Niagara Falls is steadily moving backward toward Lake Erie, owing to the work of the water in cutting away the rock over which it falls. At the Horseshoe Falls the recession is at an average rate of 5 feet a year. The American Falls are retreating much less rapidly. Geologists estimate that it has taken from 20,000 to 35,000 years to cut the Niagara gorge.

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### CAN NOW DETECT DEADLY GAS

Washington, Jan. 00 (Science Service).-- By mixing tear gas, developed for war use, with deadly but odorless hydrocyanic acid, a powerful disinfectant, the chemists of the Chemical Warfare Service have made a combination that can be used safely in sanitary work. Since the hydrocyanic acid gas kills the eggs of vermin as well as the vermin, it is one of the most effective disinfectants known. As it has no taste or smell and produces no discomfort when breathed, the first indication of its presence in the atmosphere is the collapse of the person breathing it. Tear gas is detected instantly by its irritant effect on the eyes even when the air contains only minute amounts, and the combination of the two can thus be escaped before the cyanide has a chance to act.

### BEE INHABITS ANT NEST

Washington, Jan. 00 (Science Service).-- The discovery of a small bee that makes its nest in the middle of a large paper nest constructed and inhabited by an ant colony is reported by Dr. William Mann of the Smithsonian Institution in a communication from western Brazil where he is exploring as a member of the Mulford Biological Expedition.

### AIRPLANE AIDS MINERS

Birmingham, Ala. Jan. 00. (Science Service).-- Now the airplane aids the miner. When there is a mine disaster, the Bureau of Mines district safety engineer rings up the nearest Air Service flying field and orders a plane to transport him and his rescue apparatus to the scene of the accident. J. M. Cobb was the first rescuer to use the airplane method when he traveled 50 miles from here to attempt to rescue a miner overcome by electric shock.

### TEACH FREEZING

Chicago, Jan. 00 (Science Service).-- How to make ice and produce a cool atmosphere is now being taught by the Siebel Institute of Technology here. Three month's courses in design, construction and operation of complete ice making and refrigeration plants are being given.

### ONE WAY IT DOES NOT RAIN

Washington, D. C., Jan. 00 (Science Service).-- The weather men have been trying to answer "How does it rain?" It is a hard question, says Dr. W. J. Humphreys of the Weather Bureau.

"Lots of people are content to say that the droplets at the top of the cloud pick up others on their way down and comes out at the bottom full-sized raindrops," he said. "That sounds nice, but those who give this explanation seem to overlook the fact that clouds can float in the sky for days without giving a drop of rain."

He has calculated how big a drop would result from such a fall, and it turns out that a cloud particle falling from top to bottom of a dense cloud a mile thick and picking up every other droplet in its way would come out only one sixteenth of an inch in diameter, much smaller than an ordinary raindrop.

### TO PURCHASE PASTEUR'S BIRTHPLACE

New York, Jan. 00 (Science Service).-- John D. Rockefeller has provided funds for the purchase of the birthplace of Pasteur at Dole in the Jura. It will be transformed into a museum in which will probably be housed an extensive medical and surgical library, with the authentic documents of Pasteur.



DO YOU KNOW THAT -

Cellulose, the woody material of which most of the tissues of plants are formed, is present in the bodies of one group of lower animals, the tunicates, or sea-squirts.

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Bee keepers of middle western states are beginning to prefer alsike to white clover as a honey plant.

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Coquina, extensively used for building and road-making in Florida and Bermuda, is a white limestone made up of fragments of shells and coral.

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A carton of dehydrated tomatoes weighing  $2\frac{1}{4}$  pounds is equivalent to a case of canned tomatoes consisting of two dozen quart cans, the whole weighing 60 pounds.

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DO YOU KNOW THAT -

Powerful breast muscles are an essential part of the structure of every flying animal. The absence of such muscles in conventional pictures of angels, cupids and other winged supernatural beings is an incongruity that, to this day, is apparently not realized by artists.

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The United States produces ten times as much anthracite coal as all other countries combined. Nearly the whole of our output comes from a small district, about 480 square miles in area, in eastern Pennsylvania.

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A mixture of 85% helium and 15% hydrogen has a lifting power in balloons of 70.18 pounds per 1000 cubic feet, and is perfectly unflammable.

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In marshes where duck-shooting prevails many wild duck swallow bird-shot, along with the gravel and fine pebbles that aid the process of digestion in their gizzards. This causes lead poisoning and extensive mortality among the birds.

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DO YOU KNOW THAT -

The first use of fruit syrups with soda water is attributed to a Philadelphia perfumer named Eugene Roussel, and dates from the early part of the nineteenth century.

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According to popular usage in England, "winter" means the months of November, December and January; instead of December, January and February, as in this country. The other seasons are similarly one month earlier than ours.

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A yaw-meter is an instrument used by aviators for measuring the angle between the direction of the wind and the fore-and-aft axis of the aeroplane.

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From every ton of ground sugar cane may be obtained five gallons of molasses, which can be made into two gallons of alcohol.



DO YOU KNOW THAT -

Carrageen, or Irish moss, used in making various foods and drinks, consists of seaweed, especially of the species *Chondrus crispus*. Large quantities are gathered for market on the coast of Massachusetts.

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The carat, the unit used in weighing diamonds and other precious stones, has become standardized only within the last few years. At the beginning of the present century at least 22 different carats were in use throughout the world. An international metric carat, introduced in 1905, has now been adopted by practically all countries.

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British land snails have up to 270 parts per 10,000 of the uncommon metal, manganese, in their livers and skin.

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The bad odor of spoiled eggs is due largely to the breakdown of certain sulphur compounds, giving rise to sulphuretted hydrogen gas.

DO YOU KNOW THAT -

American corn oil has been introduced as a successful substitute for ghee, or clarified butter, in Arabia.

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The South Sea Island dish, "taro", and the Hawaiian "poi" are prepared from the rootstock of a plant closely related to the common Jack-in-the-pulpit.

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Although the miner's safety-lamp, devised by Sir Humphry Davy, caused a great decrease in the number of mine explosions, and although many improved forms of safety-lamp have since been introduced, only the electric lamp is entirely free from danger.

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About one-third of the town of Hibbing, Minnesota, known as "the richest village in the world", was recently removed in order to open new iron mines on the site.

DO YOU KNOW THAT -

Kiln drying of 35 common varieties of woods is saving \$5,000,000 a year and has prospects of much wider future usefulness.

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Few people realize the immense number of types of surgical instruments in use, not only by specialists but also in general operations. One large importing house offers to supply any one of 10,000 items in this line.

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In the Flint Ridge district of Ohio, between Columbus and Zanesville, arrowheads and other objects were made from flint on a vast scale by the Indians. The deposits of chips and fragments left by the aboriginal workmen are 15 feet deep in some places and the surface of the country for a distance of 10 miles or more is covered with pits from which the flint was obtained.

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Existing maps of Africa are full of names, derived from the narratives of travelers, now unknown in the localities to which they are assigned.