

## SCIENCE NEWS

## DRIFTING CONTINENTS

*Science Service*

THE stars do not favor the theory that North and South America were formerly in contact with Europe and Africa and have gradually drifted apart during the last few million years, leaving a rift behind that has been named the Atlantic Ocean, Dr. Harlow Shapley, director of the Harvard College Observatory, told the American Philosophical Society at Philadelphia on March 2. Scientists have been interested during the past year in this hypothesis insistently advocated by Professor Alfred Wegener, of Hamburg.

"The known facts and the most probable conclusions of astronomy are not favorable to the new theory," said Dr. Shapley. "Observations on the variation in longitude and latitude do not make such a theory necessary. The attraction of the moon does not appear sufficient to account for the drifting continents with the resulting birth of the great mountain ranges of North and South America. The astronomical theory of the origin of the moon does not make it necessary to believe that at one time all the land on the surface of the parent earth was combined in a super-continent."

The theory accounts for a great many facts concerning the distribution of animal life at the present time, and as well for the distribution and arrangement of geological formations, Dr. Shapley admitted. But many other facts of biology and geology are not satisfactorily interpreted by the theory, or at least they do not demand such a revolutionary hypothesis for their explanation.

"In its present form the theory holds that during all those long geological periods when fishes, insects and reptiles were the predominant animal forms, South America fitted into the indentation on the west coast of Africa. At the same time, the Atlantic shoreline of Canada and the United States closely fitted the western margin of Europe. Some fifty or more million years ago, the great rift is believed to have formed, and the Americas began their western drifting, crumpling up the bed of the eastern part of the Pacific Ocean and thus forming the Andes and mountains of western North America, which date from about that time.

"Astronomical records show that during the last forty years Greenland may have drifted west by about three-quarters of a mile. The early observations are not very definite, however; and

there is no positive evidence from accurate modern observations that the American continent is now drifting westward."

## HAFNIUM

*Science Service*

THE Danish scientists, Coster and Hevesy, have announced that there is more hafnium, the new element they discovered, than gold in the world, yet European scientific discussion still centers around the new chemical element Number 72, according to information reaching here.

These Danish scientists have examined the material sent them by Dr. Alexander Scott, English chemist, who believed that an unidentified oxide isolated by him several years ago contained the new element. The Danes found that the Englishman's sample does not have in it even a trace of the new element they identified by X-ray spectroscopy.

Dr. Scott now plans to investigate his unknown material in the hope of discovering some other new element, probably similar to titanium.

In the meantime, Drs. G. Urbain and A. Dauvillier, of Paris, who about six months ago announced that they had discovered a rare earth that seemed to be element Number 72, and who named it "celtium," are urging the correctness of their claims and the possibility that the Danish scientists are wrong.

But the Danes feel sure that they have discovered the right element to fit into the predicted chemical scheme of things, and, while they found no hafnium in Dr. Scott's samples, they report that hafnium appears in great abundance in zirconium minerals, and they estimate the hafnium content of the earth's crust to be more than one part in one hundred thousand. If this is true, there is more of the new element in the world than of such well-known elements as gold, platinum, silver and selenium. They also announced that Professor V. Goldschmidt in Christiania has discovered a mineral in which hafnium is the main mineral constituent.

While industrial use of the new element is probably some distance in the future, it has been suggested from its chemical relations that hafnium may prove useful in the manufacture of gas mantles, incandescent filaments, alloys, refractories, glass and other materials in which hafnium's chemical sister, zirconium, is now used.

## AUTO ANTI-FREEZING MIXTURES

*Science Service*

Glucose is more dangerous than wood alcohol—as an anti-freeze mixture for cooling automobile engines. The U. S. Bureau of Standards has investigated the recently reported value of the sweet compound when used to prevent radiator freeze-ups and found that the autoist runs a big risk in using glucose. Solutions of wood or denatured alcohol seem most desirable for cold weather protection.

Any strength of glucose solution which can be made will freeze, and freeze solid, at a temperature but very few degrees below the freezing point of water. Although it will probably prevent the bursting of the radiator, it will not protect against the other serious effects resulting from a freeze.

It has been found that in glucose solutions the process of freezing is gradual, a slush forming which thickens continually as heat is abstracted, becoming a hard whitish mass streaked with veins, so that a tube of the frozen material looks very much like a stick of lemon candy. Evidence is strong that under radiator conditions the slush stage may be relied upon to continue beyond the period of marked volume changes incident to freezing, whence there will be no confined pressures and so no danger from bursting. But bursting is not the only damage inflicted upon an automobile engine cooling system by a freeze-up. Total stoppage of the water circulation may have serious effects upon the pump if there be one in the water line, and the engine is likely to overheat severely shortly after starting, with the consequent formation of steam at considerable pressure blowing out gaskets and connections. The question which confronts an automobilist in regard to the use of glucose in his radiator is therefore whether or not the exposure to cold weather will be long enough to freeze his solution to a thick enough slush to threaten dangers from the stoppage of circulation.

For all practical purposes the freezing point of any strength solution of glucose which could be employed would lie between 25 degrees Fahrenheit and 30 degrees Fahrenheit. Furthermore, it would be frozen absolutely hard and solid at such a temperature, given time enough to extract the latent heat which must be abstracted to freeze a substance. These facts are reconciled with the successful use of glucose solutions in automobile radiators exposed to very cold weather, often below zero Fahrenheit, because of the time factor involved.

## THE NICARAGUAN CANAL ROUTE

*Geographic News Bulletin*

WHETHER a Nicaraguan canal will be built is a question which only the future can answer; but it has been so continuously discussed and its possible site so thoroughly surveyed that the term "Nicaraguan canal route" is easily described. Interest in it has been reawakened by the recent signing of a protocol between the United States and Costa Rica, relating to the proposed canal.

The Panama Canal, if one leaves its locks and small artificial lake out of consideration, may be considered the American Suez; for it is relatively short and direct. The Nicaragua route—again ignoring locks—must be compared with the Turkish straits; it is relatively long, and has in its course a great natural inland sea from which narrow ship-ways are projected.

A Nicaraguan canal would be less a man-made affair than the Panama Canal, where at every turn nature had to be thwarted and subdued by engineers. There ships now move every foot of the interocean way through great ditches that were dug, locks that were built, or a lake that was created by men. The Chagres River was turned aside to make a lake and even its bed was discarded. If a Nicaraguan canal were built according to existing plans, it would entail much excavation and lock building, but work that nature has already done would be utilized to a marked degree.

From the Atlantic end a canal would have to be excavated, largely through lowlands, for some fifty miles, for the lower reaches of the San Juan River are clogged with sand brought down from the uplands of Costa Rica. Locks would then raise the waterway to the 106-foot level of the lake. Ships would be transferred into the San Juan River, dammed at this point, and would move up its slack water for approximately forty-five miles to Lake Nicaragua. This lake is a really large body of water—one of America's "Great Lakes"—though far from its peers. It is one hundred miles long and forty-five wide at the broadest point, and is the most extensive body of fresh water in North America south of Lake Michigan. For seventy miles ships would use the waters of Lake Nicaragua. Then would come the descent to the Pacific through a canal and locks covering the dozen miles or more of narrow isthmus that divides the lake from the ocean.

The river and lake portion of the route above the dam, however, would not all be in readiness for use without the expenditure of labor. Of

the forty-five miles of river, twenty-eight would require improvement, while a channel would have to be dredged through a score of miles of the lake near the river outlet where silt has accumulated.

The Pacific side of the canal would present relatively few difficulties. The narrow divide at the point crossed by the canal route rises only forty-four feet above the lake level. Altogether the canal route, from deep water to deep water, would be about one hundred and eighty miles long. The passage of ships would require more than twenty-four hours as against twelve or less at Panama. Such a canal could be reached, on the other hand, more quickly from ports of the United States.

One other contrast exists between the Panama Canal and the Nicaraguan route. The former traverses a country of relatively limited potential wealth. A canal through Nicaragua would doubtless be a strong factor in the development of that country, opening up its vast forests of both hard and soft woods and tapping its coffee and cacao plantations and its mines. Lake Nicaragua is already an important inland waterway, and near its banks are some of the chief cities of the republic.

### PLANTS AND ANIMALS ON MOUNT EVEREST

*Science Service*

ALTHOUGH the 1922 British Expedition to Mount Everest failed in its principal aim, which was to reach the top of the highest mountain in the world, it did succeed in finding out a number of things of much interest to scientific men. These things are now being made known in various scientific journals.

Certain brave little plants, such as edelweiss, were found blossoming at a height of nearly twenty thousand feet. Wild animals and birds, such as mountain sheep, ravens and rock doves, unacquainted with human beings, showed no fear of them at all, readily eating from the climbers' hands. These wild sheep, ravens and doves, together with wolves, foxes, rabbits, rats, mice and condors, with a few other birds, were found at an altitude as high as twenty thousand feet and occasionally even a thousand or more feet higher. Condors were observed flying high above the mountain's north summit, twenty-four thousand feet above sea level, where the atmosphere was only one third as dense as at sea-level.

Some naturalists have proposed the theory that life on the earth must have begun first on mountain summits, for these summits might be considered as the first parts of the earth to be cool

enough for the existence of living things. Geologists point out, however, that many of our highest mountains were formed since those earlier geological epochs in the rocks of which plant and animal foods have been found.

### EXPLORATION FOR CEREALS

*Science Service*

A VISIT to the old-fashioned and primitive relatives in the old countries of the cultivated and Americanized cereals with the purpose of bringing some of them back to mingle their vigor with the native stock, is one of the main objects of Dr. Harry V. Harlan, of the U. S. Department of Agriculture, who sailed for Africa and Asia on February 28. Dr. Harlan is agronomist in charge of barley investigations in the Bureau of Plant Industry.

He will specialize in looking up the cousins of the various sorts of barley raised in this country. Particularly interesting specimens are looked for in Abyssinia and in India, in which latter country a sort of smooth-faced or beardless variety is to be found. Specimens of the wild native wheat and oats will also be sought for.

The main idea is the strengthening of the native cereals to resist disease and the improvement of the breed of barley, especially in the arid regions of the Rocky Mountain region. In Abyssinia and in some of the high valleys of northern India, the cultivation of cereals has been going on for thousands of years, and the theory is that the species of grain raised there are particularly resistant to disease since the non-resistant sorts must have died off long ago. Specimens of these tough varieties will be brought back to be Americanized as their distant cousins were many years ago. While inferior in yield to the American stock they are expected to contribute their hardihood to a new variety which will combine the virtues of both parents.

An unwhiskered variety of barley which will give as good yields as the present sorts in cultivation here will also be sought, as well as Abyssinian barley which does particularly well in high altitudes and under arid conditions. Barley is not a popular crop with most American farmers because its detachable whiskers have an unpleasant way of getting next to the farmers' skin at threshing time, and a more smooth-faced variety would, it is thought, promote the cultivation of a valuable cereal.

Abyssinia, where Dr. Harlan expects to be during the barley harvest from October to January, has already contributed many interesting and unusual varieties of cereals to the world. It

has never been thoroughly explored by a trained expert in farm plants and Dr. Harlan's visit is expected to yield valuable results.

He will go first to northern Africa and from there to India, returning to Abyssinia, which he will enter from the Red Sea. Dr. Harlan has already conducted agricultural explorations in widely separated parts of the world, having been in the high plateau country of the Andes in South America for British interests and in Eastern Europe soon after the war on behalf of the relief work then planned in that section.

### CONTROL OF THE CLOTHES MOTH

*Science Service*

THE clothes moth, which it is estimated destroys ten thousand tons of wool each year, may be absolutely controlled by the use of a new chemical called "Eulan F" which may be used in wool-finishing. The substance is harmless to human beings, but wool impregnated with it is not eaten by the larvæ of the moth except when starvation threatens and it is then speedily fatal. The chemical has been prepared at the dye works of Leverkusen, Germany, by Dr. Meckbach and his collaborators.

Although it is preferably applied to the woollen article during or after the finishing process in the factory it may be added subsequently to the completed goods by soaking them in a cold two per cent. solution, or it may be sprayed on. The goods are then rinsed with pure water, and the Eulan finish is then said to be permanent for three or four household washings before needing renewal. A similar process may be used with furs.

The success of the new preparation, which is claimed by its inventors to be complete, comes after many years of experiment. It was noted fifty years ago that wool dyed green was safe from moths, and this was later shown to be due to the use of pigment called "Martius Yellow" in the dye. This in turn was shown to cause an acid reaction in the intestines of the caterpillar and to be invariably fatal, the normal reaction of the intestines being alkaline.

It remained then to find a chemical which would have this effect on the caterpillar but be odorless and without effect on the color or finish of the goods. This, the inventors say, they have done, and tests extending over several years have demonstrated the efficacy of this remedy against this great enemy of the careful housewife, against which the sole protection had previously been a kind of gas attack through the use of strong-smelling chemicals.

### ITEMS

*Science Service*

"FLOR DE MICO," one of the most beautiful trees of the tropics, has been imported from Guatemala by the U. S. Department of Agriculture to make Florida winters still more attractive to tourists. Wilson Popenoe, explorer for the Bureau of Plant Industry, brought home fifteen pounds of seed, from which several thousand sturdy young plants have been grown for distribution in the southern part of the everglade state and in our tropical dependencies. "Flor de mico," which is Spanish for monkey flower, drops its leaves and the entire tree becomes covered with crimson-scarlet blossoms at the end of winter. It resembles the royal poinciana.

DISTINCTIVELY oriental fruits, most of which are never seen in western markets, have been found to be well supplied with vitamin C, the preventative of scurvy, according to the results of researches by Hartley Embrey, of the Union Medical College, Peking, recently published in *The Philippine Journal of Science*. The fruits and vegetables which were found to have anti-scorbutic properties were the chico, papaya, pomelo, guava, lansones, both fruit and flower buds of the banana, coconut, pepino or cucumber, kangking leaves and camote leaves. The Chinese persimmon was also found effective.

CIVIL war in the insect world is to be further promoted by the U. S. Department of Agriculture in its fight on the gypsy moth, the insect pest which has caused such great damage to trees and other vegetation in New England and neighboring states. S. S. Crossman and Ray T. Webber, of the Bureau of Entomology, have sailed for Europe to recruit reinforcements for the army of insect enemies of the moth. In its ancestral European home the gypsy moth was afflicted with hereditary enemies which served to control its numbers. When it was introduced into this country, its enemies staid behind, with the result that the invader had things all its own way for years. Then the Department of Agriculture imported some of these enemies, which are parasites preying upon the eggs and caterpillars. These were shown to have an appreciable effect in keeping down the numbers of their enemies and now the department is sending abroad for reinforcements and also to investigate the possible existence of other similar enemies of the pest of the north-eastern states.

THE Mexican government has issued an order that operators take precautions to prevent the loss of natural gas.