# SCIENCE NEWS

*Science Service, Washington, D. C.*

## SUBMARINE LANDSLIDES

UNDER-SEA landslides, set in motion by the earthquake on November 18, were the cause of the breaks in trans-atlantic cables at that time, in the opinion of Commander N. H. Heck, in charge of the U. S. Coast and Geodetic Survey's investigations in seismology. With the aid of data gathered from seismograph stations by *Science Service,* Commander Heck and his associates determined the approximate center of the earthquake at 10:00 P. M. on Monday, less than seven hours after the quake had occurred.

The wide-spread area over which this quake was felt, the serious tidal waves that were caused and the breaks of the cables, all show that it was one of the most severe ever experienced in the eastern part of North America. Evidently is was deep-seated under the ocean bed. Thus, instead of having a small, well defined center, it seems to have centered over a large area.

In this part of the ocean, just off the edge of the continental shelf, the ocean bottom has a steep slope, and so the shake doubtless caused submarine landslides which broke the cables. The origin, off the coast of Newfoundland, was well to the north of most of the breaks, at approximately 44 degrees north latitude and 58 degrees west longitude. This point is about 180 miles off the Newfoundland coast.

The vibrations of the shock, traveling through the earth to the sensitive seismograph instruments at a number of observatories, carried the news to the world many hours before the telegraph lines carried news of its effects. Using a special code, several of the most important of these stations telegraphed their data to *Science Service.* Commander Heck was able to tell the distance of the center from each of the stations reporting. Correlating these, he determined the approximate position of the quake's center, which was announced through *Science Service* at 10:30 P. M. the same day. A quake such as this is very difficult to locate accurately because of its large area. The vibrations which arrive at different observatories may come from different parts of the shaken area. Then it would be quite impossible to fit them all together.

Commander Heck estimates that the tremor was severe enough to be felt as a strong shock over an area of 200,000 square miles, mostly at sea. Over a still larger area, about 1,500,000 square miles, the earth quivered sufficiently to cause a perceptible shaking on land. A shock must be quite strong to be perceptible to a ship. A quake in this region is quite unprecedented and shows that any part of the earth is liable to such shocks. However, there is no evidence that any further shocks will occur in the same locality.

## A NEW BAKING POWDER

A BAKING POWDER which does not leave a residue in the finished bread or cake has just been worked out in the chemistry laboratories at the University of Wisconsin, by Edwin O. Wiig. This new leavening agent has as its active agent acetonedicarboxylic acid, which during the baking process disappears entirely as gases.

The formation of carbon dioxide, the gas which "raises" the cake, is only part of the story of baking powder. The other part concerns the product which remains in the cake as a residue. The various commercial baking powders on the market at present leave as residues saline cathartics, such as sodium tartrate, Rochelle salt, disodium phosphate, sodium sulfate or aluminum hydroxide. There is still a question as to the possible ill effect of some of these materials upon health. Hence the advantage of a baking powder which leaves no residue whatsoever. Acetone is the only other substance formed besides carbon dioxide, and the acetone completely evaporates at baking temperatures.

The new powder depends for its action on combination with the water of the dough, just as do the present powders. Hence in order to protect it from atmospheric moisture it is mixed with starch. This corn-starch has a second function, more important than that just mentioned. Starch makes it possible for the chemist to standardize his product. All baking powders must have approximately the same "raising" strength to make possible the use of any recipe. The housewife-consumer will not consult the label of her tin of baking powder, and then compute whether the "two tsps. b. p." of her recipe should be doubled or halved. Starch takes care of any variation in the amount of carbon dioxide given off by active agents of different compositions.

The keeping properties of acetonedicarboxylic acid baking powder are excellent, as Mr. Wiig has shown by various tests. It needs only to be kept in the customary moisture-proof tin. The keeping power of a product is of utmost importance to the manufacturer.

Further study of the suitability of acetonedicarboxylic acid as a leavening agent is being continued at the University of Wisconsin. The question of a cheaper source of raw material is still under investigation. At present citric acid is the raw material used in the making of acetonedicarboxylic acid. Cull lemons form the natural source of citric acid and is the principal one in use. A shorter name for the substance would also be highly desirable, but that is a simple problem.

## VARIETIES OF GORILLAS

LIKE their more successful and more wide-spread human cousins, the gorillas of equatorial Africa are all members of one species. Within the species, they can be definitely differentiated into two zoological varieties, called for convenience the coast and the mountain varieties. Beyond this, all differences hitherto described can not be made out as anything more than local and probably fluctuating and impermanent.

These conclusions are set forth by a young Harvard zoologist, Harold Jefferson Coolidge, Jr., in a monograph

on this interesting genus just off the Harvard University Press. Mr. Coolidge has made an exhaustive study of all available skeletal material on the gorilla and has examined all the scientific literature in existence bearing on the question of its zoological position.

The first scientific description of the gorilla was published in 1847 by Dr. Thomas Savage and Dr. Jeffries Wyman, who regarded the animal as a new species of orang-utan. Later, its claim to recognition as a different genus was advanced, and many zoologists proceeded to split it up into a considerable number of different species. Of recent years, however, the tendency has been to reduce the number of species, and now Mr. Coolidge gets it back down to one, with two distinct subspecies.

The two varieties, coast and mountain gorillas, live in ranges separated from each other by a considerable stretch of territory in which there are apparently no gorillas at all. Thus isolated and prevented from interbreeding, each group has developed and preserved certain peculiarities of its own, most notably in the proportions of the skull. The coast gorilla has a skull that averages a little longer and wider than that of the mountain variety, but the mountain gorilla has a larger jaw and ampler mouth cavity than his lowland brother possesses.

## MAGGOTS TO FIGHT INFECTIONS IN WOUNDS

MAGGOTS, the tiny crawling larvae of blow-flies, may prove to be of great value in preventing and checking wound infections. This new method of treating wounds which is now being investigated was developed from observations made during the war by an American surgeon, Dr. William S. Baer, now clinical professor of orthopedic surgery at the Johns Hopkins University School of Medicine.

Dr. Baer noticed that when the wounded men had been lying out on the ground for some time before being brought to the dressing station, their wounds were covered with tiny maggots, the larvae from which common flies develop. But these men, strangely enough, did not develop infections in their wounds, as did those whose wounds had been dressed and treated very soon after their infliction. The men who had been lying on the ground untreated the longest and who had the most maggots crawling on their wounds were the ones who did not develop any infections.

Further investigation of this unexpected state of affairs disclosed that the maggots were eating the dead tissues, bone and flesh, and thus destroying the material that would have furnished good breeding grounds for bacteria. The bacteria which might have got into the wound and set up an infection were unable to exist in the wound which the maggots had cleaned up.

After the war Dr. Baer remembered the action of the maggots when he was treating children suffering from osteomyelitis. This disease is an inflammation of the bone, more common in children than in adults. It is the result of an infection and requires prompt surgical treatment. Recovery is often delayed for years if the disease reaches the chronic stage. In order to hasten the healing of the wound after operating on this condition, Dr. Baer has been using maggots with good results. The tiny creatures consumed all the dead tissue about the wound and the bacteria which had been causing the infection soon died from lack of sustenance.

The investigations along this line were abruptly halted during the first winter, when the cold weather killed the flies and so cut off the supply of maggots. Now, however, this contingency has been provided for, and Dr. Baer has a plentiful all-year-round supply.

## TROPICAL DIET

Too much starch and sugar, too few vitamins and too little of fatty and proteid foods are found in the diet of tropical peoples. This faulty diet is reflected in the health of the people, Dr. Seale Harris, of Birmingham, Ala., told members of the American Society of Tropical Medicine at their recent meeting.

"Ignorance and laziness are the chief reasons why the inhabitants of tropical America live largely on white flour, white meal, polished rice, dried fish, coarse tubers and white sugar products, because with a very little effort they could make their fertile lands produce a delicious and wholesome variety of foods." The faulty diet is not confined to the poor classes alone in the tropics. Rich and poor alike devote themselves to raising the money crops of sugar, bananas, tobacco and coffee, with little or no farming of the protective foods, such as vegetables, fruits, grains, chickens and cattle, for home consumption.

The faulty diet is probably a predisposing cause of many of the tropical diseases, even when the latter are known to be caused by definite organisms, Dr. Harris said, citing the work of many scientists in support of this theory. He said he believed the food factor was important in both in the number of cases of and the high death rate from all diseases that prevail in the tropics. It appears not unlikely that the ravages of malaria and hookworm may be reduced by improving the nutrition of residents in countries in which these diseases prevail.

Following the theory that the prevailing faulty diet is a factor in the causation of certain tropical diseases, Dr. Harris outlined diets which might be used effectively in combatting these diseases. The liberal use of fresh fruits and vegetables with whole wheat flour and whole grain corn-meal bread was strongly advocated in the treatment and prevention of these diseases, including pellagra and sprue. Dr. Harris considers these foods of far more importance than yeast. Considerable difference of opinion among scientists and physicians still exists on this point, however. The interesting fact that the diet of the poor in rural New York is almost identical with that of the poor in the rural South was pointed out. There were no cases of pellagra found among the poor in a New York rural community who lived on practically the same unbalanced, vitamin-deficient diet as is eaten by the poor in the South. Nor were there any cases of sprue in New York, yet the diet was as unblanced and as deficient in vitamins as that of the poor and rich in Porto Rico where sprue is prevalent. In New York the dis-

ease which is found among the undernourished individuals is tuberculosis, a disease due to a pathogenic organism, and while malnutrition is no doubt a predisposing cause of pellagra and sprue, their specific origin has not yet been discovered, at least not to the satisfaction of many clinicians who have had a large experience with those diseases that prevail in some—not all—tropical and subtropical countries.

## THE PUEBLO INDIANS

THE Pueblo Indians, who were the most substantial residents of the Southwest for many centuries before the white man's era, were at the height of their development about the time of the Middle Ages, and their decline was sudden and mysterious, Earl H. Morris, archeologist of the Carnegie Institution of Washington, said in an address at the institution on November 26.

During the golden age of Pueblo culture were built the great community houses which stand to-day in impressive ruins in the southwestern states. In these oldest American apartment houses thousands of people lived. The pueblos, as the settlements are called, were located for security against wandering tribes and for their nearness to water supplies and land suitable for farming. The inhabitants produced artistic and unusual pottery.

This Indian culture came very suddenly into flower after a long period of slow growth, Mr. Morris concludes. The most plausible explanation is that nomadic tribes became menacing to the scattered farming Pueblos, and caused the settled people to gather for strength in dwellings that were literal fortresses. Ideas of efficient tribal organization were established, for the great irrigation systems and the building programs would have been possible only by consistent, cooperative effort.

It would seem that this tremendous expansion and building came to an abrupt termination. The latest timbers from the prehistoric sites in widely scattered localities of the San Juan region have been examined by Dr. A. E. Douglass, of the University of Arizona, and he has found that these trees were cut in the same year. No evidence of building activity later than this has been found. Whether drought, pestilence or warfare put an end to the progress of these communities, is one of the problems still to be solved by archeology. At the time the Spaniards arrived in the West the Pueblo golden age was at an end, and many of the settlements were abandoned.

## ITEMS

DISCOVERY of a new comet, not in the sky, but on a ten-day-old photographic plate that he was filing, was the recent experience of E. R. Carpenter, of the Seward Observatory of the University of Arizona. The photograph was made of the sky in the constellation of Aries, the ram, on November 2. This star group is now seen high in the southern sky about eleven P. M. At the time the plate was exposed, the comet was not noticed. After Mr. Carpenter found its image on the plate, a further search was made for it in the sky, but the glare of the moon prevented its being seen. When discovered, it was very faint, of the 16th magnitude, and was moving to the southeast. However, it had a short tail, which is rather unusual for so faint a comet.

A NEW sweetening compound which is somewhat sweeter than saccharine and 690 times sweeter than sugar has been prepared by Dr. Henry Gilman and J. B. Dickey, of the department of organic chemistry at Iowa State College, from waste products of corn. The name of this compound is "the *syn*-isomer of 5-benzyl-2-furfuraldoxime." Despite its sparing solubility in water it may become a pattern for new and valuable sweetening compounds. As yet, no study has been made of its physiological action. Unlike other artificial compounds of high sweetening power this compound can be readily prepared from sugar by standard organic reactions. Other raw materials, like paper and cellulose compounds, in general, can be used as a starting point in its synthesis. Previously, Dr. Gilman and A. P. Hewlett prepared a compound from corn-cobs which was 200 times sweeter than sugar.

WHAT is now the world's largest known copper-ore deposit was worked by the prehistoric Incas, judging by remains that have been found at and near the copper mines of Chuquicamata, Chile. Within the mine primitive tools have been found from time to time, such as stone hammers and wooden shovels, as well as mummified remains of early Indian miners, one of which is now at the American Museum of Natural History in New York. The ruins of Pucaro, an ancient fortified city destroyed by the Spaniards during their first invasion of Chile, are 25 miles from Chuquicamata. Ancient graves belonging to this prehistoric city have yielded bowls and other utensils of copper as well as bead necklaces made from brochantite and atacamite, minerals characteristic of the Chuquicamata deposits. The Incas, reputed as pre-Columbian America's best miners and metal workers, conquered this part of Chile about 1443, it is believed, and the old mines may therefore have been worked at least ninety years before the discovery of America.

THE age of Pueblo Bonito and other ruins in the southwest is at last to be revealed by the slow but sure detective methods of science. Telegraphic advice received by Dr. Gilbert Grosvenor, president of the National Geographic Society, states that timbers from ancient trees collected this summer are adequate to complete the long-sought tree-ring calendar. With this as a yardstick it will be possible to date any prehistoric pueblo which has any wooden beams left in the ruins. Dr. A. E. Douglass, astronomer, of the University of Arizona, and Neil M. Judd, leader of the National Geographic Society expeditions to Pueblo Bonito, have studied 5,000 tree sections, including some located this summer after years of search. The calendar up to this season has been carried back to 1260 A. D. and still was not old enough to match the series of years recorded at Pueblo Bonito. Another set of pre-Columbian tree-ring dates covered 586 years in some unknown centuries. The link between the two series has now been discovered, and the dates will soon be announced.