SCIENCE NEWS

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THE ANTARCTIC CONTINENT

WHO discovered the Antarctic continent? In spite of centuries of exploration, extending back to the visit of Dirck Gherritz in 1599, this question remains unsettled, according to a paper presented to the Pacific Science Congress, meeting at Berkeley, by Dr. Bharne Aagaard, of Stavern, Norway. The paper gave a detailed account of the various claims, among which is included Bransfield's discovery of Trinity Land, January, 1820; Palmer's discovery of Palmer Land, November, 1820; Bellingshausen's discovery of Alexander Land, January, 1821; John Biscoe's discovery of Enderby Land, February, 1831.

Another question that remains to be settled is whether the Antarctic continent once formed part of a land bridge between South America and Australia. According to a paper presented by Dr. G. G. Simpson, geologist of the American Museum of Natural History, New York, students of zoogeography have supported such a theory as a result of fossil finds along such a speculative bridge, but there is little substantial evidence to bear this theory out from a geological standpoint.

While Dr. L. M. Gould, geologist of Carleton College and geologist with Admiral Bird in the Antarctic, advised the congress that Antarctica possessed a unity of climate, life and geographic conditions which are without parallel among the continental land masses of the earth, the surface of the great continent is not all snow and ice. The inland ice does not completely submerge the rocky sub-structure. In and around Palmer Land, mountain glaciers of great variety, island ice and shelf ice are the characteristic forms in which glaciation is manifested. But little is known of the ocean margins, where the ice meets the major waters of the Pacific Ocean. It is reasonable to assume that the inland ice moves directly into the sea over wide areas.

The former lofty mountains of Antarctica have been greatly lowered through erosion and glacial action, according to a paper presented by Dr. F. Alton Wade, geologist of Miami University, Oxford, Ohio. To-day some of those mountains are represented only by their igneous cores. Dr. Wade is also of the opinion that Palmer Land and related islands comprise a continuation of the Andean mountain chain of South America, while to the east in the Australian Quadrant is the great Antarctic Horst or depressed tract of the earth's crust, which is thought to be a continuation of the East Australian Horsts.

Climatically the continent of Antarctica exerts a tremendous influence over the whole south Pacific, according to Dr. Paul A. Siple, of Clark University. While present knowledge of climatic conditions is restricted to only five or six areas where meteorological stations are maintained, Antarctica appears to be under the control of a shallow, glacial anticyclone which periodically exchanges across the southern Pacific Ocean great masses of cold polar air for warmer masses.

PAPERS BEFORE THE PACIFIC SCIENCE CONGRESS

IN certain regions earthquakes nearly always occur after a fall of atmospheric pressure, and in others after a rise in pressure, the fall being most common over the sea and the rise over the land. This is indicated by a report to the Sixth Pacific Science Congress, by Dr. R. C. Hayes, acting director of the Dominion Observatory, Wellington, New Zealand. He investigated the effects of atmospheric changes on the occurrence of 200 prominent earthquakes in the New Zealand region over the period 1931 to 1936, noting the pressure change during an interval from one to two days before the occurrence of the earthquake. The results, plotted on a map, indicated that sea earthquakes were preceded by a fall of pressure and land earthquakes by a rise. "As a fall of pressure indicates a removal of load," he said, "and a rise an increase of load, it is considered that the results give some indication of the general crustal movements at present taking place in the regions concerned."

TILTING of the ground near active volcanoes suggests the possibility of forecasting coming eruptive activities, was reported in a paper by Professor Takeshi Minakami, of the Earthquake Research Institute, Tokyo Imperial University. Tilting on a large scale preceded by about two months the explosive activity of the volcano Mount Asama, which began on April 20, 1935. The marked changes in the inclination of the ground during the active stage of the volcano clearly differ from the seasonal and other variations. Marked changes in the crater floor of Asama during eruptions were described by Professor Minakami. Two phenomena were noted, one wherein the floor rose as a whole, and the other in which explosions ejected a part of the floor from the crater in the form of volcanic bombs and ash. These two conditions differ greatly in character.

TRANSPACIFIC aviation, using coral atolls like Midway Island as "stepping stones" on the long over-water hops, would probably not yet be possible if the land had not been raised some five feet in recent times, according to Dr. Harold T. Stearns, of the U. S. Geological Survey. There is a "five-foot bench" in the Pacific, Dr. Stearns said. "So many coral atolls, as for example Midway Island, stand about five feet above sea-level that there can be little doubt that an emergence of approximately five feet has occurred in recent time." By "recent," geologists mean the epoch of time following the last Ice Age some 20,000 years ago.

THE Panama Canal may not have been the first Pacific-Atlantic water link between North and South America. Evidence presented to the Pacific Science Congress by Dr. Ralph W. Imlay, of the University of Michigan, indicates interoceanic connection across Mexico during the Jurassic and Cretaceous periods of millions of years ago. This connection may have been through the states of Oaxaca, Querrero and Colima, where it is described as the Balsas portal, and northern Sonora, where it is known as the Sonoran portal. Evidence of prehistoric animals indicates at least a temporary connection between the two oceans during the periods mentioned. The existence of the Balsas portal is substantiated by the occurrence of thick marine sediments

of Upper Jurassic and Lower Cretaceous times across southern Mexico nearly to the Pacific Ocean. The existence of the Sonoran portal is less certain, but seems most likely during the later Lower Cretaceous, when an arm of the Mexican Sea extended westward across Northern Sonora and Southern Arizona at least as far as the present Patagonia mountains.

DISCOVERY of ancient human bones in an Oregon cave, and the finding of man-made articles buried beneath pumice erupted when Crater Lake formed thousands of years ago, are clews to a new chapter in American prehistory, which will force a reconsideration of views now held in regard to the early Far West, is the opinion of Dr. L. S. Cressman, of the Oregon State Museum of Anthropology, who reported the latest finds of his expeditions to the Sixth Pacific Science Congress. Dr. Cressman told of finding skeletal remains of a human being in gravel of the late Pleistocene or early Recent times of geologic reckoning, and said that the bones were apparently deposited naturally, not buried. This ancient American was found in a cave in the Northern Basin in south-central Oregon. In another cave on Summer Lake, Oregon, articles used by man have been found beneath the pumice ejected at Crater Lake's formation, an eruption which by the most conservative estimate must have taken place 3,000 to 10,000 years ago.

USE OF A CHEMICAL IN PLANT BREEDING

BIGGER and better cotton, tobacco, berries and fruits, with new chemical-created heredities, are about to result from research at the U. S. Department of Agriculture through use of a powerful and poisonous drug, colchicine. Fertile hybrids of economically important plants are being produced, successful plant crosses heretofore impossible are being achieved.

From pioneering experiments made several years ago by Dr. Albert F. Blakeslee, of the Carnegie Institution, the application of colchicine, extracted from seeds of the wild meadow saffron and used sometimes as a gout remedy, promises to give farmers better plants to grow in their fields. The drug causes rapidly growing young plants to double the number of chromosomes in their cells, juggling the heredity in such a way that the new plant created breeds true and is not sterile as are most hybrids. Chromosomes are the carriers of heredity within the cells and seeds.

Crossing of valuable Sea Island cotton of the Asiatic variety and American upland cotton is being undertaken by Dr. J. O. Beasley, of the Bureau of Plant Industry, working in North Carolina. For the first generation this cotton cross produces a form which gives the typical long fibers of Sea Island cotton with the early maturity of the American upland cotton. This hybrid, however, while fertile, goes to pieces after the first generation cross and loses its desirable qualities.

The drug colchicine, by doubling the number of chromosomes in the cells of the plant, allows the production of a fertile hybrid of the cotton that will breed true. To get a true-breeding strain depends on a freak of nature found commonly in Sea Island and at times in upland cotton. It is a twin embryo. Usually one of the embryos produces a shoot with only half the number of chromosomes in one set instead of the regular two sets required for fertility. By doubling the chromosome number of this shoot with colchicine, it is hoped to get a pure-line cotton with two sets of identical chromosomes which should breed true.

Dr. H. H. Smith, at the Arlington, Va., Experimental Farm of the U. S. Department of Agriculture, has obtained similar results with hybrid tobacco which, in some forms, has great value as an insecticide. This is especially true of wild tobacco of which one type contains nor-nicotine, an alkaloid related to nicotine but much more potent in killing insects.

Drs. Haig Dermen and G. M. Darrow, working at Beltsville, Md., have tried colchicine on berries and fruit trees and hope to produce a permanently reproducing cross between Loganberries and ordinary blackberries. Crossing of red raspberries with other berries is expected to yield a variety that will grow in warm southern climates. The work with peaches has only just been done. What its results will be can not yet be determined because it will take a year or two to obtain fruit from the trees.

THE DEVELOPMENT OF ALASKA

By LEONARD H. ENGEL

FORMATION of one or more private development corporations like the world-famous "Hudson's Bay Company" to people Alaska with American citizens and refugees and turn it into a prosperous "Scandinavia of the West" is to be suggested in a Department of Interior report slated for early publication.

A population of five million or more, the report will maintain, can easily be supported in the territory, which, one fifth the size of the United States, now has less than 60,000 inhabitants, including Eskimos and Indians.

It is urged that opening up the territory to large-scale colonization would provide a market for American capital goods equivalent to a heavy increase in the U. S. foreign market. At least half the settlers will be American citizens. Among the others would be carefully selected refugees from foreign lands. The plan would thus also be an American answer to European persecutions of minorities.

Private development corporations like the Hudson's Bay Company, which settled Canada, and the Plymouth Company, which sent the Pilgrims to the then unknown wilderness of the Atlantic coast, have been the most successful type of colonizing agency. One or more of them is therefore recommended for Alaska. Their dividends would be limited and their activities carefully delineated by law. Financing would be entirely private.

Providing that the plan secures support of Alaskans and others concerned, necessary legislation is expected to be introduced into the next session of Congress. Present immigration laws would be modified so as to permit aliens selected by the companies to settle in Alaska. Immigration quotas of the United States would not be altered. If the Alaskan settlers wished to become citizens or to enter the United States, they would have to apply for immigration quota numbers like other aliens. At least one large refugee-aid group is definitely interested.

Sponsors of the plan favor the establishment of more than one corporation. "Competition will be good for them," one declared. Besides, where diverse national and cultural groups are involved, they are likely to work better if each is allowed to work out its own problems instead of all being forced together into one company.

The society the colonists would build would be based primarily on manufactures exploiting Alaskan resources. The industries either would not duplicate those of the United States at all or would produce goods of a type now largely imported. Among the industries are paper manufacturing, lumbering, salting and pickling herring, woodworking, production of minerals such as tin, manganese and chrome ores, fur farming and leather working. Agriculture can supply a substantial part of the food supply of the new natives, although by no means all of it.

A National Resources Committee report quoted by sponsors of the plan indicates that Alaska is potentially richer than Sweden and Finland together. With an area two thirds larger and far better endowed by nature than the two Scandinavian countries, it now supports a population 1/165th as large. Half the population is Eskimo and Indian.

SLIPPING OF METAL CRYSTALS

SLIPPING layers of material, such as produce ranges of high mountains in nature, are being used on a microscopic scale here to show how metals behave under severe pressures. In the metallic world, the slippage occurs along tiny crystal planes of the metal.

A research movie just completed at the research laboratories of the Westinghouse Electric and Manufacturing Company here under the direction of Dr. A. Nadai, consulting mechanical engineer, opens with a two-foot strip of steel, white and smooth. As a tremendous pull comes into play, the test specimen begins to elongate like a huge rubber band. While this stretch is within the elastic limit of the steel all goes well. But soon there appear the "villains"; first a tiny black line that runs diagonally across the specimen. Soon another, and another, each time about half an inch apart at an angle of approximately 45 degrees with the direction of pull. By the end of the film the whole test specimen is criss-crossed with a maze of these lines. These lines are the distinguishable marks of slip planes of the crystals of the metal.

Each of these microscopic crystals, containing about 27,000,000,000,000 (27 trillion) individual iron atoms will —if pulled strongly enough—start slipping and attempt to relieve the pressure in this way. Paradoxically the slipping does not occur uniformly throughout the steel bar, but in localized areas and the deformed part is stronger than the unaffected parts. Slip lines must be eliminated in the rolling of steel, for they might make their appearance through a paint finish on an automobile.

The stretching of a steel bar, says Dr. Nadai, parallels on a laboratory scale the large-scale effects of stresses in mountain building. An outstanding example is the Jura chain of mountains in Switzerland, which has been pushed together into a band some eighty miles north of the Alps.

ITEMS

DR. ROBERT A. STEINBERG, of the U. S. Department of Agriculture, has discovered that traces of gallium are necessary for growth and reproduction of one of the common mold fungi, and he suggests that it may be proved necessary for other planets as well. Very little gallium was found sufficient for the needs of the fungus—10 to 30 parts per billion of water. No other element could be successfully substituted. Although gallium is one of the rarer elements, what there is of it is widely distributed in nature.

SHOCKING a patient by electrical means as a promising treatment for failing circulation of the blood is reported in the *Journal* of the American Medical Association. Many a surgeon has watched a patient sinking into traumatic shock and many a physician has observed a patient exhausted by illness, the editorial explains, only to find there is some element in the mechanics of blood circulation beyond medicine's control. Now Drs. G. G. Ornstein, Sidney Licht and Myron Herman, of Sea View Hospital, New York City, have reported a method of raising venous pressure in a case of shock, particularly applicable to circulation failure under spinal anesthesia. Towels soaked in salt solution are wrapped around the patient's body and legs. Electrodes are connected and an induced electric current is applied. This causes a distinct rise in pressure of blood in the veins. The original suggestion that low blood pressure arises from a failure in the tonus of the body's muscles which lowered the gentle pressure sending blood from the tissues into the veins and back to the heart came from Professor Yandell Henderson and his group of investigators at Yale University.

THE "mummy" of a duckbill dinosaur that had old-age trouble with its back—ninety-five million years ago—is being studied at the Smithsonian Institution. The big creature had a stiff back due to ossified tendons, or the hardening of some muscles into bone, is the belated diagnosis of Charles W. Gilmore, Smithsonian paleontologist. Old turkeys sometimes have the same condition. "Mummy" dinosaurs, so-called because the print of the rough hide is preserved over the bones, are extremely rare, only about ten being known. The Smithsonian's specimen, from the dinosaur quarry in Alberta, Canada, shows the skin in fairly well distributed patches over the body. Mr. Gilmore infers that dinosaur hide would make excellent leather, if there were any left.

THE use of safety plate glass on all the windows of motor vehicles will help to prevent many cases of "car sickness" and the headaches accompanying eye fatigue, according to Dr. A. H. Ryan, Chicago physician. Eye fatigue, he finds, is 62 per cent. greater when looking through safety sheet glass than it is when looking through safety plate glass. The tiny, almost imperceptible waviness of sheet glass, in contrast to the polished smooth surface of plate glass, distorts the vision, in laboratory as well as driving tests. The constant, automatic adjustment of the eye to this distortion causes fatigue. Most cars now have safety plate glass in the windshield, but the less smooth glass is often used in other windows. The tests were made for General Motors' Fisher Body division and the Libbey-Owens-Ford Glass Company.