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SCIENTISTS SEEK MAGNETIC NORTH  
POLE ON MAC MILLAN ARCTIC EXPEDITION.

(By Science Service)

Washington, July .- The discovery of the magnetic north pole or even the finding of bonds of union, other than that of gravitation, between the earth, the sister planets and our parent sun may be the result of the scientific arctic exploration that will be undertaken by the MacMillan Baffin Land Expedition that will sail from Wiscasset, Maine, on Saturday, July 16 for a stay of a year or more in the north.

The Carnegie Institution of Washington through its Department of Terrestrial Magnetism with the cooperation of American and Canadian government bureaus and universities has furnished the scientific equipment of the expedition, and has given two members of the expedition, G. D. Howell, jr, and R. H. Goddard, special training in the scientific observations that will be made simultaneously with other northerly stations established by various European countries and Canada in conjunction with the Amundsen arctic expedition.

"There is no telling what facts of science are hidden in the icy embraces of the far north," declares Dr. Louis A. Bauer, director of the Department of Terrestrial Magnetism of the Carnegie Institution. "The discovery of these secrets will not only enrich science but may also be of immediate benefit to the welfare of mankind. For in the lands of the mysterious polar lights, whose shooting rays dance in rhythm with the quivering magnetic needle, are unfolded and developed some of Nature's most striking and grandest phenomena which no experiment that man has been able to devise can rival or imitate."

"The expedition headed by Dr. D. B. MacMillan has a rare opportunity for obtaining data and information which unquestionably will materially assist in the solution of some of the questions raised by arctic phenomena. Penetrating as it will to a region near the Magnetic North Pole, it is planned that for a period of 8 to 10 months continuous and systematic observations shall be made pertaining chiefly to the magnetism of the Earth, the electrical and meteorological condition of the atmosphere, and to polar lights. A sledge trip may also be attempted to the locality of the North Magnetic Pole, supposed to be near the western coast of Boothia Felix, during which a systematic magnetic survey of the region may be undertaken."

"The observations of polar lights will be of special interest," Dr Bauer states. "Polar explorers have repeatedly furnished testimony and have recited experiences which would apparently indicate that the polar-light rays, or beams, pass through the atmosphere and come down comparatively close to the Earth's surface. However, many thousand observations made near the north coast of Norway by a photographic method, similar to the one to be used for the first time in the far North by the MacMillan Expedition, clearly indicate that the rays do not get closer to the Earth than about 60 miles, though they may extend from that level upward hundreds of miles. The MacMillan Expedition will be equipped with special photographic appliances for settling the question as to the depth of penetration into our atmosphere of the auroral beams in polar regions and thus it will be able to make a contribution to our knowledge which will undoubtedly help greatly in establishing a rational theory of polar lights."



## THE NEXT GREAT STEP AHEAD

### 8. In Communication- An International Language.

An interview with Ward Nichols, secretary of the Committee on International Auxiliary Language of the International Research Council.

(By Science Service)

Today radio messages are flashed across oceans and continents as a matter of routine. Airplanes, which a decade ago were purely experimental, now carry mail and passengers between great cities on regular schedules. Ocean liners more luxurious and comfortable than dry-land hotels make the continents of today as close as the states were in the early days of the republic. Over the steel tracks of railroads that form a mesh over the continents, nature's products and the ingenious works of man are shifted so quickly that the foods and materials of other climates become every-day necessities. The world has become smaller as methods of communication have progressed.

So fast and intensive has been the development of means of transferring men or messages to other parts of the world, that one can hardly guess the next mechanical development that will dwarf the airplane and the wireless.

But the next step ahead in that most common medium of communication, language, is confidently predicted by Ward Nichols, secretary of the Committee on an International Auxiliary Language of the International Research Council. It is an international auxiliary or help language.

The radio telephonist of a few years ahead when he plugs in on all parts of the world and hears dozens of strange tongues will feel the need of a simple common world language, which while not interfering with any national language will be a part of every educated person's equipment. Those modern towers of Babel, the international conferences, whose talk is slowed, cooled and distorted by dozens of translations would use it. Think of the possibilities of sending a circular commercial letter to England, France, Germany, Russia, China, Japan, the South Sea Islands or any other part of the globe and having it understood. School children of different lands would write simple post cards of greeting and query to each other in the international language. And science, whose facts are universal, will benefit by an international language. Movie captions of the future could be written in the universal language and films could be shown in all countries without the present expensive recaptioning in national languages.

Scientific bodies in different countries have begun to co-operate in the first unbiased steps toward solving the international auxiliary problem. At the 1919 Brussels meeting of the International Research Council, the committee on international auxiliary language was formed to investigate the present status and possible outlook of the general problem of an international auxiliary language and to cooperate with other organizations engaged in the same work.

"It is not the intention that this central committee shall necessarily of itself enter upon an extensive investigation and study of the international language problem, but rather, in the first instance at least, to stimulate interest and centralize effort in the study of the question by and through responsible and competent academic organizations and educational institutions in this and other countries and then to act as a clearing-house for the exchange of information and plans between them," explains Mr. Nichols. "The first work of the committee has been confined to efforts to awaken interest and to secure the organization of committees and working groups in certain learned societies and universities, and already a number of such committees and study groups have either been appointed or are authorized."

"The idea of the international language is not new," he explains. "Descartes, the great mathematician, in 1620 considered the problem and though he did not devise a language himself he formulated the two principal methods upon which all international language projects that gained a following, have been constructed. These are the "a priori" method consisting of arbitrarily selected letters, syllables or words indicating an idea or group of ideas in accordance with a determined classification, and the "a posteriori" method, based on roots already existing in the natural language."

"In the last two centuries there were over a hundred attempts to solve the problem, but not until Volapuk appeared in 1880 was real progress made. For a decade this language flourished but the death of the project was brought about by dissension among its followers," caused by imperfections of the language."



"Esperanto is the international language project that now has the largest following. Invented by Dr. Zamenhof in 1887 this language has a simplified regular grammar and is based on roots common to several existing languages."

"Among the other international languages with a following today are Ido, Esperantida, Ro and Interlingua. Esperantida is an ingenious attempt by Dr. R. de Saussure, the Swiss mathematician, at combining selected elements from both Esperanto and Ido, and Ro is an "a priori" project by Rev. E. A. Foster of Waverly, West Va. Latin has also been advocated by classicists as adaptable to modern international use."

"It would seem that for world use a language must be in the nature of a code," declared Mr. Nichols. "It will be the tool of the scientist, the business man, and the man on the street and will be used in writing and talking to other peoples in other lands so that they may do the world's work better and easier. In this respect it is like shorthand, except that everyone must use the same system so that international notes can be read."

The international committee is headed by Dr. F. G. Cottrell, who is inventor of the Cottrell process of electrically precipitating dusts and gasses. He was formerly director of the U. S. Bureau of Mines, and is now chairman of the division of chemistry and chemical technology of the National Research Council.

The three large national scientific bodies of this country, the American Association for the Advancement of Science, the National Research Council and the National Academy of Sciences have appointed representatives to cooperate with the international committee, and the American Council on Education, the American Philological Association, and the American Council of Learned Societies and the American Classical League have also appointed committees.

Across the water, the British Association for the Advancement of Science and the British Classical Association have both appointed committees on international language, and similar action from other European countries is expected.

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BEAT EDISON TO IT!

Do you know that -

No part of the earth's surface is absolutely rainless except the interiors of Antarctica and Greenland, where the moisture that falls is always in the form of snow.

Relatively speaking, very few species of insects are harmful in any way to man and his works. The injurious species amount to less than one per cent of the whole. On the other hand, a great many species are beneficial to mankind. Pollination of crops like clover would be impossible without insect visitations, and the same is true of many garden flowers and important fruits.

During the occurrence of great forest fires in Idaho, in August, 1910, the smoke was carried over the whole of the northern United States and southern Canada and far over the oceans. It was observed 500 miles from land. These fires caused "dark days" over a greater area than in any other case on record in this country.

Gypsum or plaster of paris is used for wall plasters, tile, wall board, dental work, portland cement manufacture, modeling, and surgical work.

BEAT EDISON TO IT!

Do you know that -

A new medical degree, offered by Harvard, is that of Doctor of Medical Sciences (M. S. D.). It will be given to men who have specialized in medical research and the laboratory development of medicine, rather than in the clinical branches. It is hoped that by the establishment of this new degree more medical students will be induced to take up research work.

A commission appointed by the French minister of Public Works has recommended that manufacturers consider the use of wood as an industrial fuel, as French coal mines have been largely rendered useless by the German invaders.

A need likely to be realized in the near future is an automatic device for registering the wireless distress signal ("S.O.S.") on shipboard. At present operators must keep a more or less continuous watch for this signal.



Trees belonging to the genus *Jacaratia*, growing in tropical America, are remarkable for their soft wood. After part of the bark is cut away a machete can be shoved to the center of the trunk with ease. The wood, when fresh, can be cut into blocks with a knife as one would cut up parsnips or turnips. As the wood dries it shrinks to a small fraction of its original bulk.

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#### BEAT EDISON TO IT!

Do you know that -

Paper made from bamboo pulp is said to be of high quality and suited for the better grades of printing paper. Factories for making paper from bamboo have recently been established in Indo-China, and similar undertakings are about to be launched in Trinidad, Burma and British India.

The eye of the convolvulus hawk-moth has 27,000 facets. That of the butterfly has 17,000, the house-fly 4,000, the ant 50, and the silverfish only 12.

The poisonous principle has been extracted from poison oak, and named Lobinol by its discoverer, James B. McNair. It is said to be similar in chemical composition to carbolic acid.

The beams of light sometimes seen radiating from the sun when not far from the horizon are called "crepuscular rays." They are due to rays of light passing through breaks in the clouds and made visible by dust or fine drops of water in the air. Their apparent divergence is an effect of perspective. The phenomenon is popularly described as "the sun drawing water"; sailors speak of the "sun's back-stays"; while Homer wrote of the "rosy-fingered dawn."

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#### BEAT EDISON TO IT!

Do you know that -

In the system known as "regenerative braking," used by the latest types of electric locomotives, the mechanical power developed by the train as it runs down-grade is "regenerated" and returned as electricity to the trolley, to be used by some other train, instead of being wasted in heating brake-shoes and wheels, as happens when the air-brake is used.

The rivers of the United States carry about 513,000,000 tons of suspended matter to the sea each year, and about half as much more reaches the sea dissolved in the river water. The surface of the country is being pared down by this process at the rate of an inch in 760 years.

The only fully domesticated animal in North America before the days of Columbus was the dog.

Sir James Young Simpson, who introduced the use of chloroform as anaesthetic, waged a long battle with those who opposed its use on religious grounds. One of his favorite arguments was that the Almighty set the example by causing a "deep sleep" to fall upon Adam before removing his rib. The victory of the new treatment was completely won in April, 1853, when Queen Victoria was anaesthetized with chloroform.

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#### BEAT EDISON TO IT!

Do you know that -

An "aerial edition" of the London Times was published on board the airship R33 during a recent flight over western Europe. The news was wirelessed from England and typed as received for publication.

Coal "atomized" by the McLaughlin process is reduced to a fineness of something like twenty million particles to the cubic inch. The resulting impalpable powder is fed through a pipe like a fluid and burns like gas. All the combustible matter in the fuel is instantly burned, making no smoke.

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A bimonthly journal devoted to the subject of finger-prints has been started in England.

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The beacon lights of long ago had a brightness of a few candle-power. The beams of modern lighthouses equipped with electric lamps and enormous light-gathering devices are millions of times brighter. Navesink Light, at the entrance of New York Bay, is rated at 60,000,000 candle-power.

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#### BEAT EDISON TO IT!

Do you know that-

The flat top of Table Mountain, South Africa, is often overspread with a cloud known as the Table-Cloth. It forms very suddenly, chiefly with strong southeast winds, and has been the cause of accidents to wayfarers on the mountain who have lost their way when enveloped in the dense vapor.

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Tungsten, the metal of which the filaments of incandescent lamps are now almost universally made, is nearly twice as heavy as lead.

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An English machine for the use of armless men consists of a table under which are pegs worked by the toes. The pegs are connected with artificial "arms" above the table, which do almost everything that can be done by human arms. Thus the patient can use a spoon, knife and fork, drink from a cup, pick up a cigarette and place it in his mouth, open a box of matches, strike a match and light the cigarette, typewrite, turn the leaves of a book, play checkers, wash and dry his face and neck, etc.

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Karl Hagenback, who was called "the Moltke of menagerie owners," was the first person to train large carnivorous animals of different species to perform together.

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#### SATURN'S RINGS NOW EDGEWISE TO EARTH

(By Science Service)

Washington, July .- The rings of the planet Saturn, which are unique in the solar system, are now edgewise to the earth and through the telescope at the Naval Observatory here they can be seen only as small arrows of light extending from the edge of the planet. Only every fifteen years can this phenomenon be seen, as Saturn takes nearly thirty years to travel in its orbit around the sun, while the earth makes its trip around in a year.

Saturn can be seen in the early evening in the eastern sky near Jupiter, and to the unaided eye it appears as a bright star, according to Prof. Asaph Hall of the Naval Observatory. The present view of the rings is also unusual because this year there are three chances to see the edge of the rings while ordinarily it can be seen but once every fifteen year period. The rings being on edge cause the planet to be less bright than usual.

Saturn's rings are believed to be only 40 to 60 miles thick, and for that reason their edges can hardly be distinguished with the most powerful telescope. But while the rings are thin, the dark ring sandwiched by two bright rings is broad enough to hold six earths placed side by side. The planet Saturn itself without its rings is over 72,000 miles in diameter or nine times as large as the earth.

The physical constitution of the rings is unlike that of any other object in the solar system. They are not formed of a continuous mass of solid or liquid matter, but of discrete particles of unknown minuteness, probably widely separated in proportion to their individual volumes, yet so close together as to appear continuous when the rings are turned so that they can be seen from the earth.

Prof. Hall has had a long telescopic acquaintance with Saturn. In 1876 he observed for a month one of the rare bright spots on the surface of that planet, and was able to determine its time of rotation as being a little over ten hours. As it is difficult to distinguish any individual feature on the planet, such observations can be made only when temporary bright spots appear.



"Saturn is now in the state that the earth was in eons ago before it became solid," explains Prof. Hall. "Its density is seven-tenths that of water but it has clouds and an atmosphere much like that of the earth. It is nine and a half times as far from the sun as the earth."

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#### CALIFORNIA HAD 87 EARTHQUAKES LAST YEAR.

(By Science Service)

San Francisco, July .-- During the year 1920 there were 87 separate and distinct earthquakes in California according to information reported to the Seismological Society of America by Andrew H. Palmer, meteorologist of the U.S. Weather Bureau here. This figure includes only those tremors that were actually felt.

"From a seismological viewpoint, the feature of the year in California was the large number of earthquakes in Los Angeles and vicinity," declares Mr. Palmer. "No earthquakes were reported from Los Angeles during the first five months of the year, but seven occurred there in June, twelve in July, one in August, and four in September, making a total of twenty-four for the year. The city received much unwelcome publicity once in eastern newspapers in connection with these disturbances. The great shock of June 21 was heralded with front-page head lines quite as large as those which announced the San Francisco disaster in 1906."

"Not a single month has passed during the past six years without one or more earthquakes in California. One draws the inevitable conclusion that these slight but constantly occurring tremors may well be regarded as a safety valve in efficient operation. However, the earthquake menace is constantly present, and a great shock may be possible at any time."

The Weather Bureau has approximately 350 correspondents well distributed throughout California who are supplied with cards on which to record data on each earthquake observed.

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#### THE HEAVIEST RAINFALL ON RECORD

(By Science Service)

The heaviest rainfall ever recorded was during the night of November 29, 1911 at Porto Bello, Panama, when 2.47 inches of rain fell in three minutes, exceeding by 100 per cent, says B. C. Kadel, of the United States Weather Bureau, the rate measured at Curtea de Arges, Roumania, on July, 1889, and heretofore held to be the world's record.

So great was the Panama rainfall that all the conditions under which it was measured were carefully examined, in order that there might be no question as to the accuracy of the record. It was found that the circumstances corroborated the testimony of the recording instruments. The rain-gage was in the hands of careful observers, and it had been emptied at 5 p.m. preceding the rain. No foreign substance was found in the gage after the rain which could have clogged the opening temporarily. Low-lying land was covered with several inches of water, the drain pipes not being capable of carrying away the water, large boulders were washed loose, and the town reservoir overflowed.

It was suggested that someone with a peculiar sense of humor might have poured water into the gage, but this was dismissed on the ground that it was hardly conceivable that a person could derive sufficient amusement from climbing a steep bank of wet clay at 2 a.m. with a bucket of water, to make such an exploit worth while.

When it is remembered that in the United States, 0.25 inch of rain in five minutes is considered excessive, the magnitude of the Porto Bello downpour can be well imagined.