



Science News-Letter

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GEOGRAPHY

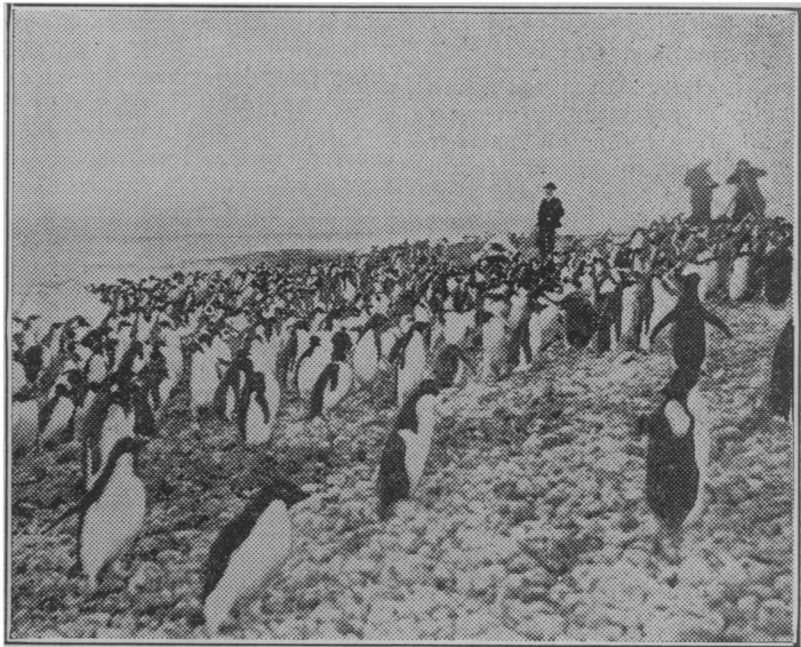
Byrd's Hops Will Explore Mystery Land

The most isolated corner of the globe—a land as mysterious as the mountainous face of the moon—at last is on the point of yielding to science the secrets of its icy peaks and blizzard-swept plains.

When the whir of Commander Richard E. Byrd's motors sounds over the Antarctic continent the bold aviators will look down on a landscape apparently as foreign to this planet as the surface of Mars and probably with many points of similarity. Northern Greenland, the Sahara desert, the icy Himalaya heights or the black rocks of Spitzbergen are desolate enough and seem far removed from village church spires and cultivated fields of the civilized world.

But in the final analysis desolate Spitzbergen is far more closely related to the United States or Europe than Antarctica. All these barren areas abound with life, even in winter. But the great land mass about the South Pole is almost truly lifeless. Life is confined to the lowest forms and even these are rare. There is one degenerate type of insect found in the interior. Fungi and lichens grow in isolated patches. There is not a single worm, mollusc, reptile, bird or mammal from the shores of the Antarctic sea to the pole. All living things are left behind a few miles from the coast. Death is king of Antarctica. The ice-jeweled mountains are his palaces and the snow plains his fertile fields.

Science, however, has a particular interest in the dead continent. The high rock walls of its mountain passes are expected to reveal, through fossils, an important chapter in the past history of the world. For at one time Antarctica, then covered with semi-tropical forests and abounding with life, may have served as a land bridge around the world by which species were distributed. The airplane seems to afford the only



THE LITTLE PEOPLE OF ANTARCTICA. The beaches of the southern continent sometimes are literally covered with these curious birds, the penguins, who act strangely like humans

means of transportation by which geologists and paleontologists can obtain the rock specimens needed to reconstruct the picture.

Like the land masses of the Arctic, this Antarctic continent once had a prolific vegetation and at least a sub-tropical climate. This is shown conclusively by coal deposits, specimens of which have been brought back by several expeditions, notably that of Sir Ernest Shackleton which penetrated to within 97 miles of the pole before it was obliged to turn back. Coal indicates great forests of seed ferns and club mosses in carboniferous times.

The causes of the radical change in circumpolar climates remain obscure despite various ingenious theories advanced in recent years to account for them. No explanation seems to satisfy all the requirements.

Perhaps the most striking is the continental drift theory proposed by the German physicist Wegener which places Antarctica near the equator at some period in the world's history when the South Pole was located somewhere over the Indian Ocean.

But the mystery is deepened further by a peculiar distribution of animals, birds and plants. Take, for example, the marsupials or pouched animals. They form, with one or two exceptions, the sole mammal types of Australia, New Zealand and Tasmania and their best-known representative is the kangaroo. Then they skip Asia, Africa and Europe altogether and reappear in America in the form of the opossum. How did they bridge the gap?

A similar problem is afforded by the ostrich type. It is represented

(Just turn the page)

INDEX TO THIS ISSUE

Airplane Exploration of Antarctica.....	145	Evolution, Cold Made Plant.....	153	Mortality Statistics.....	157	Relatives Grade Alike.....	153
Airplanes, Model.....	149	Ewers, Hans Heinz.....	157	Moss, S. A.....	149	Sarton, George.....	155
Airplanes, More Power for.....	149	Flies, Children of Beelzebub.....	155	Musical Instruments in U. S. National Museum.....	157	Sawtell, Ruth Otis.....	157
America's Art Treasures.....	153	Geology School on Wheels.....	159	Nature Ramblings.....	155	Science, Essence of.....	157
Anniversaries of Science.....	159	Geology Train Tour.....	147	Nicholson, Seth B.....	157	Somerville, William.....	157
Antarctica, Mystery Land, to be Explored.....	145	Goldberger, Joseph.....	147	Oatmeal Defended as an Article of Diet.....	155	Souter, R. W.....	157
Ants, Honey-Cask.....	157	Haldane, J. B. S.....	155	Pearl, Raymond.....	159	Steenbock, Harry.....	155
Art Treasures of America.....	153	Harrington, C. R.....	147	Pellagra Epidemic Threatens.....	147	Students Grade Alike, Related.....	153
Barger, George.....	147	Hollick, Arthur.....	153	Plant Evolution Due to Cold.....	153	Stur, J.....	155
Barnard, E. E.....	159	Honey-Cask Ants.....	157	Platyus, The.....	155	Sydenstricker, Edgar.....	147
Beelzebub, Children of.....	155	House Plan 4,000 Years Old.....	155	Pollak Prize Essays.....	157	Synthetic Thyroid Hormone.....	147
Byrd's Hops Will Explore Mystery Land.....	145	Huestis, R. R.....	153	Populations Grow Alike, All.....	159	Thyroid Hormone, Synthetic.....	147
Canada's "North Country".....	147	Hume.....	157	Power for Planes, More.....	149	Thyroxin, Synthetic.....	147
Childhood, Inner World of.....	157	Jennings, H. S.....	157	Primitive Hearths in the Pyrenees.....	157	Tondorf, Francis Anthony.....	147
Cleanliness Journal, The.....	157	Jones, Gladys Moon.....	155	Princeton Univ. Geology Train Tour.....	147	Treat, Ida.....	157
Cold Made Plant Evolution.....	153	Jupiter, Discovery of Satellite of.....	159	Princeton University School on Wheels.....	159	Tree Crows, How a.....	157
Crops, Diversified, Relief for.....	147	Jupiter Moon Pulled by Sun.....	157	Pyrenees, Primitive Hearths in the.....	157	Unfitness Not Encouraged.....	157
		Magoffin, R. V. D.....	153			Valery, Paul.....	155
		Mellanby, Edward.....	155			War Greater than World War.....	155
		Millikan, R. A.....	157			Wickes, Frances G.....	157
		Model Airplanes, Building and Flying.....	149			Winder, Making a Geared.....	149
		Moon of Jupiter Pulled by Sun.....	157			Science News-Letter, Sept. 3, 1927.....	

To Explore Mystery Land

(Continued from page 145)

in Australia, South Africa and South America in a way strongly suggestive of an easy means of passage from one continent to another. Again the blood-thirsty New Zealand kea, the world's champion sheep-slayer, is a close relative of some of the beaked parrots of South America.

If fossils of intermediate types of marsupials, ostriches and beaked parrots, to say nothing of certain plants, are found in the icy rocks of Antarctica they will constitute strong evidence that the world's seventh continent once was a connecting link between Africa, Australia and South America or may even lead to the conclusion that these four continents once constituted a single land mass. Moreover such a discovery would force a revision of some classical ideas in geology. It is worthy of note that the marsupials and the ostriches are low types in the mammal and bird worlds. They probably were evolved quite early. If such fossils are not found, a convenient explanation of the distribution of species will be shattered for biologists. They are, geologists will have a difficult problem on their hands.

The lifelessness of Antarctica is a striking example of the absolute dependence of life on a few degrees of temperature and the delicate balance which is struck in the clockwork of the world. The continent never has the extremes of temperature reported by Arctic explorers. A mark of minus 50 Centigrade seldom is reached in the middle of the Antarctic winter while Arctic temperatures may fall to -70 and -80. The expeditions of Scott, Shackleton and Amundsen, which wintered on the continent, never suffered greatly from intense cold. On the other hand, Antarctica seldom has days much above freezing while the Arctic summer has many pleasant weeks

with days which occasionally are uncomfortably hot. The soil of the West Greenland coast thaws in late June and July several inches below the surface and the hillsides are covered for a few weeks with a magic carpet of brilliant colors. Great herds of musk oxen graze on lush pastures during the summer in the valleys of Axel Heiberg land and Ellesmere land. But on the Antarctic continent the soil never thaws to a sufficient depth or for long enough at a time to allow seeds to germinate. Without plant life there can be no animal life. An explorer lost in the Arctic might survive there for an indefinite period, even in winter, if he had a hardy constitution and was a good rifle shot. A handful of Eskimos have maintained life on the northwest Greenland coast for generations. But man or animal astray in Antarctica starves. No amount of ingenuity enables him to find a mouthful to eat—unless life could be maintained for a few weeks on the mosses.

On the coast of Antarctica in summer life abounds. But it extends only a few miles inland. The rocks sometimes are white with those curious, human-like birds, the penguins, and explorers have to kick them out of the way to land. Other seabirds, such as the skua gull, rear their young in the rocks. One variety of seal, the sea leopard, is common. Whales, as is well known, abound in the waters and constitute the only economic reason for an invasion of the southern seas.

The possibility of mineral resources in Antarctica, particularly precious metals, long has been a favorite topic for geographical romancers. It is difficult to imagine such a large land mass without some valuable deposits. But the fact remains that nobody knows whether they are there or not. The aviators may run across them, but the prac-

(Continued on page 151)



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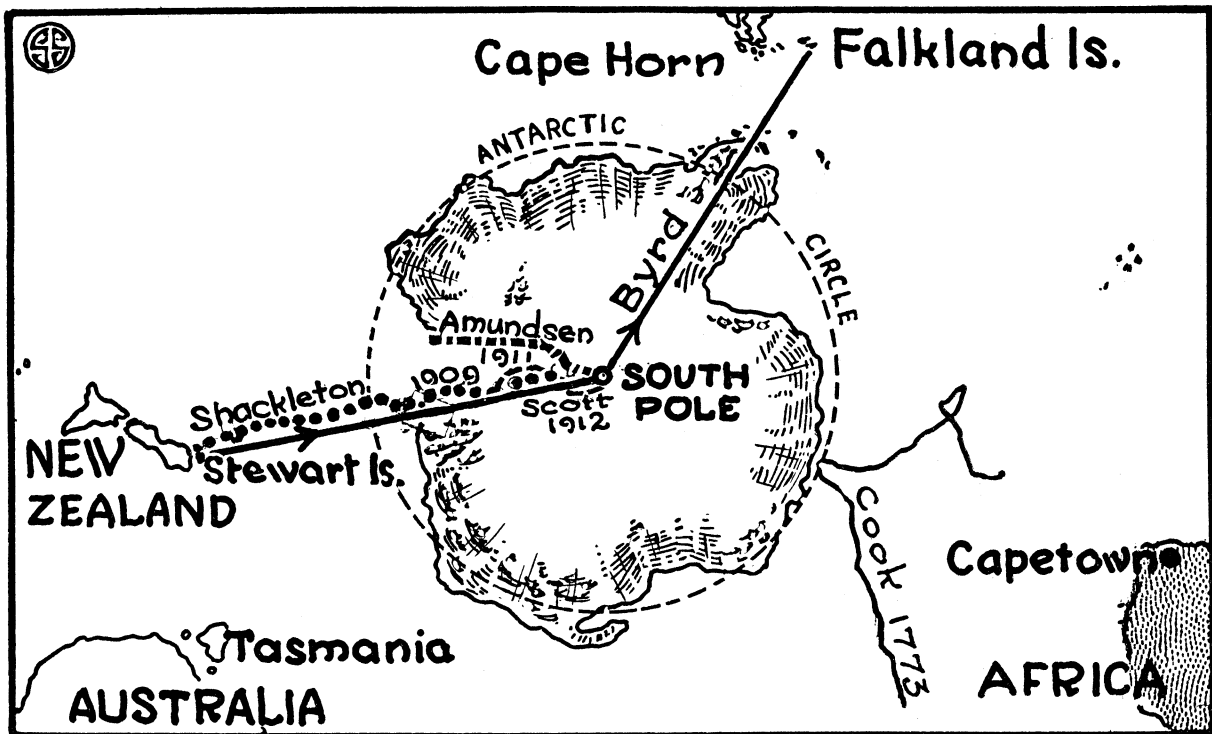
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ANTARCTICA, the land that Byrd and his flyers will penetrate. The route of the proposed expedition is shown by full line, while the dash lines show the routes of past Antarctic explorers. The distance from New Zealand to the South Pole is nearly 3,000 miles while the distance from the South Pole to the Falkland Islands is over 2,500 miles. On his flight from New York to France, Commander Byrd and his crew traveled over 3,500 miles. On the map the Antarctic circle is dotted. Byrd plans to lay down a base at Discovery Harbor, the place on the edge of the ice barrier at which other exploratory parties have had their headquarters.

To Explore Mystery Land

(Continued from page 146)

tical impossibility of getting them out will render them valueless.

Commander Byrd's announced plan is to make flights in several directions over the interior to select landing places where stations can be established. From these points land parties will be able to work with geologists' hammers. This, according to those familiar with Antarctic conditions, is the only feasible plan of exploration. The continent can be penetrated by dog team. Robert Falcon Scott, the English explorer who died on his way out after reaching the pole, went in with Manchurian ponies. But explorers using such means of transportation have no time for leisurely side trips. The best they can hope for is to get in and get out alive. All their energy is required for the mere task of living.

The land mass of Antarctica is comparable to that of continental Europe—approximately 3,500,000 square miles. This vast area of desolation and death, forming a jagged circle around the South Pole, can be divided roughly into three circular zones. First the explorer must cross the great ice barrier. This is a level but rough plain of ice, broken up by apparently bottomless chasms and swept by terrible

blizzards. In the past the greatest difficulty has been encountered in crossing this area. The floor of this ice barrier in some places is a thousand feet above sea level. It opposes to the stormy Antarctic ocean an almost unbroken circle of high black cliff lashed by angry water. The elevation of this ice barrier long baffled all attempts even to land on the continental mass, to say nothing of making a dash for the pole, and the earlier expeditions had to content themselves with landing on small islands eight or ten miles away.

Beyond the coastal plain rise the mountains. Icy peaks which probably never will be scaled by man push their heads into clouds at altitudes of from 15,000 to 20,000 feet. Between the peaks there are dangerous passes crossing the range at 10,000 feet, into which motionless glaciers are jammed. Over the mountains comes the high plateau, 9,500 feet above sea level, a fairly smooth plain in the center of which is located the southernmost point on earth. The elevation of the mountains which must be crossed offers the most serious handicap to the aviator who seeks to reach the pole and he must recognize the fact that if he ever comes down human help is extremely unlikely. Scott and his party

became stranded and died on the ice barrier itself, within a hundred miles of the expedition's headquarters on the coast, in the middle of summer, and only a year later was an expedition able to get through to recover their bodies.

It is fitting that American aviators should be the first to open up the great southern land mass, for two American sailors share, rather than dispute, the honor of its discovery. Unfortunately, neither of them was able to land on the shores, so the flags of Great Britain and Norway float undisputed over a continent. The mountain peaks of Antarctica probably were seen for the first time in the distance by Capt. Nathaniel P. Palmer, a Yankee whaler from Stonington, Conn., in 1820. Without much question he first landed on the archipelago just off the continental mass which now bears the name of Palmer land, and his reports of high, smoking peaks in the distance to the south indicate that he actually looked upon West Antarctica. Palmer was more than a whaler. He was a conscientious explorer and continually went out of his way to add to geographical knowledge.

His exploits, however, only recently have been revived and his fame rests largely on the unusual gener-

(Just turn the page)

To Explore Mystery Land

(Continued from page 151)

osity of the testimony of another explorer. After his discovery of Palmer land the whaler ran his ship into a sheltered cove of the South Shetlands, where about 20 other American and British craft were gathered. There he was met by Capt. Fabian Gottlieb von Bellinghausen of the Russian navy, leader of an organized exploring expedition into the southern seas, who had crossed the Antarctic circle six times and discovered the first land in the Antarctic ocean, Peter the First land and Alexander land, two rocky, insignificant islands. Palmer told the Russian of his discoveries and the latter gave generous credit to the American whaler in his reports to the Russian government. Palmer's standing as an explorer and the justice of his claim to the discovery of the world's seventh continent has been disputed and defended. On some maps his name is attached to a long strip of the continental coast and on others is left off altogether. His chief claim to fame is found in the journals of Bellinghausen.

The most generally recognized claim to the discovery of the Antarctic continent, or at least of East Antarctica, is that of Charles Wilkes, commander of the United States exploring expedition which sailed from Newport News in the autumn of 1838. This expedition was the first ambitious effort of the young republic to win a place for the Stars and Stripes in the annals of exploration somewhat comparable to that which had been achieved for Great Britain by the voyages of the celebrated Capt. James Cook. The expedition, financed by the government, was accompanied by the most distinguished American scientists of the day, including Richard Henry Dana, the geologist, and Asa Gray, the botanist. It sailed in five well-equipped ships, primarily for a voyage of discovery in the South Pacific, but also with orders to reach the most southerly point which had been reached by Cook a half century before.

Few expeditions have met with worse treatment at the hands of fortune. The results still are in dispute. Wilkes, then a naval lieutenant, was a man of little tact. He continually was quarelling with the scientific personnel who claimed that he treated them like enlisted men. Moreover, his ships had not been equipped for contact with the ice pack.

The expedition went south from

Sidney on December 26, 1839, in the midst of the Antarctic summer. Four of the ships took the voyage south, leaving most of the scientists at Sidney. On January 19, Lieut. Hudson, in command of one of the ships, reported land seen from the masthead. During the next four days all the ships reported seeing mountain peaks. Wilkes sailed for nearly a thousand miles along the ice barrier, seeking in vain for a place to land. There was no break in the black cliff. The squadron was buried in a dense fog and the ships tossed about by tempests. The sailors, in clothes intended for tropical waters, suffered intensely. There were frequent rumbles of rebellion below deck. Finally, on February 14, Wilkes went ashore on a small island eight miles from the coast and set up the American flag. The sailors gathered rocks and handfuls of gravel for souvenirs. Then the squadron sailed north.

Simultaneously a French exploring expedition under Captain Dumont D'Urville was in Antarctic waters. D'Urville sighted land a few days after the Americans. Both commanders charted the coastline and the Frenchman gave French names to large segments. For the rest of his life he consistently denied that Wilkes had been in a position on January 19 in which he could have sighted land.

Both men charted the coastline. Wilkes' chart was inaccurate in many respects and a few years later the British expedition under Sir James Clark Ross with two ships, the Erebus and Terror, sailed completely over some of the land indicated on the American map. Ross, indeed, sailed far into the great gulf now known as the Ross Sea which runs to within 800 miles of the pole. The British commander always denied the existence of an Antarctic continent at all and believed that the South Pole could be reached by ship.

It was not until 1900 that the first landing was made on the Antarctic continent by the British Southern Cross expedition. Ten years later the Norwegian, Amundsen, and the Englishman, Scott, reached the pole within a month of each other. Amundsen encountered pleasant weather and a comparatively easy route there and back. Scott, beset by every sort of misfortune, perished.

Since then Antarctic exploration has attracted no attention and Byrd's men will be the first to land there, it is likely, since the remnant of Scott's party sailed for England.

Science News-Letter, September 3, 1927

News-Letter Features

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The Egyptians made light boats out of papyrus.

Artificial silk conducts electricity as cotton does.

Columbus' voyage to America in 1492 required 69 days.

Pigs six feet high roamed in early prehistoric America.

One kind of bark beetle alone destroys over 15 million dollars' worth of timber in a year.