

EARTH SCIENCES HISTORY

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ALEKSANDR LAVRENT'YEVICH CHEKANOVSKIY,
PIONEER GEOLOGIST AND EXPLORER OF
NORTH CENTRAL SIBERIA, 1873-76

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ABSTRACT

Aleksandr Lavrent'yevich Chekanovskiy, a Pole by nationality, who had studied geology at the universities of Kiev and Derpt (Tartu, was exiled to Siberia for his participation in the uprisings in Kiev in 1863. Through the intercession of his colleague Friedrich Schmidt, his sentence to hard labour at Padun was repealed in 1868 and he was allowed to move to Irkutsk where he was employed by the Siberian Branch of the Russian Imperial Geographical Society. Over the next few years he carried out extremely valuable geological surveys in the areas around Irkutsk and Ozero Baykal. Probably his major contribution during this phase of his career in terms of paleobotany was the discovery of a new genus of gingkos, namely *Czekanowskia* Heer.

With the support of the Geographical Society Chekanovskiy next mounted two very important exploring expeditions which focussed on the enormous and largely unknown area of north East Siberia lying between the Yenisey and Lena Rivers. Apart from geographical exploration he and his colleagues also made extensive studies and assembled impressive geological, botanical, and entomological collections. On the first expedition, in the spring and summer of 1873, Chekanovskiy travelled the full length of the Nizhnaya Tunguska River by boat. On the second expedition, which lasted throughout the whole of 1874, he travelled down the Olenek by raft, then explored the lower reaches of the river valley by reindeer sledge. He returned to Irkutsk by sledge in winter. Immediately thereafter, in the spring of 1875, he mounted a private expedition, travelling the full length of the Lena by boat and returning to the mouth of the Olenek to complete his geological and botanical work in that area; he then again returned to Irkutsk in winter.

Shortly thereafter, in March 1876, Chekanovskiy's sentence of exile was repealed and he moved west to St. Petersburg. Apparently depressed by opposition to his plans for yet another northern expedition, to the basins of the Anabar and Khatanga, he committed suicide in October 1876. His vast contribution to the knowledge of the geography, geology, botany, entomology, and ethnography of this vast area of northern Siberia, assembled during a remarkably intensive series of expeditions, has been recognized, if only to a minor degree, by the commemoration of his name in that of the Kryazh Chekanovskogo, the range of hills west of the mouth of the Lena, which he explored.

LAUGE KOCH: PIONEER GEO-EXPLORER OF
GREENLAND'S FAR NORTH
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ABSTRACT

Lauge Koch, Danish explorer, geologist, and cartographer, became a legendary figure in his lifetime. He was also a very controversial one. For 50 years he was concerned with Greenland affairs, spending 33 summers and 6 winters in the far north, making a profound impact on Greenland geo-science. He was a pioneer in regional map-making and in the use of aircraft in photogrammetric surveys. Koch was a colourful personality of inter- national fame, a man of boundless energy, who-strangely as it may seem- perhaps made in his home country as many enemies as he had admirers.

Internationally, he is best known for his continuous work along the east coast between 1926 and 1958 as initiator and leader of expeditions that mapped the vast mountainous terrain of the East Greenland Caledonian fold belt. The results represent an outstanding do-ordinated effort of many international scientists. In contrast, Koch's earlier contribution, the topographical and geological mapping of northern Greenland from Baffin Bay to the Greenland Sea, is much more the work of one man. The results, accomplished primarily by dog-sledge and under particularly harsh conditions, are a mammoth achievement of regional map making unsurpassed in polar history, and one initiated long before the national commitment for regional mapping had taken shape.

FOLLOW THE NEEDLE: SEEKING THE
MAGNETIC POLES
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ABSTRACT

This article examines ideas about the Earth's magnetic poles up to the early 20th century. I first examine the quickening interest in Earth magnetism during the 16th and 17th centuries and lay out some parameters of discourse regarding the magnetic poles during the Scientific Revolution. Primary figures discussed include Robert Norman, William Gilbert, and Edmond Halley. I then discuss the efforts to understand the magnetic poles that came with the revival of interest in Earth magnetism in the 19th century. The central authors in this period were Christopher Hansteen, Carl Friedrich Gauss, and Edward Sabine. I omit most 20th-century events, as they are too extensive and require separate treatment. The discussion ends with Roald Amundsen and Douglas Mawson's empirical studies of the magnetic poles and the setting of the stage for 20th-century investigations.

FRIDTJOF NANSEN AND THE GEOLOGY OF THE ARCTIC

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ABSTRACT

Fridtjof Nansen, polar explorer, scientist, and humanitarian, worked on the geology of the Arctic for a period of almost forty years.

On his first major expedition-the first crossing of Greenland in 1888-questions regarding the nature and causes of ice ages were the central scientific concerns. On Nansen's second major expedition-the Fram expedition 1893-96-he studied the formation of the continental margins of the Arctic Ocean, and collected fossil faunas and floras from Franz Josef Land and Siberia. During the drift in the ice, Lt. Scott-Hansen on the Fram made pioneer measurements of gravity at sea.

In his geological works Nansen always addressed the fundamental issues. His main geological interests were in geomorphology (valley and fjord formation, formation of coastal platforms and continental margins), the theory of isostasy and the structure of the earth's crust, ice ages, and climatic changes.

Special attention is given to the intellectual context of Nansen's geological work. It is shown that Scandinavian geologists were the main scientific supporters of Nansen's expeditions, and that contemporary problems of geology featured large in the scientific rationale of his expeditions. Nansen's collaboration with the Scandinavian geologists H. Backstrom, W. Chr. Bragger, O. Boggild, A. M. Hansen, A. Helland, J. Kiter, A. G. Nathorst, A. E. Nordenskiöld, H. Rink, A. E. Tiirnebohm as well as the German J. F. Pompeckj is described in detail.

SOME RECORDS ABOUT THE ARCTIC IN EARLY CHINESE BOOKS

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ABSTRACT

A review of early Chinese writings has revealed several references to the Arctic. The oldest of these is Zhou bi suan jing from the second century B.C. The latest reference considered is from the early seventh century A.D. Among the characteristics of the Arctic known to the early Chinese were its high latitude with respect to the pole star, its cold climate and consequent dearth of vegetation, and its lengthy period of winter darkness. The existence of an Arctic Ocean was also recognized.

THE FIRST INTERNATIONAL POLAR YEAR (1882-1883)
AND INTERNATIONAL GEOPHYSICAL COOPERATION

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ABSTRACT

As a part of the historiography of individual scientific disciplines, the present paper provides a brief history of the development of Polar geophysics. Among important factors are expeditions and international cooperation (Magnetic Association of Göttingen; First International Polar Year, Berlin Atmospheric Programme, etc.). The history of observations and scientific expeditions is reviewed. The sources of data, beginning with the 18th century, as well as the scientists and institutions involved in these programs are noted.

THE DISCOVERY OF DIAMONDS IN SIBERIA AND
OTHER NORTHERN REGIONS: EXPLORATIONAL,
HISTORICAL, AND PERSONAL NOTES

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ABSTRACT

Only four known diamond locations are near and north of the Arctic Circle. What is believed to be the oldest diamond find in this region was made in the gravels of the Pasvik River on the U.S.S.R.-Finland-Norway border. This was followed by the discovery of the northern fields of the Yakutian diamondiferous province in the U.S.S.R. Somerset Island in the Canadian Arctic Archipelago and southwestern Greenland conclude this short list.

Geographically close to the Arctic but south of the Arctic Circle are the diamond locations on the shore of the Belye More or White Sea and in the Timan Range (U.S.S.R.), western and eastern Alaska (U.S.A.), and in the Mackenzie Mountains (Canada). Farther south and partly in the Subarctic are locations in the Ural Mountains and Yakutia (U.S.S.R.), as well as in Labrador and Saskatchewan (Canada).

While the discoveries in Canada and Greenland belong to our times, the history of the others is hidden in ancient records. For the Yakutian fields, which are of major economic importance and among the world leaders in the production of gem quality diamonds, an ancient reference dating back to 1375 is presented here for the first time.

THE EARLY EXPLORATION OF GREENLAND

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ABSTRACT

About 4000 years ago the first immigration of Inuit tribes explored Greenland, and about 1000 years ago the Norsemen explored southwest Greenland, and Icelandic sagas describe every-day life. The early search for the Northwest Passage years ago was followed by intensive whaling during 17th and 18th centuries. The connection between Greenland and Scandinavia was re-established by Hans Egede, who started his missionary and exploratory activity in 1721, whereafter polymaths from Denmark and other countries contributed to our scientific knowledge. Several attempts to reach the North Pole resulted in new information about the High Arctic Greenland, while local Inuit, such as Hans Hendrik, played an important role in several expeditions in the Arctic. The growing Danish and foreign scientific expeditions led to the Danish government establishing in 1878 the Commission for Scientific Research in Greenland, whose mandate was to coordinate such research.