THE DISTRIBUTION OF OIL AND NATURAL GAS DEPOSITS IN THE EARTH'S CRUST IN RELATION TO Pt, Ni, AND Cr MINERALIZATION ALONG GREAT CIRCLES[1]

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ABSTRACT

Breaks, probably situated in the deeper reaches of the crust or the upper mantle, and their extensions, seem to be the channelways which have been, and probably still are, used by mineral solutions for the ascent of metallic and non-metallic minerals to the earth's surface. The position of such deep seated channels or channel zones may be recognized by the study of jointing. Joints being straight and vertical when formed follow the course of great circles, even when apparently interrupted by the ocean basins.

A study of the distribution of single elements (in our case minerals of such elements) indicates their position along lines and zones forming portions of great circles. These lines have been described previously for the minerals of Pt, Ni, Sn and diamonds in Africa. This paper deals with Pt, Ni, Sn, and Cr deposits and the unexpectedly close structural association with hydrocarbons.

The NW and NE trending mineralized areas in North America and those of Europe and their mutual relations are described. The long belt of Pt, Ni and Cr mineralization which trends from South Africa along the whole continent up into Asia and which ends in Alaska is shown to carry these ore deposits as well as natural gas and oil.

In addition, similar observations are cited for the remaining southern continents of South America and Australia where the known deposits are again distributed along a common great circle zone which includes the oil and gas occurrences of the Baikal and the chromites of the Philippines.

In their intersection these three mineralization zones form a triangle with one right angle and two 45 degree angles albeit distorted (enlarged) due to the spherical nature of the feature. These angles (including their distortion) are well known from studies of jointing and should be regarded as genetically interrelated.

[1] Verbal presentation by Leslie W. Camp.

[2] Deceased July 1, 1974.

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MEMORIAL

It is with deep regret we note here the unexpected death of Dr. Nikolai Thamm in Johannesburg, South Africa, a few weeks after the Conference had been held in Salt Lake City, Utah. Dr. Thamm was a consulting geologist engaged primarily in the search for, and evaluation of, mineral deposits. Over a period of many years and with limited resaurces, Dr. Thamm devoted much time to the collection and synthesis of a remarkable amount of information on the occurrence and distribution of mineral deposits and to the study of systematic jointing and lineaments. His work is referred to by a number of the authors in the present volume. As a result of this work, Dr. Thamm recognized a system to the worldwide distribution of minerals, and further, the possibility that this distribution was controlled by the great systematic fractures or "joints" which penetrate the Earth's crust and lithosphere.

Dr. Thamm's paper, represented by the abstract in this volume, was his last and was completed shortly before his death. To a great extent it presents a synthesis of his views concerning the origin of mineral deposits. A review of some of Dr. Thamm's major contributions to the literature on jointing and mineral exploration shows a continuous and logical evolution of observation and thought toward the present summation, and one realizes that his conclusions here cannot be taken lightly. They may, in fact, point the way to a final solution of the origin of the great crustal lineaments and show how they have influenced the occurrence of mineral deposits of all types.

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