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INTRODUCTION

Peter Simon Pallas belongs to that brand of naturalists who advanced geological knowledge in the eighteenth century by precise descriptions of various kinds of rocks visible at the surface of the Earth. He traveled extensively between 1768 and 1774 through a large part of Russia but drew a geological map of the Ural Mountains only, giving symbols for rocks as well as for minerals in mining districts. In 1777 he was asked to give a talk at the Academy of Sciences at St. Petersburg in which he included his observations and a theory of the Earth. Today, his fame rests not on his precise geological observations but on the statement given in his theory of a central chain of primitive mountains (granite and schists) in the Urals, accompanied on both sides by limestone mountains, and finally by layers of marls, sandstones, and clays.

Pallas' contemporary, H.-B. de Saussure's, carefully analysed both Pallas' theory as well as his geological observations, being well aware that those observations served as basis for his theory (see Chapter IV). However, today, Pallas' geological observations are forgotten and his once famous theory "On the nature of mountains and on changes that have occurred on the globe" (first published in French by the Academy of Sciences of St. Petersburg in 1777) is generally cited by historians in a few lines. Only Arthur Stössner presented in his doctoral thesis (1900) a thorough investigation of all of Pallas' geological investigations rather than describing merely Pallas' theory of the Earth. However an analysis of Pallas' geology of the Urals is missing (see Chapter V). Folkwart Wendland (1986) gave a detailed account of Pallas' German theory published in 1778 to which he added a biography and some comments on Pallas' geological interpretations (Chapter V). Nevertheless, though Wendland noticed that Pallas made a distinction between the eastern and western side of the Urals, he treated Pallas' geological knowledge of these mountains according to their classification into mountains of first, second, and third order, giving neither a hint about the locations where Pallas found these various rocks nor how they fit into the modern interpretation of the Ural Mountains.

This paper includes first a translation of Pallas' German theory of 1778 which has not been published in English. It remains a marvelous and very readable piece of eighteenth-century scholarship. Pallas gave not only a description of the nature of mountains and possible reasons for the great changes that have occurred on Earth, but he also talked about the origin of the black race; the first settlements of humans; their first civilization; the various climates of Siberia; the animals and plants native to Central Asia; the belief that the natives of Tibet were the descendants of apes;

and the many recorded floods of the Neva at St. Petersburg. These ideas, often unrelated to geology, are mostly in footnotes some of which were omitted in the French edition of 1777.

Pallas wrote a German edition a year later perhaps because the felt that the French paper was not entirely representative of his own ideas. Read in French at the Academy of St. Petersburg for a guest of distinction (the King of Sweden), Pallas' talk was actually meant to show the European scientific public what the Academy of Sciences at St. Petersburg was capable of doing. Those who have read the St. Petersburg version, or any later French version, are missing the original thoughts of Pallas because many views in the French edition differ from the German and are at times even contradictory. We believe therefore, that a faithful translation of Pallas' German essay of 1778, including all his footnotes, would please those readers who are not conversant in that language, and perhaps also those who have never read Pallas at all.

Second, we are giving here an explanation of Pallas' description of geological features as he recorded them during his 1768-1774 expedition and drew them on his map. On the basis of a reconstruction of this map, these observations are compared with the modern geology of the Urals as well as with his theory of 1778. With this reevaluation of Pallas' contribution, we are hoping to fill one more gap in the history of geology of the eighteenth century.

With respect to footnotes and pagination, either by Pallas or the translators, the following standards were adopted: Pallas' footnotes are given at the end of his theory (Chapter III). Pallas' original pagination and footnote numbers are given in parentheses both in the theory and in Pallas' footnotes (plain text). Our footnotes and references are marked by superscript numbers (bold) in the translation. They include bibliographical references, explanations about some of Pallas' terms, and clarifications of Pallas' geological observations; they point also to discrepancies between the French and the German text. Minor complementary information by the authors is in square brackets. References follow all chapters with the exception of III and VIII; Pallas' publications follow a short biography in chapter I. The spelling of Russian rivers and cities has been modernized with the exception of names not found on any modern map.

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