GEOLOGICAL WORK IN THE LENA-YENISEY AREA, 1918–40

[Review of *Istoriya geologicheskogo issledovaniya Sibiri. Period pyaty* (1918–40). *Vypusk V. Sibirskaya platforma, Taymyrski Kray i Vostochny Sayan* (*History of the geological exploration of Siberia. Fifth period* (1918–40). *No. 5. Siberian platform, Taymyrski Kray and Vostochny Sayan*), by V. A. Obruchev. Moscow, Leningrad: Izdatel'stvo Akademii Nauk SSSR (Publishing House of the Academy of Sciences of the U.S.S.R.), 1945, 126 pp., 26 cm. Price 11 roubles.]

Anyone who wants to get a clear idea of the enormous amount of geological work that has been done recently in central Siberia will find this volume a most valuable, indeed essential, aid. It is the fifth of a series of nine parts, together comprising the fifth and last section of the whole work *Istoriya geologicheskogo issledovaniya Sibiri* [*History of the geological exploration of Siberia*] which sets out to list and summarise all published literature on the subject. Earlier parts of the work have been published at intervals over a number of years. The author of this vast undertaking, Academician V. A. Obruchev, is a distinguished Soviet geologist. His own work on the geology of Siberia was started some 60 years ago, and he is now head of the geological and geographical section of the Academy of Sciences.

The material in the present book is arranged by regions within the confines given in its title. The whole area is, very roughly, that part of the U.S.S.R. lying between the rivers Yenisey and Lena. Of the five regions into which this area is subdivided, three are Arctic or sub-Arctic: Taymyrski Kray, with which is included the Yenisey-Khatanga depression, Severnaya Zemlya and all islands off the coast; the western half of the Siberian platform; and the eastern half. The author takes each region in turn and gives in chronological order the essence of any paper or expedition results concerning that region. Each of these short summaries is followed by a number which refers to an entry in the bibliography at the end of the book. Thus the reader is provided with both a picture of how the corpus of knowledge was built up and an alphabetically arranged bibliography, by regions, of 925 items expertly annotated.

A relevant question is that of the likelihood of being able to locate these references in this country. An examination of the bibliography shows how widely the literature is scattered among different publications. The section on Taymyrski Kray and the adjoining territory has almost the smallest bibliography, but its ninety odd entries are distributed over twenty-eight different periodicals and books. In the case of this region, as it happens, over half the entries are to be found in publications of the Arctic Institute, and sets of these, though generally imperfect, are available. It is likely that as many as four-fifths of the total number of references could be found in British libraries (though certainly not all in any one library). In the other sections the distribution of literature is wider because no one body has had as large a share in the work to be done as has the Arctic Institute in the northern region. The 175 entries in the section on the eastern half of the Siberian platform are taken from fifty-four periodicals and twenty-five books. As far as the periodicals are concerned it is probable that about 60 per cent of the references could be found.

The period 1918–40 is that which is best covered by holdings of Russian periodicals in this country. For the future, however, the outlook may not be so good. In June 1947 a Decree of the Council of Ministers of the U.S.S.R. classified as a state secret "geological reserves and production of non-ferrous and rare metals and rare earths". It is sincerely to be hoped that this will not be interpreted too ruthlessly. It would be a very great pity if the exchange of information, built up between the wars and at last reaching a point at which really useful quantities of material are available, were to be abruptly stopped.

TERENCE ARMSTRONG

RECENT SOVIET RESEARCH ON PERMANENTLY FROZEN SOIL

[Based on papers in *Trudy Instituta Merzlotovedeniya im. V. A. Obrucheva* (*Transactions of the V. A. Obruchev Institute for the Study of Permanently Frozen Soil*) (Moscow, Leningrad), Tom 5, 1947.]

A start has been made in the U.S.S.R. in applying electrical prospecting methods to the study of permanently frozen soil—particularly with the object of determining the thickness of the upper thawed (or "active") layer and of the permanently frozen layer beneath it. The Geophysical section of the V. A. Obruchev Institute for the Study of Permanently Frozen Soil [*Institut Merzlotovedeniya im. V. A. Obrucheva*] carried out a certain amount of experimental work on this subject in the years immediately preceding the war, and a recent issue of the Institute's *Transactions* contains a number of papers which give the results of this work.

There are broadly speaking two principal ways in which electrical methods can be used for prospecting: conductivity methods, which the Russians call "electrometry", and electro-magnetic methods, which they call "ondometry". The problem is to apply these methods to permanently frozen soil.

B. S. Enenshteyn contributes two papers on "electrometry". In one he studies the conductivity of permanently frozen soil and surveys his own experimental work of 1935–40 carried out in various parts of the permanently frozen soil zones. His results show that the method he used—the Schlumberger direct current method—is applicable to permanently frozen soil, since the latter is a sufficient conductor; but it will only work under certain conditions. The temperature of the frozen layer must be roughly between $-1°$ and $-5°$ C.—lower temperatures render the system useless; and such factors as lenses of ice within the frozen layer or the presence of frozen sea water disturb the results. Enenshteyn obtained reasonably accurate readings of the thickness of the upper thawed layer up to about 20 m. and the frozen layer up to about 100 m., when working under good conditions.

In the other paper Enenshteyn writes of his measurements of earth currents in the thawed layer and concludes that they must emanate from the boundary between thawed and frozen layers. This then may be another possible method of determining the depth of the dividing line.

Results of work on electro-magnetic methods are also contributed. A. A. Petrovsky, head of the Geophysical Section of the Institute, together with