

A possible reason for this action is contained in “. . . no pedological classification of soils covering the whole of northern Borneo is generally available”. Nevertheless there is plenty of basic information, necessary for an engineering-pedology approach, available on tropical soils including E. C. J. MOHR's monumental “*Soils of Equatorial Regions*” translated by R. L. Pendleton, 1944; “*Tropical Soils*” by E. C. J. MOHR and F. A. VAN BAREN, 1959, and J. Thorpe's work on China soils and, in particular, the podsollic Sājong soils.

There is no shame in engineers borrowing other disciplines to assist their understanding. Indeed, as life is so short and funds for research and development are rapidly running out, it is an essential step in the search for truth. The predictive approach based on bits and pieces of information sewn together with intelligence, was probably first used by the same Pendleton, of the U.S. Geological Survey, when serving with the Military Geological Section of the U.S. Corps of Engineers, during the war and used to assist in the design of equipment for Pacific landings and in the preplanning necessary for the rapid construction of roads and runways.

The paper is well written and presented. It contains most valuable data, including mineralogical data, on the soils of northern Borneo and will be of great service to all engineers, contractors and students interested in that area. A special word of praise is earned for the inclusion of so many simple little observations, based on long experience, which, if forgotten when an engineer is transferred, or ignored by the enthusiastic junior yet to learn that experience must accompany learning, may result in the waste— even the repeated waste— of not inconsiderable sums of public money. To give one example: “Experience has shown that when decomposing rocks are used as base material beneath bitumen surfacing the rocks may disintegrate into a clayey sand causing failure of the road within a year or two. This occurs when there is a high proportion of secondary clay minerals within the rock although it may appear to be sound”.

It is of value to record that the Tropical Section is now in a position not only to advise the governments of developing countries in tropical and subtropical regions in problems of road planning and road building but is also able to offer similar facilities to consultants, contractors and others interested in such problems.

F. L. D. WOOLTORTON (Loxwood)

Marble in Israel. A. SHADMON. Ministry of Development, State of Israel, Jerusalem, 1965, 56 pp., 36 fig., 2 tables.

The booklet *Marble in Israel* is announced to be the first in a series of reports on the mineral building commodities of Israel, which series will summarize the information available on the subject at the Quarries Section of the Israel Geological Survey and the Office of the Controller of Mines.

Shadman has brought together geological, technical and commercial information on the marble industry, particularly to make this available to the building industry. To that end also the wide definition of marble as any calcareous rock capable of taking a polish, has been adopted. In fact, Israel marbles are generally of a non-metamorphic nature.

About half of the publication is taken up by a geographical survey of the quarries, presenting the exact location of each, ownership, brief geological information, main properties of the quarried rock and some production details. In the remainder of the book subjects like qualities of Israel marble, technical tests, quarrying methods, drilling methods, the wiresaw, quarry development, fabrication and marketing are briefly treated.

A.A.M.

TRANSLATIONS FROM RUSSIAN

It is generally known that in fact today there are only two major scientific languages, Russian and English. In each of these two languages about one-third of the total world literature in geo-sciences is being published, all other languages together making up for the remaining one-third.

Given this fact, it is most remarkable to note that there is only a very limited exchange of data and ideas between the two major language areas. English-speaking geo-scientists list mainly references to other English-language publications in the bibliographies of their own publications, whereas the least frequent source is to the Russian literature. Authors from the U.S.S.R. demonstrate the reverse situation, with generally 75% or more of their references from Russian sources. Geo-scientists in the French and German language areas show a preference for literature published in their own country, no doubt because of familiarity with the language and ease of access, but take, in addition to this, also note of part of their professional literature issued in English. More information about the language problem in earth sciences can be found in papers by GROSS and WOODFORD (1931), TERRY and CHILINGAR (1956), EMERY and MARTIN (1961), MANTEN and VAN DILST (1965).

The conclusion from the above assertion is that science is proceeding in each major language area to a varying degree independently of progress in other language areas, and in particular, this is true for science in the Eastern and Western World. This is a method which is extremely wasteful of manpower, facilities, and time, although it does provide independent confirmation of ideas and techniques (EMERY and MARTIN, 1961, p.20). Moreover, it implies that also the approach to the subject of study in these two parts of the world and the manner of presenting results and ideas are often different, with the consequence that those who make

the effort of studying what is published in the other main language area are faced with more difficulties than only that of language in properly understanding these publications.

One of the solutions to assist in overcoming this important problem in scientific intercommunication, and one increasingly resorted to, is the translation of publications issued in languages to which scientists in their own country are least familiar. In engineering geology, the publishing company, working under the name of Consultants Bureau, has greatly contributed during the last decade in making such most necessary translations from the Russian into English. The following ten of them were recently sent to *Engineering Geology* for review:

- D. P. MALYUGA, 1964. *Biogeochemical Methods of Prospecting*. Consultants Bureau, New York, 205 pp. (Original Russian text published in 1963.)
- N. V. GLAZOV and A. N. GLAZOV, 1959. *New Instruments and Methods of Engineering Geology*. Consultants Bureau, New York, 91 pp. (Original Russian text published in 1957.)
- I. V. POPOV and F. V. KOTLOV (Editors), 1963. *The Stability of Slopes*. Consultants Bureau, New York, 83 pp. (Original Russian text published in 1961.)
- M. I. SHVIDLER, 1964. *Filtration Flows in Heterogeneous Media (A Statistical Approach)*. Consultants Bureau, New York, 104 pp. (Original Russian text published in 1963.)
- K. F. ZHIGACH (Editor), 1963. *Industrial and Exploratory Geophysical Prospecting*. Consultants Bureau, New York, 136 pp. (Original Russian text published in 1960.)
- N. I. TITKOV, A. S. KORZHUEV, V. G. SMOLYANINOV, V. A. NIKISHIN and A. YA. NERETINA, 1961. *Electrochemical Induration of Weak Rocks*. Consultants Bureau New York, 51 pp. (Original Russian text published in 1959.)
- B. A. NIKOLAEV, 1962. *Pile Driving by Electroosmosis*. Consultants Bureau, New York, 62 pp. (Original Russian text published in 1960.)
- B. M. GUMENSKII and N. S. KOMAROV, 1961. *Soil Drilling by Vibration*. Consultants Bureau, New York, 80 pp. (Original Russian text published in 1959.)
- A. P. OSTROVSKII, 1962. *Deep-hole Drilling with Explosives*. Consultants Bureau, New York, 133 pp. (Original Russian text published in 1960.)
- S. V. MEDVEDEV (Editor), 1963. *Problems of Engineering Seismology*. Consultants Bureau, New York, 112 pp. (Original Russian text published in 1962.)

The contents of each of these books need not be described, the titles being self-explanatory.

Although the quality of the translations is varying and not particularly good in some cases, the problem of language itself can be overcome as far as the above publications are concerned.

The readers of the translations, however, are still faced with surmounting by themselves the above-stipulated difficulties in understanding the approach and the

presentation of information, which are mainly the result of the existence of a language barrier and the problem of psychological translating, which implies that one sees through the translation to the intentions originally presented by the authors.

Is it for this reason that many Western geo-scientists do not even read English translations of Russian publications, or only do so occasionally? I do not know how the translated books of Consultants Bureau sell, but from other sources I have information that translations from the Russian reach, on the average, much lower sales figures than comparable books by Western authors. This strengthens the belief that also a dose of love of ease plays a part in the selection of literature which a scientist reads.

This is an unhealthy situation. The amount of engineering-geological work going on in the U.S.S.R. is impressive. The books listed above contain several ideas and data not found in current Western literature. It is true, that case histories deal with localities unfamiliar to most of the Western readers, but on the other hand this just supplements their own experience.

An analysis of the references which authors give offers a good impression of the literature which they used in their own work (MANTEN and VAN DILST, 1965). Although in some instances one has to guess in what language the authors of the translated books have read a specific paper, Table I gives a fair impression of the distribution over the main scientific languages of the literature which the Soviet authors consulted.

The average percentages for the ten books together show that these books are based, to a major extent, on other Soviet publications and consequently give

TABLE I

LANGUAGE DISTRIBUTION OF LITERATURE CONSULTED BY SOVIET GEO-SCIENTISTS

<i>Book</i>	<i>Language of references</i>					<i>Total references</i>
	<i>Russian</i>	<i>English</i>	<i>German</i>	<i>French</i>	<i>Other</i>	
Glazow and Glazow	34	8	1	—	—	43
Gumenskii and Komarov	91	5	4	1	1	102
Malyuga	257	85	14	4	15	375
Medvedev	86	1	—	—	—	87
Nikolaev	15	3	—	—	—	18
Ostrovskii	55	9	3	—	—	67
Popov and Kotlow	97	2	1	—	1	101
Shvidler	28	3	—	—	—	31
Titkov et al.	2	—	3	—	—	5
Zhigach	118	26	—	1	—	145
Total	783	142	26	6	17	974
Percentages	80.38	14.58	2.67	0.62	1.75	100

a key to what is done in that part of the world. This should make them very valuable literature for Western scientists.

The percentages also illustrate, once again, the extent of the language problem. Even if one takes into account that of the papers read in Russian, some (roughly 2% of the total) are translations of work originally published in English; more than three-fourths of the literature seen by even prominent Soviet workers originates from their own language area. Almost the entire way in which they still obtain a partial knowledge of research work and results in the West is through the English language.

For those interested in keeping up with international developments in the earth sciences, the large amount of literature appearing in a less accessible language creates a problem. It should be considered from both sides what steps are necessary to ensure better knowledge of substantial contributions that appear in the other language area, and, even more, what steps can be made towards a closer understanding and cooperation in general.

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