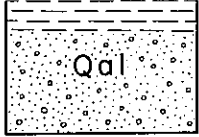
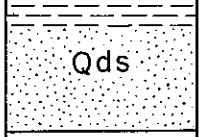
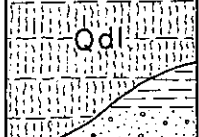
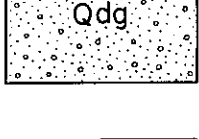
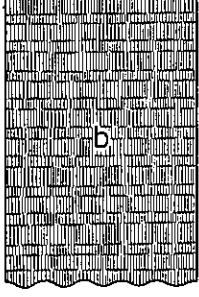
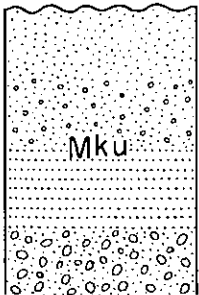


GEOLOGIC COLUMN AND UNIT DESCRIPTIONS

AGE	ROCK UNIT	LITHOLOGY; THICKNESS WHERE KNOWN	UNIT DESCRIPTION	ECONOMIC VALUE	REFERENCES
CENOZOIC	Alluvium	 <i>Sand, gravel, clay and mud; thickness 5 to 10 m</i>	Alluvium, consisting of sand, gravel, clay, and mud, is 5 to 10 m thick. It is the recent deposits along rivers. Swamps and playas scattered in the semi-desert areas are filled with mud.		<p>Geological Institute, South Manchuria Railway Co., 1938, Geological map of Manchuria, scale 1:1,000,000.</p> <p>HARAGUCHI, Kuman, 1938, Report on the projected reservoir sites of the Liao Ho (遼河): Manchoukuo Geol. Inst. Bull., no. 96</p> <p>HATA, Jūkichi, 1927, Explanatory text to the geological map of Kung-chu-ling (公主嶺): Geol. Inst., S. Manchuria Ry. Co.</p> <p>KATAYAMA, Ryōhei, 1914-1917, Reports on the mineral resources in East Mongolia, v. 4 of Survey report on Eastern Inner Mongolia: Temporary Econ. Inv. Bur., Japan Ministry of Agriculture and Commerce.</p> <p>OGURA, Tsutomu, 1940, The Chi-hsing (十里) volcanoes and Lung-kang (龍崗) volcanoes: Geol. Soc. Manchuria Jour., no. 1.</p> <p>SAITŌ, Rinji, 1938, A geological view on the Chuantou formation: Manchoukuo Inst. Sci. Research Bull., v. 2, no. 3.</p> <p>_____, compiler, 1940, Geological map of Manchuria and adjacent areas, scale 1:3,000,000: Manchoukuo Geol. Inst.</p> <p>SHIKAMA, Tokio, 1954, The Quaternary period of Manchuria, in Geology and Mineral Resources of the Far East, Manchuria, III-10, Stratigraphy: Comp. Comm. Geology and Mineral Res. Far East, Tokyo Geog. Soc.</p> <p>YABE, Shigeru, 1924-1925, Geology of the eastern parts of Inner and Outer Mongolia (with a geological map at scale 1:500,000): S. Manchuria Ry. Co.</p>
		 <i>Aeolian sand and mud; thickness 10 to 20 m</i>	Qds consists of aeolian sand and silt blown into lacustrine basins which later, upon emergence, were wind-eroded and turned to desert lands. It constitutes the uppermost part of Diluvium, and is 10 to 20 m in thickness. The dune sand now drifts from west to east owing to the prevailing westerly winds.		
	Diluvium	 <i>Sandy loess and clay; thickness less than 100 m</i>	Qdl consists of interstratified sandy loess and lacustrine clay, and may attain a maximum thickness of 100 m. Gravel is found locally near the bottom. Qdl is the principal body of the Mongolian Quaternary.		
		 <i>Sand and gravel, with clay; thickness 30 m or more</i>	Qdg consists chiefly of sand and gravel, with clay. The thickness may be more than 30 m. It has a fluvial phase which predominates in the plains of northern Manchurian. It may be a heterotopic facies of Qdl.		
	Quaternary? basalt	 <i>Basalt and trachybasalt</i>	Basalt is exposed as isolated lava domes at six localities in and around the Liao-yuan [遼源] district. Its age of eruption is not known definitely, although T. OGURA (1940) considered it to be latest Diluvium. It consists of fine- to coarse-grained basalt and trachybasalt. The principal rock-forming minerals are plagioclase, olivine and titan-augite, and minor constituents are alkali-feldspar, aegirine-augite, biotite, iron grains, apatite, leonite, micaceous ilmenite, megascopic picotite, analcite, leucite, sagenite, and glass. An average of 8 analyses of samples from these domes was given by OGURA as follows (% ratio):- SiO ₂ , 45.10; TiO ₂ , 2.04; Al ₂ O ₃ , 14.65; Fe ₂ O ₃ , 2.30; FeO, 10.07; MnO, 0.18; MgO, 9.16; CaO, 9.30; Na ₂ O, 3.55; K ₂ O, 1.77; P ₂ O ₅ , 0.58; H ₂ O, 1.30.	<p>Basalt of the Liao-yuan district has been quarried as railway ballast. It is an important source for railway construction works in this semi-desert territory.</p>	
~~~~~Unconformity~~~~~					
MESOZOIC	Chuantou formation	 <i>Sand, gravel, sandstone and conglomerate; thickness less than 100 m</i>	The Upper Cretaceous formation, or the so-called Chuantou formation( 泉 統 層 ), is exposed in the southeastern corner of the map area. No data are available regarding the succession of the Chuantou formation within the map area. However, the formation near Chuan-tou, east of the map area, was studied by R. SAITŌ (1938) who listed the succession in descending order as follows: Sand and gravel, interstratified +70 m Sandstone, false-bedding 20 m Conglomerate, with rhyolite pebbles 0.5 m		
	(Column not drawn) to scale				