GEOLOGIC COLUMN AND UNIT DESCRIPTION

AGE	ROCK UNIT	LITHOLOGY; THICKNESS WHERE KNOWN	UNIT DESCRIPTION
QUATERNARY	Alluvium	Loess, sand, gravel and clay; thickness less than 15 meters	Alluvium, consisting of loess, sand, gravel and clay, covers low terraces and flood plains.
	UNCONFORMITY		
TERTIARY	Neogene basalt	Olivine basalt and tuffaceous sand; thickness 50 m to 300 m	The Neogene basalt consists chiefly of flows of olivine basalt intercalated with tuffaceous sand. The thickness ranges from 50 m to 300 m. The basalt occurs as the cap rock of the Ta-hsing-an-ling mountain range. It may have overflowed the Mongolian peneplain which probably was formed by the end of the Paleogene epoch. The rock is either compact or has an amygdaloidal structure.
	EFFUSIVE CONTACT		
MESOZOIC	Andesite	Hornblende andesite; thickness 100 m to 200 m	Andesite consists chiefly of flows of hornblende andesite with a minor amount of glassy andesite. It is exposed predominantly in the lower and middle reaches of the Kuei-liu Ho[歸 流 河]and also in the drainage basin of the Tao-erh Ho [洮 爾 河]. The age of its eruption is believed to be somewhat younger than the rhyolite (rh). The thickness ranges from 100 m to 200 m.
	Rhyolite	Rhyolite, trachyandesite, tuff and breccia; thickness less than 1,000 m	Rhyolite, consisting of flows of rhyolite and trachyandesite, intercalated with breccia and tuff, constitutes the main body of the Ta-hsing-an-ling mountain range. The thickness is estimated at less than 1,000 m.
	EFFUSIVE CONTACT		
	Quartz porphyry	Quartz porphyry, granite porphyry and diorite porphyry	Quartz porphyry occurs as stocks and laccoliths, associated with granite porphyry and diorite porphyry. It may be a marginal facies of the Cretaceous granite (g_3).
	Cretaceous granite	Hornblende-biotite granite, syenite and pegmatite	The Cretaceous granite consists of medium- to coarse-grained hornblende-biotite granite, syenite and various kinds of pegmatite, and is marked with tabular joints. It may be a marginal facies of the so-called Mongolian batholith.
	INTRUSIVE CONTACT		
	Jurassic volcanic complex	Propylite, diabase porphyrite, breccia, tuff and tuffaceous rock; thickness unknown	The Jurassic volcanic complex consists chiefly of dark-greenish propylite, diabase porphyrite, and breccia, associated with tuff and tuffaceous sediments. The age of the volcanic activity may range from Latest Triassic to Early Jurassic.
	UNCONFORMITY		
PALEOZOIC	Solun formation	Slate, schalstein, sandstone, quartzite, graywacke, schist, hornfels, shale and limestone; thickness unknown	The Solun formation is composed of marine and brackish-water deposits. It consists of siliceous slate, schalstein, sandstone, quartzite and graywacke, locally accompanied by such metamorphics as schist, hornfels, spotted shale and crystalline limestone. The formation makes the bedrock of the map area, and is generally covered by various volcanic rocks of Mesozoic age. Outcrops are found in the districts of Ma-an-t'un[馬 鞍 屯], Chaganchorotō, Ta-shih-chai[大 石 寨], Nerigancha, Erh-shih-chia-tzu[二 十 家 子] and So-lun [索 倫]. Fossil shells, collected by Torao HATCHŌ (1926) from a sandstone on the hill northwest of So-lun, were determined by Teiichi KOBAYASHI (1931) as follows: Aviculopecten khinganensis Kobayashi, Deltopecten sp., Crenipecten soronensis Kobayashi, Pleurotomaria Yabeshigerui Kobayashi. KOBAYASHI correlated them with the Permo-Carboniferous fauna. Naiads collected by Li-hsü CHANG (1941) from the formation north of So-lun were determined by KOBAYASHI and Sadataka HISAKOSHI as follows: Carbonicola(?) khinganensis Kobayashi & Hisakoshi, C.(?) soronensis Kobayashi & Hisakoshi, Palaeomutela chohi Kobayashi & Hisakoshi, P. hahaiensis Kobayashi & Hisakoshi, P. subrectangularis Kobayashi & Hisakoshi, Palaeonodonta cfr. longissima (Netschejew).

(Column not drawn to scale)

REFERENCES

CHANG, Li-hsü, 1941, A few fossil localities of the Solun formation: Geol. Soc. Japan Jour., v. 48, no. 574.

HATCHŌ, Torao, 1926, Geology and mineral resources along the route Tao-nan -- Cha-lai-no-erh -- Man-chou-li: Unpub. rept., Geol. Inst., S. Manchuria Ry. Co.

KOBAYASHI, Teiichi, 1931, Upper Paleozoic shells of So-lun in the Great Khingan Range: Jap. Jour. Geology and Geography, v. 8, no. 4.

_____ 1950, The Mammo group in central and northern Manchuria, and its geological relation to the neighbouring areas, in Geology and mineral resources of the Far East, Manchuria, III-7: Comp. Comm. Geology and Mineral Res. Far East, Tokyo Geog. Soc.

OKADA, Shigemitsu, 1955, Iron zone along the eastern margin of the Ta-hsing-an-ling, in Geologic activity in post-war Manchuria: Unpub. rept.

OZAKI, Hiroshi, 1938, Reconnaissance report on the route Tao-nan -- A-erh-shan hot spring: Unpub. rept., Geol. Inst., S. Manchuria Ry. Co.

SAITŌ, Rinji, compiler, 1940, Geological map of Manchuria and adjacent areas, scale 1:3,000,000: Manchoukuo Geol. Inst.