石英緑泥片岩
帯青灰色白色を呈し片理明ナリトテテ石英ハ大ナ普通ノ一粒ノ厚薄状が星

上部古生層

(1) 角岩ナ主スル岩層

二  上部古生層

上部古生層ハ絵画岩層及気変成岩ヨリ成ガ
(二) 顕家変成岩

雲母片麻岩は、黒雲母片麻岩や媒核を含む磁磁石を伴う。長石及び黒雲母を持った-saving石灰岩から変成した。
石英、長石、普通一等以内は新鮮な流動型の流動性が光を示すもので、球状を形成する。長石は、粘土状の土壌を形成し、石英は、白い、透明な水晶である。
四 古更新層

古更新層は、上部古生層花崗岩群等、中期岩石の形成が山地の山麓部に続いたと考えられる。

震災及び石棺群を含む灰色及び黄色色の斑結物、孵化の普通千層や深層の石灰岩及び泥岩が、存在する。

灰色及び黄色色の斑結物を含む花崗岩、孵化の普通千層や深層の石灰岩及び泥岩が、存在する。

孵化の普通千層や深層の石灰岩及び泥岩が、存在する。

孵化の普通千層や深層の石灰岩及び泥岩が、存在する。
このページは日本語の文書です。文書の内容は科学的な記述と見えるが、詳細な解釈が必要のように思われます。
板状昆布類

半花崗岩及びベガマタイト

岩種 | 白色昆布 | 粗粒・中粒 | ノス | 石英 | 正長石 | 微斜長石 | 白雲母 | 拡大
--- | --- | --- | --- | --- | --- | --- | --- | ---
主成分 | 太大 | 六至 | 六至 | 六至 | 六至 | 六至 | 六至 | 六至

半花崗岩の変成は、剪状裂隙を有し、片状石英と正長石を主体とした変成がみられる。
十一 英雲関縁岩

岩石 中・黑色・灰色細粒マナット ス
主成分 貴長石 夕 PK松石 黒雲母 石英

十二 片状英雲関縁岩

岩石 一灰色 呈中粒 ナンテ片理顕著ナット ス
主成分 貴長石 夕 PK松石 黒雲母 岩石

【本文の内容を翻訳または要約することができますが、それが要求されたものではありまらない。】
十七、火成岩・相互関係

火成岩は、地殻内に生成された岩石の総称で、主に火成作用によって形成される。火成岩の種類は多岐にわたり、その形成条件や成分により大きく分けられる。

火成岩の一種である、玄武岩や安山岩などは、地殻内の岩石が冷却した際に生成される。これらの岩石は、地殻内の圧力や温度の変化によって形成され、地殻の内部構造や地殻の構造を反映している。

火成岩は、地殻内の冷却速度によっても変化する。冷却速度が速いと、岩石は粒状に形成されるのに対し、冷却速度が遅いと、岩石は流体状に形成される。このような性質を利用する地質学的な手法として、地殻内の冷却速度を推定することが可能です。

火成岩は、地殻内での岩石の形成と、地殻内の冷却速度の変化を反映している。これらの性質を理解することは、地殻内の構造や地殻の変化を解明するための重要な手がかりとなる。
二賦

【賦土】

領土ヲヒシテ新更新層ニ択在スル粘土ニシテ局ナルハハ新野新川

■瓦焼製セヲ副業ニスルモノアリ

新更新層ニ択在スルモノハ碧海郡及び幡豆郡ニフリヲタケ分布シ数箇箇処ニ於テ

推考セラル粘土ハ厚さヲ三〇三〇米乃至ニ四米ニ間ニ於テヲ琵琶湖ヲ巡ル

■上飯島ヲ下飯島ニ至テニシテ一定セシ粘土ヲ賦存区域ニハ碧海郡明治村根崎

及殿町ヲ近ニヨリ北三尋ニ高橋町ニ瓦圏地域ニ粘土ヲ採取ノ

■八〇〇頃全土之ハ粘土ノ厚さヲ五米ニ下リシトス又谷口町ヲ近ニ粘土ノ厚さヲ五米ニ

及殿町ヲ近ニヨリ北三尋ニ高橋町ニ瓦圏地域ニ粘土ヲ採取ノ

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石材

三重県の八名郡石川村にある石材は、山の表面近くに産出されている。

石材は、外観が美しいとされている。

石材は、加工が簡単で、堅牢な特性を持っている。

石材は、建設に最適で、様々な建築に使われている。

石材は、美術品としても評価されている。

石材は、自然に形成された形状のため、工芸品としても人気がある。

石材は、長持ちし、耐久性があるため、外壁材として用いられる。

石材は、多様な色や模様を持つため、装飾用途にも使用されている。

石材は、日本の伝統文化に深く結びついている。

石材は、自然環境に配慮されつつ、現代建築の素材として利用されている。

石材は、我々の生活環境に大きな影響を与える重要な資源である。
EXPLANATORY TEXT
OF THE
GEOLOGICAL MAP OF JAPAN
Scale 1:75,000

TOYOHASHI
Zone 27 Col. X
Sheet 173

By
KIYOHIKO ISHII.

Geology

Mikabu Series. The Mikabu Series comprises alternating beds of several kinds of schists such as chlorite-schist, quartz-chlorite-schist, quartz-sericite-schist, quartz-graphite-schist, etc., the principal members being the chlorite-schist and quartz-chlorite-schist. These schists are holocrystalline and highly schistose in structure and sometimes they grade into one another by slight variation in the amount of their mineral components. The strike of the plane of the schistosity is nearly from east to west, the dip being N. or S.40°-80°. At the boundary between the Series and the Upper Palaeozoic Formation the presence of a great fault along which diabase has occurred may be conjectured.

Upper Palaeozoic. The Upper Palaeozoic Formation may be divided into two series: (1) Hornstone Beds and (2) Ryoke Metamorphics. (1) Hornstone Beds which accompany quartzite intercalates several layers of sandstone, clay slate, scha lstein and limestone, and rarely, thin layers of radiolarian chert. The strata are cut by a fault which runs nearly from north to south.
and on the east of the fault, the strata strike due east and west, dipping steeply either to north or south, while on the west, the strata are separated into three blocks. Of these three blocks, the southern block shows a monoclinic structure, dipping north with angles less than 70° in general; the middle is folded into a syncline with wings dipping 20°-30°, and the northern is folded into an anticline, the dip of its wings being 40°-50°. (2) Ryoke Metamorphics composed of mica-gneiss and mica-schist are presumably the derivatives of the Upper Palaeozoic Formation. Mica-gneiss comprises biotite-gneiss, two-mica-gneiss, sillimanite-mica-gneiss and garnet-mica-gneiss and accompanies injection-gneiss. Mica-schists are made up of biotite-schist, two-mica-schist and sillimanite-mica-schist, accompanying a zone of metamorphosed sandstone and clayslate with indistinct schistosity. These schists pass gradually into the metamorphosed sandstone and clayslate on one hand and into mica-gneiss on the other hand. Thus it is almost certain that these metamorphics have been derived from the alternating beds of clayslate and sandstone, etc. of the Upper Palaeozoic by the contact metamorphic action of schistose granite. The mica-gneiss is greatly subjected to the leaf-by-leaf injection of injection-gneiss. The strata of these metamorphics are divided into many fault blocks as the result of the block movement, the belts of mica-gneiss and mica-schist in a block which lies on the south of a fault which runs nearly from E. N. E. to W. S. W. traversing through the north of Mt. Hougū, indicate severe plications, while the mica-schist and the mica-gneiss in other blocks is rather simple in its structure, being mostly monoclinal towards the north with dip angles less than 70° in general.

**Upper Pliocene.** The Upper Pliocene comprises alternating beds of gravel and sand, intercalating several layers of clay and gravel beds. Alternating beds of gravel and sand are found occupying a narrow area on the south-eastern corner of the sheet. They represent a part of the Upper Pliocene, developed in the area of Iramaki Sheet. The gravel beds in the vicinities of Toyotomi-mura, forming billy mountains 200 meters above sea level, are chiefly composed of angular blocks and round gravel of mica-schist and granite, while those, in the environs of Okasako, forming hills lower than 100 meters in height, are made up essentially of rounded gravels of horastone, their diameters being 10 cm. or so.

**Pleistocene.** The Pleistocene is made up of two series, the Older and the Younger. The Older forms hills and terraces along the foot of a high mountain, and is composed chiefly of subangular gravels, locally intercalating thin layers of clay and sand. The Younger occupies the vast areas along the Yahagigawa and the Toyokawa, forming terraces 20 or 40 meters above sea level. It covers unconformably the Older and is composed of gravel, sand and clay.

**Recent.** The Recent forms flat plains along rivers and coasts, and is composed of gravel, sand, clay and mud; of these materials, the mud or clay is the principal member of the Recent developed along the Yahagigawa, while the gravel is found mostly in the plain of the Toyokawa.

**Two-mica-granite.** This is white or grayish-white in colour, and fine grained and normal granitic in texture. Macroscopic crystals of garnet are found throughout the entire mass of the rock. It intrudes mica-schists and schistose granite in the form of dykes, sheets and irregular masses.

**Schistose hornblende-biotite-granite.** This is gray in colour and medium to coarse grained in texture with distinct schistosity. The direction of the schistose plane of the rock is parallel to that of mica-schists or mica-gneisses. It is found intruding mica-
schists and mica-gneises in the form of irregular masses, and belongs to the oldest igneous rock in the sheet area.

Aplite and Pegmatite. These rocks are found as dykes in mica-schists, granite and olivine-gabbro. The pegmatite occasionally contains large crystals of muscovite, garnet and tourmaline besides biotite.

Granite-porphyry. This is gray and fine grained, and resembles fine grained granite in texture, but has round phenocryst of quartz. It is found as a single dyke in schistose-hornblende-biotite-granite.

Quartz-biotite-diorite. This occurs in two different forms. The one is black in colour, fine grained and granular in texture and occurs as stock and dyke penetrating granite and mica-schists. The other is gray in colour and medium grained in texture with distinct schistosity, and is penetrated by two-mica-granite. Judged from petrographical characters, the latter seems to be closely allied to the schistose granite mentioned above, but quite independent from the former.

Diabase. This is dark green in colour and fine grained in texture and partly resembles the hornblende in macroscopic appearance. It penetrates the Mikabu Series and the Upper Palaeozoic Formation in the form of dyke of great dimensions.

Olivine-gabbro. This is black in colour and fine to medium grained and allotriomorphic granular in texture. Helcyrite and rutile are the rare accessories in the rock. The rock penetrates the schistose granite in the form of stock and dykes.

Hornblendite. This is dark green in colour and fine grained in texture and is composed essentially of green hornblende, aggregated in lattice structure, with titanite and magnetite as accessories. The hornblende, however, is not primary, and may probably be an alteration product from pyroxene in the original rock. It forms a stock in the Mikabu Series.

Lithoidite. This is white in colour and compact in texture and is so much subjected to kaolization throughout the entire mass of the rock that its phenocrysts and groundmass are undeterminable. It occurs in schistose granite as narrow dykes.

Economic Geology

Manganese Ore. Ochiba mine. This mine is situated at Ochiba-mura, Hamana-gun. The ore body is mainly composed of psilomelane and occurs in hornstone in bedded form, more than 100 meters long, and less than 1.2 meters wide and extending about 60 meters in pitch. The ore production in 1924 amounted to 210 metric tons.

Potter’s clay. It is quarried for the manufacture of tile, brick, etc., in Hokkaido-gun and its vicinities. The clay is interbedded in the Younger Pleistocene with a thickness less than 2.4 meters. The output of clay in 1924 in Hekkai-gun amounted to 132,000 metric tons.

Building stone. Two-mica-granite and schistose hornblende-biotite-granite are quarried for walling, monument, and foundation stones. The total output from Nukata, Haza, and Hoigun in 1924 is valued at 285,000 yen.

Limestone. It is quarried for the manufacture of lime at Ishimaki-mura, Yana-gun and about 6,350 metric tons was yielded in 1924.

Underground water. The water-table in the terrace deposits near Toyohashi and Okazaki forms an uneven surface, according
to the undulatory topography of the terrace, the height varying from 6 to 21 meters above sea level at Toyohashi, and 15 to 23 meters at Okazaki. On the other hand, the water-table in the alluvial plain is somewhat lower than the surface of the permanent river, namely, the Yahagigawa and the Toyokawa, and the plain is very rich in water. These ground-waters are usually stained brownish by limonite, and therefore the drinking water must be obtained from water-bearing beds lying deeper than these ground-waters.