Geotectonics of the Pacific with Reference to South-western Japan

II. Geotectonics of the Kii Peninsula in Connection with the Subjacent Igneous Mass, occupying the Greater Part of it

by

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1. Introduction

The geologic formations of the Kii Peninsula are, not only the prolongation of those of Shikoku, but also belong to the same tectonic province with Eastern Shikoku. Therefore, before entering into the study of the Peninsula it would be necessary to examine the geotectonics of Shikoku, which might give us many informations about the Pacific and Japan Sea movements.

The geotectonic study of the Kii Peninsula would not be carried out by the principle which merely dwells upon the lateral thrust coming from the north; but by making up for the Pacific movement, it might be brought to fulness.

The hypocenter of the Nankaido earthquake, considered to lie in the south sea bottom of the Kii Peninsula, which is underlaid by the subjacent igneous rocks, may be treated from the geologic standpoint, while it is not done so in Shikoku where no igneous bodies are remarked under the continental slope to the south of Cape Muroto.

In these and other meanings the geotectonic study of the Kii Peninsula would be a test for that of Shikoku.

2. The subjacent Igneous mass of the Kii Peninsula

To explain the extruded Liparite lava in the Kii Peninsula let us suppose the occurrence of the granitic batholith under it, which may be probed geologically and geophysically. This supposition is extremely important for the study of the Peninsula, whose example is given by DALY on the Yellowstone National Park of the U. S. A., where the rhyolite is extruded from the granitic batholith at the early Pleistocene time, and an unexampled profusion of hot springs and geysers is flowing out of the batholith at present.

In the Kii Peninsula the quartz-porphyry which appears to have been extruded from the granitic batholith is extending, not only along the eastern half of the Peninsula from Cape Shionomisaki toward the town of Nagashima passing through the city of Owase, but also along the Ômine range to Dorokawa. Moreover, the hot springs, closely related to the batholith are found everywhere in the valleys between the city of Tanabe and the Totsukawa River, far distant to the north-east of the former; and on the south-east coast of the Peninsula.

From the distribution of the extrusive rocks and the hot springs one may define the north boundary of the granitic batholith, which traverses toward north-east, the Peninsula from the town of Minabe to the north of Miyai where the Totsukawa and Kitayama Rivers are joining to the Kumano River. At Miyai the boundary is separated in two directions, one going toward north along the Ômine range, and the other north-east toward Owase. The whole Peninsula to the south of the boundary may have been occupied by the granitic batholith. Lately, under the leadership of C. Tsuboi, the Seismological Institute of the Tokyo University has completed the gravity Survey of the whole of the Japanese Is.—Hokkaido, Honshu, Shikoku and Kyushu. According to him, the Isanomaly of Cape Shionomisaki reaches to +150 mgal which gradually degrades to +80 mgal at Owase lying north-north-east from the former. The trends of the Isanomaly lines are north-east to south-west which coincide with the distribution of the granitic batholith. The distribution of the lines shows the occurrence of a heavy mass under the Kii Peninsula, extending from Cape Shionomisaki toward Ujiyamada passing on the way through the city of Owase, which includes the Ômine range and the 2,000 meters depressed basin of the Kumanonada.

Further, I. TAMAKI of the Seismological Institute of the Kyoto University studied the structure of the earth crust of the Japanese Is. by means of the shallow earthquake waves. He detected the granitic layer in the two routes—between Wakayama and Cape Shionomisaki; Owase and Cape Shionomisaki. His study appears to indicate the granitic layer extending, not only under the Kii Peninsula, but also under the continental shelf of the same. The granite which exposes itself at Cape Ashizurisaki in Shikoku intrudes and metamorphoses the Upper Cretaceous of Uwajima and may be the same in the geologic age with that, extended under the Kii Peninsula.

The intrusion of the granitic batholith of the Kii Peninsula may have been the Late-Cretaceous, by which the south portion of the Hidaka group had been depressed away at the position now occupied by the Muro Paleogene group. The batholithic intrusion may have been associated with the Pacific movement which pressed the Peninsula from south to north, and the protruding portion of the batholith which is manifested by the Ômine range has pushed into Paleozoic of Mt. Yoshino, far in the depth of the ground; and to the north of Nagashima the other portion of the batholith, into the Paleozoic of Ise Prov.

3. Geotectonics of North Kii mountain land

The geologic formations of Western Kii are almost the same as those of Eastern Shikoku, as shown in the following table.

Eastern Shikoku	Western Kii
Granite..... (developed at Sanuki)	Granite (developed to the south of Ōsaka)
Izumi sandstone series	Izumi sandstone series
— Median line —	— Median line —
Crystalline schist series	Crystalline schist series
(containing Ōboke gneiss & Besshi series)	(not differentiated as in Shikoku)
Mikabu series.....	Mikabu series
Chichibu series	Chichibu series
(comprising the Permo-Carboniferous, Gotlandian and Lower Triassic)	(not so differentiated as in Shikoku)
Mesozoic series.....	Mesozoic series
(Containing Up. and Low. Cretaceous, Up. Jurassic and Up. and Mid. Triassic)	(less kinds of the Mesozoic series than in Shikoku)
Akigawa series	Hidaka series
(including the Terasoma, Nishikawa, Higashikawa & Muroto groups)	(containing Inami series & Matoya series but not so differentiated as in Shikoku)
Naharigawa series	Muro series
Akigawa series	Altogether lacking, outside the quartz-por- phyry exposed at the Cape of Shionomi- saki and Isle of Ōshima
(corresponding to the Muroto group, intruded by Gabbro)	

The east-west trend of both the regions are the same; but within the Western Kii Peninsula, it changes from east-east-north to north-east.

Along the median line which runs almost parallel to the Kinokawa R., the crystalline schist series gradually fades away to the west of the town of Gōjo, while the Izumi sandstone series also disappears along the same line in the town of Kamiichi, the north of Mt. Yoshino. Thence along the median line, the Mikabu series comes into contact with the granitic series of the inner zone; which all the way, stretches toward east reaching the city of Ujiyamada.

Such phenomena as the median line shows, mentioned above, are not to be met with in Shikoku, where by the pushing out of the Hiuchinada from the north-west the arcuate layers extend all the way, up to the Nankai trench; and moreover, the Pacific movement has pressed the arcs opposite from the front of the same, causing the depression of Tosa Bay and the underthrust of the north of the Kōchi environs.

In the Kii Peninsula the Pacific movement reaches its culmination in the north of the Ōmine range where it presses all the strata of the outer zone from the south against the granite of the inner. Both the sides of the Ōmine range whose trend is north-south, are limited by the Kitayama R. and the Totsukawa R. which are flowing north-south; and the range consists of the steep inaccessible ridges whose height reaches 1,000 meters above. The ridges of the Ōmine range are composed of the quartz porphyry penetrating the Hidaka group. At the foot of the range, the group is metamorphosed into hornfels, cut by many small veins of aplite, which suggest the approach of plutonic rocks near the surface. The Hidaka group of the Ōmine range is strikingly different in geologic structure from the same group of the western part of the Kii Peninsula. Near the boundary between the Paleozoic and the Hidaka group of the Ōmine range, the strata of the latter dip north at small angles, and are said to have intercalated Torinosu limestone at the top; while both the Paleozoic and the Mikabu series which lie to the north of the Hidaka group dip north, as the Hidaka group of the Ōmine range does, showing the inverted stratigraphical order. They may have been subjected to the pushing of the granitic batholith underlying the Ōmine range by the underthrust of the Pacific.

The Pushing of the Ômine range into the strata Hidaka, Chichibu and Mikabu of the north Kii mountain land was made at Mt. Yoshino which lies between Mt. Kôya and the Ôdaigahara Plateau, while that of the Paleozoic to the north of the Ôdaigahara Plateau into the Mikabu series is clearly described by IZUKA of the Geological Survey, on his Nojiri sheet.

By the pushing of the granitic batholith of the Ômine range, all the strata developed at the western part of the Kii Peninsula have delineated the arc, turning the convex side toward the north, whose top is just the town of Kamiichi, in the north of Mt. Yoshino where the arc is pressed against the granite of the inner zone. The fading away of the crystalline schist and the Izumi sandstone series mentioned above, may be attributed to the pushing of the Ômine range which pressed the outer zone of the Kii Peninsula against the granitic series of the inner, at Kamiichi.

Together with the pushing of the Ômine batholith, however, the batholith of Owase which forms a subjacent igneous mass of the Kii Peninsula has pushed into the Paleozoic of Ise, and not only makes a curve to the boundary between the Matoya series and the Paleozoic, but also along the median line has pressed the Paleozoic and the Mikabu series against the granite of the inner zone.

4. Tectonic remnants of the Izumi sandstone series on the median line

Twenty years ago, the spotted occurrences of the tectonic remnants of the Izumi sandstone series, which once disappeared to the north of Mt. Yoshino, have been discovered by R. SUGIYAMA of the Geol. Inst. of Niigata University, on the median line between Kamiichi and Ujiyamada. The remnants may be part of the basal layer of the same series.

In the Shikoku, the Izumi sandstone thrusts over the crystalline schist series along the median line from the north; but to the south of the Hiuchinada there is a different way of movement, represented by the crystalline schist series which is subjected to the Pacific movement from the south. The Izumi sandstone subjected to the lateral thrust from the north-west, thrusts over the crystalline schist series which is being pressed from the south. Under such circumstances, the granite of the inner zone, overlaid by the basal layer of the Izumi sandstone proceeds and approaches to the crystalline schist series by pushing away the upper layer of the Izumi sandstone more and more.

In the Kinki district, when the granite of the inner zone overlaid by the basal layer of the Izumi sandstone, is subjected to the lateral thrust from the north and comes into contact with the median line and the Mikabu series, which are subjected to the underthrust from the Pacific, the Izumi sandstone would be squeezed out, leaving the basal layer over the same line.

In the Kinki district, both the movements of the Japan Sea and the Pacific appear to have conflicted with each other on the median line between Kamiichi and Ujiyamada, which may be shown by the tectonic remnants of the Izumi sandstone. According to S. MATSUSHITA of the Kyoto University, in the Kinki district there are two or three zones of Mylonite in the granitic series, parallel to the median line. The same geologic phenomena are to be observed in the Izumi sandstone of Shikoku, where faults parallel to the median line are running closely near the same line. MATSUSHITA states that the origin of the median line belongs to the Pre-Upper Cretaceous; and the later movements may have happened along the same old tectonic line. His theory may be valid in the meaning that the later movements took place under the lateral thrust from the south or the north.

5. Geotectonics of the southern Kii Peninsula

In South Kii, the boundary between the Hidaka and Muro groups may be the east-west fault connecting the town of Minabe on the western coast, and the village of Miyai where the Totsukawa R. and the Kitayama R. join to the Kumano R. It would correspond to the north boundary between the Akigawa and Naharigawa series in eastern Shikoku, whose eastward prolongation, passes all the way through the straits of Kii and may be connected to the former.

In the Naharigawa series no fossil was contained except the one that S. SAWATA, the assistant of the author had discovered "furoid" at Kannoura. Fifteen years ago, at the Muro group in Kii, some impressions of Algae were discovered at Horagatani, to the east of the city of Tanabe; and by the suggestion of the writer, S. MIKI of the Kyoto University went there and collected some pieces of them, which he described, with those discovered by the writer from the Upper Cretaceous of Uwajima in western Shikoku. They are *Paleodictyon majus* MENEGHINI, *P. tenue* KORIBA & MIKI, *P. robustum* KORIBA & MIKI, *Hydrodictyon teritarum* KORIBA & MIKI. But Muro group would not be defined as the Upper Cretaceous, merely with these fossils alone.

The south boundary between the Naharigawa and Akigawa series in eastern Shikoku runs to west-east passing through the town of Nobe, from where, however, along the fault cliff between the continental shelf under the Kii channel, and the Toki graben passes through the neck of Cape Shionomisaki in the Kii Peninsula. Under the circumstances mentioned above, the Muroto sphenoidal block in the south of the Naharigawa series, which consists of the Akigawa series intruded by gabbro, and makes tilted movement at the ordinary time, but rises up suddenly at the Nankaido earthquake, is altogether lacking in the south of Cape Shionomisaki, where the abrupt upheaving is also recognized in the same earthquake.

S. MATSUSHITA says, "The Muro and Shimosato groups whose trends are west-east, occupy the south of the Hidaka group and obvious by construct a part of the outer zone of south-western Japan; but the Miyai and Tanabe groups whose geologic age is Miocene, appear to be independent in the geologic distribution of the same zone. Because the former whose trend is from north-east to south-west forms the deposit, that occupies a boat-shaped basin, while the latter forms a local deposit around the city of Tanabe, whose unconformable boundary between the Muro groups turns the convex side toward north-east, dipping south-west."

The dipping to south-west of the Tanabe series may be attributed to the depression of the Toki graben which lies to the south-west of Tanabe.

The Miyai group, however, whose deposits contain coal seams in the upper horizon, but marine fossils in the lower, forms a synclinal basin whose axis runs north-east to south-west, along the eastern margin of the Peninsula from Kushimoto toward Owase; and it is evident that the distribution of the group has a close connection with a part of the subjacent granitic batholith, which may have submerged in the Pre-Miocene, forming the basin where the Miyai group had deposited.

In the Kii Peninsula, the main portion of the granitic batholith which is manifested by the distribution of the Isanomaly lines of gravity may occupy the south of the Peninsula. But from the distribution of quartz porphyry in the Miyai basin, and of the Isanomaly lines one may suppose the existence of a part of batholith extending from Kushimoto toward Ujiyamada passing through the town of Owase, along the eastern coast. We may, moreover, suppose the eastern elongation

of batholith into the sea, which extends to the 2,000 meters cauldron depression occupying the continental slope of the Kumanonada.

At the early Pleistocene time, the depression of a part of batholith may have occurred at the place of the cauldron depression of the Kumanonada, and at that time, as MIZUNO and TANAI of the Geological Survey remarked, the north-south faults running parallel to the eastern coast may have arisen along the axis of the Miyai basin as well as along that of the Ômine range respectively, through which the quartz porphyry has been extruded from the granitic batholith. According to M. SAWATARI who studied the geology of south Kii, the acidic rocks in the Miyai basin are extruded in the descending order as follows: 1) Biotite granite porphyry, 2) Persemitic garnet bearing Biotite liparite, 3) Glassy biotite liparite, 4) Felsic biotite liparite. They may indicate the order of the crystallization of the acidic magma contained in the batholith.

It should be noticed that in the extrusion of the acidic magma from the granitic batholith, there was an influence of the Pacific movement. Along the middle and the lower course of the Koza R. which is flowing to west-east through South Kii, there is a dyke rock of quartz porphyry extending widely from west to east from Kuratogo via Shimosato, to Daichi, which penetrated the Tertiary of this district. The extrusion of the same rock may be attributed to the underthrust from the Pacific which pressed the Tertiary from south to north.

According to M. ISHIMOTO, the mining geologist of the Myohoji Mine, of the district, the quartz porphyry is extruded along the tectonic lines of the trend, west-east, north-east-east and north-west and the pyrite deposits are produced in the sandstone of the Miyai series, by the igneous activity and the supply of the mineralized water coming from the subjacent batholithic rocks. The three kinds of the tectonic lines may have been formed by the lateral thrust coming from the Pacific. Here again, ISHIMOTO recognized the occurrence of the granitic batholith from the standpoint of the miners.

The 2,000 meters cauldron depression of the Kumanonada may be attributed to the underthrust of the Pacific movement which pressed the Nankai trench to the south of the Kumanonada where a mass, probably of igneous origin is pushed into the trench from the south.

6. An Occurrence of Guyot(?) and the tectonics of the Nankai trench

According to the chart published by the Hydrographical Department in 1951, at the point N. Lat. $31^{\circ}60'$, E. Long. $135^{\circ}80'$, to the south of Cape Shionomisaki, there is a swell, like the submarine volcano, whose height reaches 1,600 meters from the abyssal bottom. The late R. TAYAMA once wrote to the writer that it might be a Guyot(?). Around the Guyot(?) there are other swells on the sea floor but not so remarkable as the former.

To the south of the Izu Peninsula there is the volcanic chain of Niijima and Kôzushima, whose trend is north-east to south-west. The volcanic chain extrudes the Liparite and may be older than the Fuji volcanic zone where Andesite erupts. The chain is parallel to the Nankai trench, and occupies the south side of the same, whose terminal lies to the west of the Izu Peninsula. The Niijima volcanic chain and the terminal of the Nankai trench are parallel to the Akaishi, Kiso and Hida mountain ranges and form an Echelon which occupies the western margin of the Fossa Magna. When the trend of the Niijima chain is elongated to the west

parallel to the south margin of the Nankai trench, it will come to contain the Guyot(?) mentioned above, to the south of Shionomisaki.

As N. KUMAGAI of the Kyoto University remarked an existence of cryptobatholith on the outside of the Sanriku trench, if there occurs a magmatic reservoir outside the Nankai trench, the granitic batholith under the Kii Peninsula may have intruded laterally from the same by the Pacific movement.

To the south of Tosa Bay the trend of the Nankai trench is from north-east to south-west and whose distance from the median line reaches 230 kilometers. But to the south of Cape Shionomisaki, the trend, not only turns west-east the distance from the median line becomes 180 kilometers, approaching to the land by 50 kilometers nearer than the former.

At the Muroto Peninsula in Shikoku, the Akigawa series to the south of the Naharigawa series forms a sphenoidal block which is sinking at the ordinary time, but rising suddenly at the Nankaido earthquake. In the Kii Peninsula, the block which corresponds to the Muroto sphenoidal block is altogether lacking in the south of Cape Shionomisaki.

It may be attributed to the Pacific movement, by whose underthrust the block to the south of Cape Shionomisaki is depressed away, and the crystalline schist as well as the Izumi sandstone series are pushed away from the north of the Kii Peninsula. The approaching of the Nankai trench to Cape Shionomisaki may be partly due to the three subtractions of the land.

To the south of the Kumanonada, the Nankai trench strikingly reduces its width by the pushing into of a mass like an igneous body. Henceforth the trend of the trench becomes north-east and after running parallel to the median line, reducing its breadth and passing through the Yenshunada reaches the mouth of Suruga Bay where it ends. In the Yenshunada there is a remarkable constriction of the trench, which may be attributed to the fault passing there. The Nagoya-Fukui fault of the Mino-Owari earthquake occurred in 1891, whose trend is north-west to south-east may pass along the constriction. In the earthquake, the east side of the fault had moved to the north and the west side to the south. It may accord with the character of the Nankai trench which is subjected to the lateral thrust whose tendency becomes the stronger the nearer it approaches the east.

The Tertiary of the Miura-Bôso dips north and is subjected to the underthrust from the south while the Kwanto earthquake whose initial movement pushes from south to north breaks out in the bottom of Sagami Bay. This may indicate that the district may belong to the same tectonic province as the South Japan Sea.

7. The Nankaido earthquake

The sea floor to the south of Cape Shionomisaki is well known as the place where a severe earthquake, frequently breaks out as is witnessed in the occurrence of the Nankaido earthquake ten years ago. S. TAKAGI, Seismologist of the Meteorological Observatory of Tokyo, who studied the Nankaido earthquake noticed the remarkable difference of energy between the P wave of the main earthquake on Dec. 21, 1946 and that of the aftershock on Apr. 18, 1948. These earthquakes occurred almost at the same place of the sea bottom in the south-east of the Kii Peninsula.

In regard to the origin of the earthquake, he supposed the existence of a cylindrical magma pocket in the depth of 50 kilometers which dips to south-east at an angle of 30° ; and assumed the magma explosion at the hypocenter in the pocket;

the explosion was upward in the main, earthquake of 1946, but in the aftershock of 1948, it was downward. The study by TAKAGI is a precious work, based on lots of data and calculations, but there is, as he remarks, a question whether the magma is explosive in the depth of 50 kilometers or no. As the writer mentioned above, the place where S. TAKAGI has suspected the existence of the magma pocket, coincides with a part of the granitic batholith, which contains acidic, extremely viscous magma, and is subjected to the underthrust from the south or south east of the Pacific movement. A geophysist is usually apt to overlook the lateral thrust occupying the region. Therefore from geological point of view, the magma pocket of TAKAGI may be treated as follows:

The pocket containing the viscous magma which is more or less solidified outwardly but fluidal internally, is subjected to the lateral thrust from the Pacific. When the accumulated stress has broken the pocket at the place of the hypocenter, the magma reserved below the pocket has intruded itself violently, where the pocket is broken. The co-operation of the lateral thrust and the magma intrusion is a usual phenomenon at the time of the mountain making as exemplified in the case of the Ômine range and others.

T. MATUZAWA of the Seismological Institute of the Tokyo University, who established the "Feldtheorie der Erdbeben" assumes the occurrence of the heat reservoir under the field where a great earthquake breaks out. The heat reservoir where the solidifying of melting phase, is in the state of flux, influences upon the upper layers where occur compression, tension and faults which produce earthquakes. Under the circumstances, however, convection current may be inferred to take place from the heat reservoir to the upper layer. MATUZAWA is not satisfied merely with the fault theory, and so he supposed the existence of the heat reservoir increasing the energy of the earthquake. In this meaning, the Magma pocket of S. TAKAGI may be convenient.

8. Summary and Conclusion

(1) The Pacific movement of south-western Japan appears to increase the strength with a gradual approach from west to east. In western Shikoku the boundary between both the movements, the Pacific and the Japan Sea is the Sukumo-Nakamura line which comes near the Pacific; while in Tosa Bay it looks like to range the median line far to the north beyond the Kôchi environs; but in eastern Shikoku, the boundary reaches also, the median line far beyond the Kii channel.

In North Kii both the movements conflict with each other on the median line which extends all the way, to the east passing through Ujiyamada via Ise Bay and Toyohashi toward Lake Suwa. But the eastern portion of the median line between Ujiyamada and Suwa is strikingly influenced by the pushing of the Shichito batholith into the Fossa Magna, which delineates a curve, with the convex side toward south-east.

(2) According to C. TSUBOI of the Seimological Institute of the University of Tokyo, "In Kyushu the distribution of the Isanomaly lines of gravity along the median line manifests an anticlinal structure, which extends south-west to north-east, from Yatsushiro to Usuki; in Shikoku, however, it represents a synclinal, where the zone of Izumi sandstone is developed along the median line, all the way from west to east. In passing to the Kinki district, the synclinal may first be perceived, but on the way from Kamiichi to Ujiyamada becomes imperceptible, and the median

line presents itself as if it lost the character of the boundary between the inner and the outer zone.

It may be attributed to the squeezing out of the Izumi sandstone series on the median line where the two movements (the Japan Sea and the Pacific) conflict with each other coming from the opposite directions north and south.

(3) The occurrence of the granitic batholith under the Kii Peninsula may be verified not only geologically and geophysically but also mineralogically. K. TAKIMOTO of the Mining Institute of the University of Kyoto believes in the existence of the subjacent granitic batholith under the Kii Peninsula from the standpoint of mining geology. He told the writer that the pyrite deposits of the Kishu and the Myohoji mines might be the igneous origin, but without the supply of the mineralized water coming from the subjacent batholithic rock, the formation of such thick ore bodies seems to be impossible.

(4) In the Kinki district, the Japan Sea and the Pacific movement conflict on the median line extending west-east between Kamiichi and Ujiyamada. To the south of the line, T. KIMURA of the University of Nagoya has discovered the Mikabu series which thrusts at a low angle, over the Palaeozoic from north to south; while the latter dips north at a high angle. It may be a decken structure occurring in this district, which belongs to the primary structure.

(5) The granite of the inner zone (the Kashio gneiss), overlaid by the basal layer of the Izumi sandstone, and subjected to the lateral thrust from the north-west (the Japan Sea movement) proceeds and approaches to the Mikabu series of the outer zone subjected to the lateral thrust from the south (the Pacific movement) by pushing away the upper layer of the Izumi sandstone more and more. Ultimately, when the basal layer of the Izumi sandstone series is squeezed between the Kashio gneiss and the Mikabu series, a part of the gneiss and Izumi sandstone would enter and penetrate the rocks of the other series, which were observed in some places along the median line between Kamiichi and Ujiyamada, by SUGIYAMA, TSUBOMOTO and others, though the relation between the Izumi sandstone and the Mikabu series is not clear as yet.

If the illustration of the writer is adequate the cataclastic origin of the Kashio gneiss may seem to have turned out valid.

(6) The Muroto Peninsula in Shikoku forms a sphenoidal block whose apex is sinking at the ordinary time; 2 or 3 years before the earthquake, however, it turned to a gradual upheaving and then to a sudden upraising at the time of the earthquake. The sinking may be attributed to the Japan Sea movement, pushing Shikoku from north-west to south-east while the upheaving may be due to the ascending magma from the bottom of the batholith, which intrudes into the breaking portion of the batholith, inflicted by the Pacific movement.

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南西日本の太平洋地体構造論

—II. 紀伊半島とその地下に潜在する花崗底盤の地質構造—

江 原 真 伍

(摘 要)

紀伊半島の地層は四国地層の西東延長であつて東四国と同一構造圏内にある。紀伊半島の地下に潜在する花崗底盤は地質学、地球物理学又は鉱床学上より確認しうるものであつて、その主体は第三紀の始め太平洋運動に伴つて半島南部に、又一部は大峯山脈に、他の一部は半島の東海岸に進入し、このため半島北部の御荷鈴、古生、日高各層は中央線に向て北に押し出されたのである。

本文は半島の構造運動に関連して東半部を占める石英粗面岩と各地に湧出する温泉の由来、中央線に沿うて和泉砂岩の絞り出し、南海海溝の陸地に接近し来る事情、南海道地震について述べている。