

GUIDE-BOOK EXCURSION D

會協學地京東

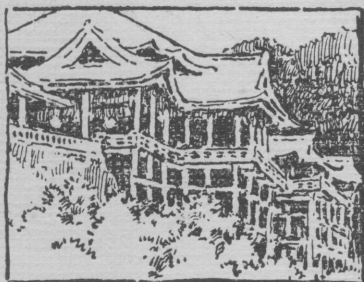
Nov. 11th—15th, 1926

No.

TOKYO GEOGRAPHICAL SOCIETY
FOUNDED APRIL 1879.

會協學地京
立創月四年二十

KYOTO, NARA, OSAKA, KOBE



PAN-PACIFIC SCIENCE CONGRESS 1926

JAPAN

CENTRAL KINKI

KYŌTO—NARA—ŌSAKA—KŌBE

CONTENTS:

	Page
Geography	I
Geology	5
Botanical Notes on Central Kinki District	11
Insect Fauna of the Kinki (Middle Western) District	18
Brief Guide to the Places to be visited by the Congress-Party	20

GEOGRAPHY

BY SHINTARŌ NAKAMURA, *Kyōto Imperial University.*

The Central Kinki district lies in the centre of Japan and is the most populous portion of the country. There are broad plains surrounded by mountains and extending along the Inland Sea. The district comprises two ancient capitals, Kyōto and Nara, and two modern industrial and commercial cities, Ōsaka and Kōbe, together with four other cities, Ōtsu, Sakai, Amagasaki and Nishinomiya.

Population of the chief cities in October, 1925.

Ōsaka	2,114,804	Sakai	105,009
Kyōto	679,963	Nara	48,879
Kōbe	644,212		

Population and density of population in the prefectures.

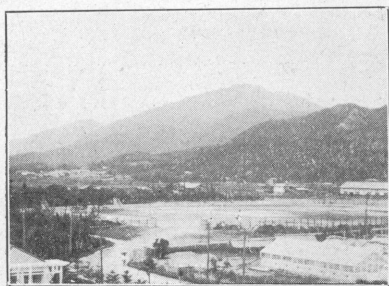
Kyōto-fu	1,406,382	4,758 in square <i>ri</i> *
Ōsaka-fu	3,059,502	26,493 " " "
Nara-ken	583,828	2,414 " " "
Hyōgo-ken	2,454,679	4,493 " " "

Orography—The main feature of the district is the existence of a depression along the Yodo-gawa in the central part of the district, diagonally separating the Tamba plateau on the north-

* A square *ri* is equal to 15.42347 square kilometres.

west and the Ōmi-Iga plateau, with the Ikoma range, on the south-east. Topographically the Tamba plateau forms a dissected plateau with flat summits and deep valleys. Looking to the north from Kyōto one may detect a flat summit about 800 metres above the sea. Deep valleys divide the plateau in the district concerned here into certain ranges and masses.

To the east, close to Kyōto, the Hiei range runs north and south, and Hiei-zan (Shimeiga-take, the highest summit 848 metres above the sea) is an eminence in this range. The ascent



Mount Hiei

to the mount, facilitated by cable-car lines, affords a fine panorama of the plain of Kyōto and the basin of Lake Biwa. The ridge of Higashiyama is a small outstanding mass of the Hiei range, and running south, terminates at the hill of Momoyama, where lies the mausoleum of Emperor

Meiji. Opposite to Hiei-zan and to the west of Kyōto there is a mountain-mass culminating, at Atago-yama (924 metres), in a notable knob. The mass is cut off by the Hōzu gorge on the south. The stream is young in the stage of a geographical cycle and makes rapids; we can enjoy the rapid descent of the rapids by boat through the gorge from a place near Kameoka down to Arashiyama, famed for its fine scenery, where the gorge debouches to the plain of Kyōto.

South of the Hōzu-gawa, a massive mountain-land occupies a large area, being separated into the two masses of Nishiyama on the east and Noze on the west by intervening valleys. The former has the piedmont-hills at its eastern foot and the latter at its southern foot. The ravine of Minoo Park, noted for maple trees and a cataract, cuts the south part of the Noze mass beyond the hills. The mass is bounded by the Noze-gawa on the west, along which are situated the factories of a celebra-

ted carbonated water, *Tansan* of Hirano.

To the west of the Noze-gawa there is a hilly tract of lower elevation and especially in the western portion the surface is low and wavy. The Rokkō mass, steeply elevated from the narrow coastal plain of Kōbe to the south, is an outstanding mass of the Tamba plateau and culminates at Rokkō-zan (932 metres), at the northern foot of which lies the hot-spring resort of Arima. The mass sinks down to the plain of Ōsaka on the east with a fringed low land where a helmet-like, volcanic knoll called Kabuto-yama towers 309 metres above the sea. Behind Kōbe Maya-san (699 metres), a prominence of the mass, stands and gradually descends to the west submerging in Ōsaka bay to the west of Suma and Maiko, where there are many villas along the beautiful shores and among the rows of pine trees.

The eastern margin of the plains of Kyōto and Nara bounds the Ōmi-Iga plateau in an almost straight line running north and south. The plateau stretches in a wide sweep over to the south-east and only a small area of it occupies the eastern part of the district under consideration. This part is cut by the Seta-gawa, the outlet of the large lake Biwa, and the Kizu-gawa. Geologically considered, the two rivers originated in the Recent epoch, and during the Pleistocene epoch they both took other courses which are shown by the gravel deposit several kilometres apart from the present ways. The Seta-gawa forms a gorge with steep sides and enters the Kyōto plain at Uji, a picturesque town surrounded by tea plantations. The Kizu-gawa flows down to the west and turns abruptly northwards at Kizu; thence it takes a north-western course to join the main stream of the Yodo-gawa. The western part of the Ōmi-Iga plateau has no summit higher than 700 metres. We can only perceive a few prominent points, of which Jubu-sen (685 metres) on the north and Takamine-yama (633 metres) on the south are rather distinct. It is to be mentioned here that behind Nara certain small volcanic cones stand near the margin of the mountain lands.

The Ikoma range runs north and south between the plains of Ōsaka and Nara. The western side is rather precipitous, while the eastern side is flanked by low hills. The Yamatogawa cuts through it on the south. A meridional depression lies in the middle of the range. Geologically, it was built up by two parallel tilted blocks, each having an easterly inclined back-slope. On the western ridge Ikoma-yama towers from the Ōsaka plain at a height of 642 metres.

Plains—Biwa-ko is the largest lake in Japan, occupying an area of 699,959,320 sq.m., and its basin is separated from the Kyōto plain by a narrow neck, affording a low pass. The city of Ōtsu is situated at the south end of the lake and at the foot of the pass.

The Kyōto plain is hemmed in between plateaus except on the south and is rectangular in form. Kyōto City lies in the north part of the plain. It must be mentioned that every thing in the surroundings of the city is associated with history, for it was the very centre of civilization of Japan for more than a thousand years. Ogura-no-ike is a swampy depression between the rivers Uji and Kizu.

The Nara plain may be a southern continuation of the Kyōto plain, but there is a low divide between them close to Nara, which allows the Nara plain to form an independent inland plain. In the margins of this plain there are several towns. Nara was the capital of Japan from A.D. 709 to 784 and is a fine city with many artistic monuments.

The lower course of the Yodo-gawa drains the central part of the Ōsaka plain, which continues to the narrow coastal plain of Kōbe to the west and to the coastal plain of Izumi to the south. The plain along the bay of Ōsaka is the most populous and prosperous site in the empire, having the three large cities of Ōsaka, Kōbe and Sakai.

G E O L O G Y

BY SHINTARŌ NAKAMURA, *Kyōto Imperial University.*

The mountainous land of the Kinki district is mainly composed of the Paleozoic sedimentaries and the schistose granite with the intruded eruptives. The hilly tracts along the foot of the mountains consist of the Tertiary and the Pleistocene deposits, leaving the Alluvial plains in the basins.

Paleozoic—The Paleozoic belongs to the so-called Chichibu System and is built up by clayslates, greywackes, cherts and schalsteins with limestone-lenses. Though the strata have a comparatively regular trend of nearly west-northwest, they have suffered severe disturbances and are traversed by many faults and thrusts; moreover a member of the strata is not persistent and thins out at a short distance. So the establishment of the stratigraphical order is not an easy matter to work out. The rocks are almost devoid of fossils, though some limestones contain poor Anthracolithic forms, such as *Fusulina*. The limestones in the Nishiyama mass to the southwest of Kyōto afford foraminiferas (*Tetrataxis* and *Bigenerina*), bryozoans (*Fistulipora*, *Batostomella*, *Chasmatopora*, *Fenestella*, *Rhombopora*, etc.), and some brachiopods; it is yet impossible to determine whether the fossils designate the Upper Devonian or the Lower Carboniferous.

The Paleozoic formation is intruded by the bosses of granites and the contact phenomena between them are clearly seen in several places, especially at Nyoigatake close to Kyōto, Ishiyamadera on the Seta river, Kaihana near Kameoka and in the valley of Watsuka in south Yamashiro. In these regions the clayslate is altered to a hornfels or mica-schist, and the chert to a crystalline quartzite, the limestone becoming crystalline, and each of these with some newly formed minerals of chialstolite, cordierite, wollastonite, etc.

The gneissic and schistose rocks along the Kizu-gawa are

the severely metamorphic Paleozoic sedimentaries thinly injected with granites. Also there are small strips of mica-schist imbedded in diorite or granite in the west side of Ikomayama and near Nara.

Mesozoic—The Mesozoic rocks composed of sandstones and shales are exposed in small areas along the Ina-gawa in the Noze mass; but no fossils are found here.

Tertiary—The Tertiary generally occurs in the form of small patches and covers the Paleozoic, granite and liparite, underlying the Pleistocene gravels and sands. The Tertiary at Okuyamada, south-east of Kyōto, occupies a small triangular area and consists of arkose, mudstone and tuff with a thickness of about 200 metres, containing many molluscs and a few plants. Of the molluscs such species are identified as *Diplodonta usta*, *Dosinia japonica*, *Protorotella yuantaniensis*, *Turritella*, *Crepidula*, etc., and they are probably of the Miocene species. The Tertiary terrane is bounded to the south, with the Paleozoic, by an east-westerly fault-line. The Tertiary to the south of Nara contains also some molluscan remains, as *Turritella*, *Tonna japonica* etc., the fauna showing that the strata is not younger than the Pliocene. The Tertiary to the west of Kōbe is mainly formed of tuffs with subordinate shale, arkose and conglomerate, and plant-remains assigned to the Pliocene are found in the shales and tuffs. The strata in the wide hilly land near Sanda have a few lignite seams.

The Tertiary rocks have a gentle stratification while they are subjected to dislocations, so in many places the boundaries between the Tertiary and the older formations are shown by the fault lines, most of them taking east-west or north-northeast courses.

Pleistocene—The Pleistocene deposits from the hilly uplands at the foot of the mountains and consist of sands, gravels and clays. Where the gravels predominate, the surface is rugged and shows the bad-land topography as seen in the hills near Uji and north-west of Nara. The Pleistocene is to be divided

into two stages, the Older and the Younger.

The thickness of the older Pleistocene attains over 100 metres and contains, in a few exposures, some lacustrine mollusca,—*Corbicula sandai*, *Viviparus*, *Cristaria*, *Melania*, etc.—and such plant-remains as *Trapa*. The faunal assemblage is the same as the lacustrine older Pleistocene deposit along Lake Biwa, where *Stegodon orientalis*, *Buffelus*, *Elephas trogontheri* etc. were found. Indeed, from the gravelly deposit at Hashimoto on the Yodo-gawa a straight tusk of an *Elephas* was excavated some years ago. The incoherent strata near Nishinomiya at the foot of the Rokkō mass contain marine mollusca as well as lacustrine ones; the former comprising *Pecten*, *Macoma*, *Tellina*, *Raëta pulchella*, *Arca*, *Natica*, *Acmaea*, *Tonna*, etc.. From this fact it may be inferred that the sea invaded the land for a time at one period. Formerly these strata were ascertained to be the Pliocene, while they are of the Pleistocene, from the faunal point of view.

In some places an unconformity, in the midst of the older Pleistocene, was noticed, but we have not yet able to trace the break throughout the area concerned here. At any rate the uppermost of the strata consist of gravels, which are fluvial sediments deposited in the course of rivers or in the basins where the rivers debouched in the Pleistocene epoch. The river-gravels remain at present in the state of detached patches along the ancient river-courses; we can see such a stream-relic on the slope of the mountain bounding the west side of the Watsuka Valley in south Yamashiro.

The coarse, fluvial deposit indicates the existence of a pluvial or torrential age in a later time of the older Pleistocene. At that time the topography of the Kinki district was not different from the present, the gross relief of the land accomplished at the end of the Tertiary. In general the strata of the older Pleistocene lie nearly horizontally, but in some places they have steep dips ranging from thirty degrees to an almost vertical position. The location of such disturbances runs in

straight lines, indicating the existence of the fault along them; for example, along the south foot of the Nishiyama mass from Ikeda to the north of Ibaraki, there is a linear depression, in a narrow band, along which the strata dip down from opposite sides with a dip of fifteen to twenty degrees, in spite of the flatness of the stratification beyond the disturbed zone. Sometimes it is found that in the loose gravel-beds of the older Pleistocene the distinct faults traverse the beds, one of which is shown in the new road-cutting of Mukōmachi southwest of Kyōto, and has a north-northwesterly trend, this being the direction of a series of faults in the Paleozoic formation of the adjacent Nishiyama mass.

The low upland composed of gravels and sands of the older Pleistocene rears several special products; the famous tea-plant near Uji is chiefly grown on the gravelly land with a subordinate plantation on the terrace of the younger Pleistocene. Also the area, except for the bad-land now abandoned, is under cultivation for fruit-gardens and bamboo-groves.

The younger Pleistocene consists of sands and gravels, forming low terraces not so frequently furrowed by valleys as the hills of the older Pleistocene, and unconformably overlies the latter.

Recent—The Recent formation forms the wide plains consisting of sands, clays and gravels. The Ōsaka plain was widened in an historical time, especially in the eastern part where there were many swampy lakes formerly. Also the area of land near the mouth of the Yodo at Ōsaka has been increased by reclamation, as the city has developed.

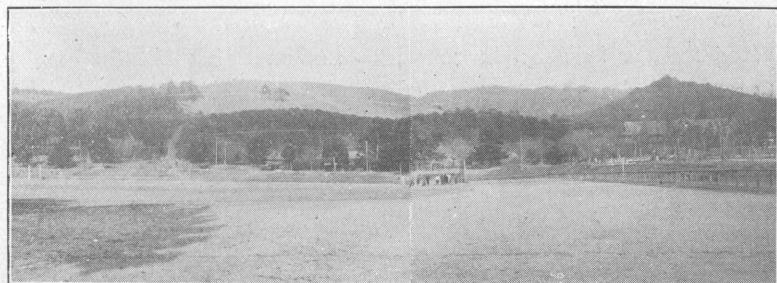
Eruptives—Of the eruptives schistose granite and granite occupy large areas. The schistose granite makes a zone to the south of the Paleozoic and builds up the Ōmi-Iga plateau and the Ikoma range. This gneissic granite grades to granite and they both give the contact action to the Paleozoic sedimentaries in the Kasagi district along the Kizu-gawa. The granite close to Kyōto, forming part of the Hiei range, has a lower elevation,

intervening between the heights of Hiei-zan and Nyoï-ga-take, where the hard contact-metamorphosed Paleozoic sedimentaries have made prominences. The granite is chiefly of biotite-bearing, occasionally, in the boundary, having a small area of hornblende granite. The biotite granite is characterized by its possession of megascopic allanite-crystals. The granite of the Rokkō range mainly belongs to a biotite granite with flesh-coloured felspar; the rock is quarried near Mikage, hence throughout Japan, we commonly call granites "Mikage-*ishi*" or "Mikage-stone".

Mount Ikoma is made up of a quartz-diorite intruded into the schistose granite. Diorites occur as dikes in the Paleozoic near Uji. Also granite-porphry and quartz-porphry pierce the granite and the Paleozoic as dikes, one of which, to the west of Ōtsu, gives a topographical mark to a mountain near the shore of Lake Biwa.

Liparite, in the neighbourhood of Arima, is, perhaps, one of the flows extruded in a pre-Tertiary time, and forms rather rugged and steep hills. It has much plagioclase as well as orthoclase and shows a fluidal texture in places. Dacite forms a large volcanic area of Muroo-san, outside the district considered, and part of it peeps out at the southeastern corner of the annexed geological map.

Andesites are exposed at several points as small cones or plugs. At Nara there are charming volcanic cones, such as



Mikasa-yama and Kasuga-yama, Nara.

Mikasa-yama, Kasuga-yama and so forth, all composed of two-pyroxene andesite. The lava overlies the sediments of sand and quartz-bearing tuff, which may be assigned to the older Pleistocene deposits. In the Ikoma range two areas of andesite are found—on the south, mica-andesite forms Shigi-san and on the north, bronzite-andesite or *sanukite* is exposed in a small mass on the eastern flank of Ikoma-yama, both extruded from the schistose granite. The helmet-like cone of Kabuto-yama in the Rokkō range is also no more than a small tholoide of sanukite.

Tectonics—As shown in the above, the land features of Central Kinki mainly are governed by geotectonic lines. Though the district was subjected to foldings at the pre-Tertiary the disturbances in later ages must have been up-and-down movements. The chief directions of the faults are nearly equatorial and meridional; the Rokkō range is a horst cut off by the equatorial faults and the Ikoma range is a meridional compound-horst. The north-south line along the western brink of the Ōmi-Iga plateau designates a great fault continuing in the south and north directions outside of the area concerned. In 1662, Kinki suffered severe damage by a destructive earthquake and its epicentrum lay in the Kuchiki valley, bounding the western margin of the northern continuation of the Hiei range. The valley forms a part of the above cited fault; hence is one of the active seismo-tectonic lines in Central Japan. Kyōto has often undergone calamities by earthquakes and now one feels many shocks here. It must be inferred that in the adjoining district of Kyōto there exist many active seismo-tectonic lines in accordance with the faults that are discernible by geological researches in detail.

BOTANICAL NOTES ON CENTRAL KINKI DISTRICT

BY PROF. KWAN KORIBA, D. SC., *Kyōto Imperial University.*

The Central Kinki District, situated in the middle of Honshū, has a mild climate and a rich precipitation throughout nearly all seasons. Phytogeographically speaking, it lies in an intermediate region between the zones of the warm-temperate evergreen forest and the temperate deciduous one. Both kinds of trees occur in equal abundance, though the deciduous species far surpass the evergreens in number. The vegetation has been, however, as the district has been densely populated since olden times, greatly modified and most of the area is only of secondary formations—forests, bushes or grasslands—or under the plough, except at shrines and temples, or in ravines and remote mountainous regions.

Among the evergreen trees, there occur frequently: *Symplocos caudata*, *Ilex Oldhami*, *I. rotunda*, *Photinia glabra*, *Pasania Sieboldii* and various species of *Quercus*. Of the deciduous trees those predominating are for the most part: *Zelkova serrata*, *Aphananthe aspera*, *Celtis japonica*, *Acer palmatum*, and in the higher regions *Acer pictum*, *Prunus Grayana*, *Micromeles alnifolia*, *Quercus acutissima*, *Cercedophyllum japonicum*, *Fagus japonica* and *F. Sieboldii*.

There are also various conifers, planted or natural, throughout the district. The cryptomerias in the shrine and temple grounds and along the ravines, the red pines (*Pinus densiflora*) on the hills, and the *Chamaecyparis*-plantations in the mountain regions are very common. *Abies firma* and *Tsuga Sieboldii* occur also here and there. *Ginkgo biloba* are planted usually in consecrated grounds, and *Trachycarpus excelsa* (a palm) in residence gardens.

The red pine forests, just mentioned, are preserved in this district especially for the production of a mushroom, *Armellaria*

Matsutake, the queen of mushrooms in Japan, fragrant and delicious, which is parasitic on pine rootlets, forming the mycorrhiza.

Some hills in the granite regions, where the forest was once cleared, still remain bare, as the withered rock breaks down into fragments incessantly and does not retain the water, so that the advancement of the forest is extremely slow. But two kinds of alders (*Alnus firma* var. *hirtella* and var. *multinervia*) are now planted with success, as pioneers, in such bare slopes.

Of the shrubs and undergrowths, among many others may be noticed: *Aucuba japonica*, *Ligustrum japonicum*, *Viburnum furcatum*, *Orixa japonica*, *Hydrangea hirta*, *Hamamelis japonica*, *Ardisia japonica*, *Sasa variegata* f. *glabra*, *Pollia japonica*, *Oplismenus Burmanni*, *Dryopteris erythrosora*, *Gleichenia glauca*.

As the climate is humid and warm, there are a number of epiphytic orchids, such as *Sarcochilus japonicus*, *Tacniophyllum aphyllum*, *Bulbophyllum inconspicuum* and others, some of which occur even in the groves of city sites. The epiphytic ferns, mosses and lichens occur much more frequently. Various lianas such as ivy, wistaria, *Pueraria*, *Trachelospermum* and others also grow abundantly.

The greater part of the agricultural area has two or more successive crops, rice in summer, and barley, rape or vegetables during rest of the seasons. Shōgoin-daikon (a big radish) and various other vegetables; persimmon, grape and other fruit trees; tea, mulberry and bamboo bushes occupy also a wide area. At Uji, on the route from Kyōto to Nara, there is a famous old tea plantation.

Among several places botanically interesting, the following may be worthy of special mention.

KASUGA-YAMA

Kasuga-yama is a densely wooded hill lying east of Kasuga Shrine at Nara. It has an altitude of 497 m., with a fore-hill of 282 m. immediately behind the shrine, which latter lies circa 150 m. above sea level.

As a consecrated hill, the forest has been preserved in its natural condition since a time more than a thousand years ago, and various trees with associated undergrowths, lianas and epiphytes are found there in luxuriant growth with a rich floral composition, so that it may be regarded as representative of the vegetation in this district.

After the survey of Mr. Y. Okamoto, the floral elements of Kasuga-yama are stated to be as follows: there occur 567 species of vascular plants altogether, in which 374 of dicotyls, 89 of monocotyls, 12 of conifers and 92 species of ferns are included. Among them there are 32 broad-leaved evergreen trees and shrubs, 80 deciduous ones, 57 lianas (including both the woody and herbaceous species), 14 epiphytes (orchids and ferns) and 372 herbs.

Of the broad-leaved evergreens there are: *Quercus sessilifolia*, *Q. gilba*, *Pasania Sieboldii*, *Myrica rubra*, *Actinodaphne lancifolia*, *Machilus japonica*, *Tetradenia foliosa*, *Prunus spinosa*, *Ilex micrococca*, *Symplocos myrtacea*, *S. lancifolia*, *Fraxinus longicuspis*, *Eurea ochnacea*.

Of the deciduous trees there occur: *Ostrya japonica*, *Magnolia hypoleuca*, *Malus japonica*, *Acer rufinerve*, *A. palmatum* var. *amabile*, *Aralia chinensis* var. *glabrescens*, *Kalopanax innovans*, *Clethra alnifolia*, *Diospyros Lotus* var. *glabra* and several others.

Of the conifers: *Abies firma*, *Tsuga Sieboldii*, *Cryptomeria japonica*, *Podocarpus Nagi* and a few others, of which the cryptomerias are for the most part those planted and the largest tree growing there measures more than 10 m. in circumference.

The lianas are found growing vigorously throughout the forest. *Ficus pumila*, *Rosa sambucina*, *Kraunlia floribunda* f. *albiflora*, *Hydrangea scandens*, *Trachelospermum asiaticum*, *Ou-rouparia rhynchophylla* and various others may be seen, together with the epiphytes such as: *Bulbophyllum inconspicuum*, *B. japonicum*, *Sarcochilus japonicus*, *Taeniophyllum aphyllum*, *Angraecum falcatum*, *Dendrobium moniliforme*, *Saccalobium Matsuran*,

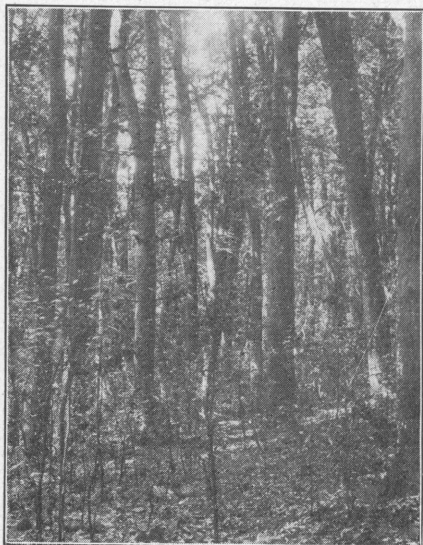
Oberonia japonica, *Psilotum nudum*, *Drymoglossum microphyllum*, *Polypodium issuriense* and some other ferns and myriads of mosses and lichens.

Shrubs, herbs and ferns as undergrowths are especially abundant on the wet area along the ravines.

Shrubs: *Eurya japonica*, *Ilex pedunculosa*, *Pieris japonica*, *Oxycoccus japonicus* var. *ciliatis*, *Damnacanthus angustifolius*, *Epigaea asiatica*.

Herbs: *Sciaphila japonica*, *Goodyera macrantha*, *G. velutina*, *Isopyrum dicarpon*, *I. trachyspermum*, *Potentilla Yokusaiana*, *Mitella japonica*, *Viola Maximowicziana* f. *typica*, *V. verecunda*, *Panax Schinseng* var. *japonicum*, *Primula japonica*, *Pseudopyxis depressa*, *Ajuga yezoensis*.

Ferns: *Pteris Wallichiana*, *P. flavicaulis*, *Dryopteris erythrosora*, *D. lacera*, *D. matsumurae*, *D. viridescens*, *Diplazium lanceum*, *D. Textori*, *Plagiogyra adnata*, *Polypodium scolopendrium*, *P. aristatum* var. *simplicior*, *Polystichium falcatum* var. *genuinum*, *Denstaedtia scabra*, *Cystopteris sudetica*.

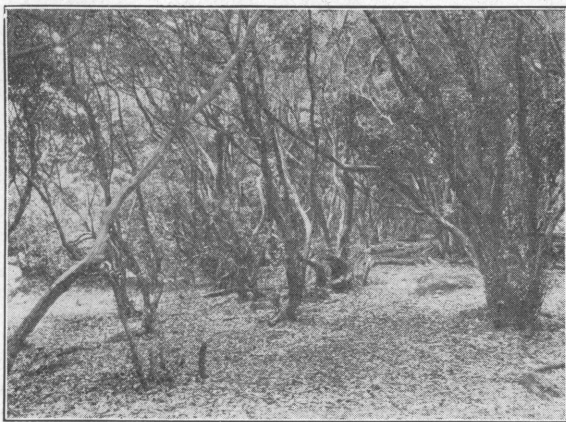


Nagi forest

As to the floral distribution, it may be noted, that there are some species of tropical or subtropical origin, as *Ourouparia rhyncophylla* (a liana of the Rubiaceae with recurved hooks), *Sciaphila japonica* (a saprophytic herb of the Triuridaceae), *Podocarpus Nagi* (a conifer with elliptical leaves and berry-like seeds), *Psilotum nudum* (an epiphyte), *Pteris Wallichiana* and some other ferns, while most of the deciduous trees have their

distribution to a point far to the north.

Though most of the trees are found mingled together, some species show more or less pure communities. For instance, *Abies* and *Tsuga* in the higher region, *Symplocos lancifolia* on the south-western slope, *Tetradenia* and *Acer rufinerve* on the north-western slope. The most remarkable consociation among them all is however the nagi forest. It occupies an area of more than 10 acres on the western slope of the fore-hill in close proximity to the shrine, and affords an aspect quite unique in this district.



A bush of *Pieris japonica*.

No less interesting is it to note further that *Pieris japonica*—a tall evergreen shrub of the Ericaceae—shows a dense growth, not only on the hill, but also here and there in Nara Park. This is brought about by the toxic character of its leaves, which makes them free from the grazing of the deer. The nagi forest seems also to be in the same relation.

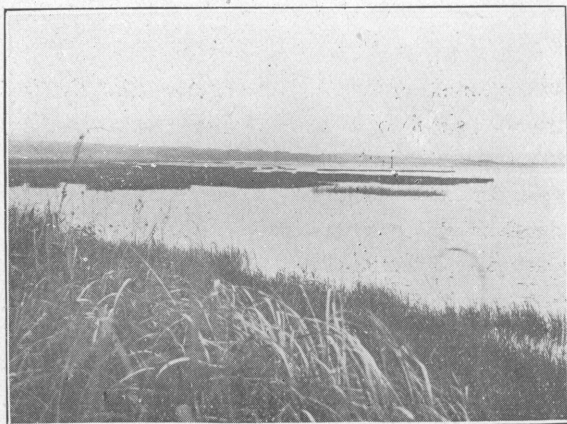
In autumn various leaves change their colour to red (*Acer palmatum* var. *amabile*, *Photinia glabra*, *Diospyros Lotus* var. *glabra*, *Prunus serrata* var. *pubescens*, *Carpinus laxifolia*, etc.), while others to yellow or brown (*Acer rufinerve*, *Sapindus Mukurosi*, *Magnolia obovata*, *Lindera glauca*, *Kraunkhia floribunda*,

Kalopanax sciadophylloides, *Rhus javanica*, *Castanea pubinervis*, *Quercus acutissima*, etc.). These autumnal tints, intermingled with evergreens, make the hill just like a piece of brocade stretched beyond the park and shrine.

Mikasa-yama lies on the left of Kasuga-yama with a soft outline of grass. The hill has been burnt in the late winter every year, as a ceremony, since remote historic times, so that it remains in a grassy condition for ever, with a few fire-resisting plants, as *Miscanthus*, *Ostrya*, *Aletris*, *Asparagus*, *Wickstroemia*, *Gentiana*, *Orobanche*, *Artemisia*, *Aster*, *Senecio* and others, which clothe the slope in spring and summer so as to make an emerald hill.

OGURA-NO-IKE

Ogura-no-ike is situated 2 km. south from Kyōto. It is a remnant of a lake which formerly occupied the greater part of Yamashiro-basin. It has now a width of about 3×4 km., with a depth of less than 2 m. even at the time of high water in summer. The margin of the pond is partly marshy with a gradual transition of *Phragmites*, *Zizania*, *Typha* and others, but is now partly modified artificially into rice fields, which latter work is at present going on rapidly.



Ogura-no-ike.

Specially worthy of notice in regard to this pond is its richness in fresh water plants. According to the survey of Dr. S. Miki, there occur 21 genera of phanerogams and 8 genera of cryptogams, comprising more than 80% of the entire genera of Japan.

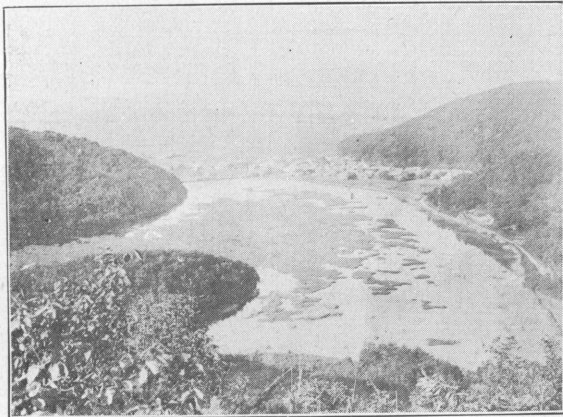
Dicotyledones: *Utricularia*, *Trapella*, *Limnanthemum*, *Myriophyllum*, *Trapa*, *Aldrovanda*, *Ceratophyllum*, *Nymphaea*, *Nuphar*, *Nelumbo*, *Euriale*.

Monocotyledones: *Lemna*, *Spirodela*, *Blyxa*, *Hydrilla*, *Hydrocharis*, *Otteria*, *Vallisneria*, *Caldesia*, *Najas*, *Potamogeton*.

Cryptogams: *Azolla*, *Salvinia*, *Marsilia*, *Ceratopteris*, *Riccia*, *Ricciocarpus*, *Nitella*, *Chara*.

MIZORO-GA-IKE

Mizoro is a pond embraced by pine hills, 2 km. north from Kyōto. It is about 500 × 300 m. in diameter and 1—1.5 m. in depth, with deep mud underneath. The peculiar feature of this pond is the occurrence of a sphagnum moor, a quite rare case in such a warm region.



Mizoro-ga-ike

From the eastern border of the pond has developed a floating islet composed of plant remnants. The marginal portion of the islet has the nature of a low moor with its associated

plants, as *Menianthus trifoliata*, *Carex Gaudichaudiana* var. *Thubergii* and others, which pass over inwards gradually to *Rhynchospora Fauriae*, and ultimately to the cushions and beds of the peat moss in the central portion, associated with *Lycopodium inundatum* (an element of the colder region) *Pinus densiflora*, *Ilex crenata*, *Vaccinium bracteatum*, *Hydrangea paniculata*, *Iris albopurpurea*.

In accordance with such a dystrophous nature of the water, there occur also several insectivorous plants. *Drosera rotundifolia*, *D. Loureiri*, *Utricularia affinis*, *U. bifida*, *U. dimorphantha*, *U. japonica*, *U. minor*, *U. Nagurai*, *U. pilosa* and *U. racemosa*,— a total of ten species, were found there after the researches of Dr. S. Miki. Last year we transported also *Aldrovanda vesiculosa* from the pond Ogura for the sake of its preservation, and this now grows vigorously in its new habitat.

On the open surface of the pond, there occur also those floating leaves of *Brasenia Schreberi*, *Limnanthemum indicum*, and *Nuphar subintegerrimum*, and on the outer margin *Sagittaria Aginashi*, *Caldesia reniformis* and other emerging plants.

INSECT FAUNA OF THE KINKI (MIDDLE WESTERN) DISTRICT.

BY PROF. HACHIRŌ YUASA, PH. D., M. SC., B. SC.,
Kyōto Imperial University.

The insect fauna of the Middle Western District is, generally speaking, an interesting mixture of palaeartic and oriental forms, some of which have a peculiar local distribution. In certain sections facing the Pacific such as the Prefecture of Wakayama, the local fauna include a number of tropical species.

Among the genuine palaeartic butterflies may be mentioned *Gonepteryx scuminata* and *Parnassius stubbendorffi* var. *citrinarius* which were formerly believed to be limited to the north of Shinano and Nikkō respectively but are now known to occur

on Mt. Kurama, near Kyōto. A dragonfly, *Palaeophlebia superstes*, is found only in a certain locality in Hokkaidō, on Mt. Ehiko, Kyūshū and, strangely enough, on Mt. Kurama just mentioned. Another dragonfly, *Nannophya pygmaea*, and a cicada, *Euterpnosia chibensis*, have a restricted distribution, the former occurring in Shizuoka, Okayama and at Mizoro-ga-ike, Kyōto and the latter in Kazusa and on Mt. Kasuga, Nara. Species of interest, mostly Asiatic, include, among others, such Lepidoptera as (1) *Papilio helemus nicconicolens*, (2) *Danais chrysippus*, (3) *Melanitis leda determinata*, (4) *M. phedima polishana*, (5) *Chrestis thyodemas mabella*, (6) *Arhopala bazalus*, (7) *A. ganesa loomisi*, (8) *Langia zenzeroides* var. *nawae*, (9) *Erasmia purchella*, (10) *Heterusia aedea* var. and (11) *Nyctemera plagifera*. Of these, all except Nos. 1 and 7 find the northern limit of their distribution in this part of Japan. No. 8 is confined to Mino where only two or three specimens are taken each year while No. 11, also a southern form found in Formosa, Loo Choo Island, etc., is restricted to Mt. Mikasa, Nara. No. 7, a species common in central and western China, is found also on Mt. Kasuga, Nara.

Places where collecting is good are as follows :

1. Mt. Kurama near Kyōto. Perhaps the best place for general collecting.
2. Mino, forty minutes ride from Ōsaka.
3. Mt. Kasuga, Nara. For special forms.
4. Mt. Ōdaigahara and the environ. For sub-tropical species.



BRIEF GUIDE TO THE PLACES TO BE VISITED BY THE CONGRESS PARTY.

Chronology useful in reading the history of Japanese Arts and Architectures.

- I. Primeval Period: before the introduction of Buddhism. 660 B.C.—551 A.D.
 - II. Asuka Period: 552 A.D.—644 A.D.
 - III. Nara or Tempyō Period; 645—781.
 - IV. Early Heian or Kōnin Period: 782—897.
 - V. Late Heian or Jōkwan Period: 898—1185.
 - VI. Kamakura Period: 1186—1393.
 - VII. Ashikaga or Muromachi Period: 1394—1572.
 - VIII. Toyotomi or Momoyama Period: 1573—1614.
 - IX. Tokugawa or Yedo Period: 1615—1867.
 - X. Era of Meiji (or so-called Post-restoration): 1868—1911.
 - XI. Era of Taishō: 1912—
-

KYŌTO.

Kyōto (population: about 700,000; area: 33 square miles.) is the most classical city in Japan, and used to be the seat of Imperial Residence from 794 A.D. to 1867. It stands on a plain surrounded by hill ranges on all sides, except toward the S., where it is open to larger plains extending to Ōsaka Bay in the S.W. and to Nara district in the S. The celebrated R. Kamo-gawa runs towards S. through the eastern part of the city.

When the city was first planned by Emperor Kwammu, the 50th Emperor of Japan, after the style of Chinese capitals, it was much wider in area (3 m. from E. to W., and $3\frac{1}{3}$ m. from N. to S., enclosed as a whole by a low mud wall, and further surrounded by outer ditches) containing in its interior altogether 2732 streets. In the medieval age, it was repeatedly destroyed by wars and calamities, and the present city of Kyōto corresponds to only the eastern half of the ancient one.

(a) *Gosho* (or *The Old Imperial Palace*).

In the centre of the Gyo-en (or the Imperial Park) is situated the Old Imperial Palace, surrounded by high, plastered wall, which is pierced by six big entrance-gates. To the S.E. of the Palace stands the Sentō-gosho (Palace for retired Emperors). The Gosho is closed to the public and high grade officials, exofficials or distinguished personages can get a special permit only; if foreigner his permission must be obtained from the Imperial Household through his respective embassy or legation. Having been destroyed by fire, in the Tokugawa Era, the present edifices of the Gosho are not very old, though constructed after the ancient style. See Seiryōden (Ceremonial Hall); Shishinden (Larger Ceremonial Hall and Throne); Kogosho (Minor Palace); Ogakumon-jo (or the Imperial Study); all these buildings, being of an ancient style, are not brilliantly decorated; but very fascinating in its noble simplicity.

(b) *Nijō-Detached Palace*.

Inside the site of the old castle of Nijō, there is a splendid palace composed of five big buildings. These were built by the first Tokugawa Shōgun to serve as his residence on the occasion of his visit to Kyōto. Between 1871 and 1884 the castle was turned into Kyōto Prefectural Office and it was during this period that the interior of the Palace was seriously damaged. Since 1884 the castle was made as Detached Imperial Palace.

Kara-mon, or the front gate of the Palace was brought over from the Momoyama Palace of Hideyoshi Toyotomi and shows every characteristics of the architecture of the Momoyama, Period. In the interior of the Palace there are numerous rooms richly decorated with paintings and sculptures.

(c) *Rokuon-ji* (or very often called *Kinkaku-ji*).

A Buddhist temple situated near the foot of Kinugasa-yama at the N.W. corner of the city, and noted as one of the finest and most typical landscape gardens in Japan. Originally a

villa of a court noble and then the residence of one of Ashikaga Shōguns, who added in 1397 the famous three-storied Kinkaku, or the Gold Pavilion (so called because the interior was formerly covered with gold leaf) which is the best example of the summer villa architectures of the Ashikaga Period.

(d) *Arashiyama (or Ranzan).*

One of the most famous places in the vicinity of Kyōto. On the hill-sides facing the R. Ōi-gawa rise many large pine-, cherry- and maple-trees and the contrast of the tints of these woods exhibits an exquisite beauty in various seasons. The upper 13 miles of this river (between Kameoka and Arashiyama) is "Hozu rapids," and shooting these rapids is a pleasant excursion recommended to the visitors to Kyōto.

(e) *Kyōto Imperial University.*

Founded in 1897, having 7 departments (Law, Medicine, Engineering, Literature, Science, Economics, Agriculture) and more than 178 professors, 131 assistant professors, 160 lecturers, and 3819 students.

(f) *Shūgakuin Detached Palace.*

The Imperial villa located at the foot of Mt. Hi-ei-zan, originally built by the Tokugawa Shogunate for the Ex-Emperor Gomizuno-o-Hō-wō, at a spot where then stood a temple, Shūgakuin. The site are divided into three sections, the uppermost of which, the Kamino-ochaya, is on the slope of a background hill and commands a wide view. A large pond occupies the centre of this section and contains a few small islands.

(g) *Maruyama-kōen.*

A public park of the city backed by thickly wooded Higashiyama. There is a famous cherry-tree in the centre of the Park. The Yasakajinsha, a shinto shrine, near the

western margin of the Park and the Chion-in, a large Buddhist temple, north to the Park, are both worthy of visiting. The latter established as early as 12th century, has a large front gate, some huge temple edifices and a huge bell (12 ft. in height and 9 ft. in diameter).

(h) *Lake Biwa.*

The largest lake in Japan, being 6.6 miles in average width (E. to W.); 39.7 miles in length (N. to S.); 146.1 miles in circumference and 267 square miles in area, hence nearly equal in size to the Lake of Geneva. The deepest spot lying in the N. part of the lake measures 318 ft., and the water surface is 284.9 ft. high above sea level. Three islands, composed of igneous rocks and covered by woods, stand in the lake. The waters descending from the surrounding hills empty themselves into the lake, and flows out as the R. Seta-gawa, the only natural outlet at the S. end. The same river is called the Uji-gawa near Kyōto and finally the Yodo-gawa near Ōsaka. An artificial water-canal, called "Sosui," also leads to Kyōto by means of tunnels.

(i) *Ishiyama-dera.*

(12 miles E. from Kyōto and near the outlet of Lake Biwa). A Buddhist temple established in 8th century (the Nara Period), though the present buildings are of much later age. An entrance-gate; an avenue of maple-trees; a fantastically shaped black rock (dolomite); the main building (of the Earlier Fujiwara Period); many ancient sculptures (national treasures); a belfry, and a beautifully proportioned, 2-storied pagoda (both of the Kamakura Period); and finally a splendid panoramic view of L. Biwa and the R. Seta-gawa.

(j) *Onjōji* (also called *Mii-dera*).

A Buddhist temple, first founded in the 7th century. In its most prosperous days, it is said, there were 859 buildings

within the wide temple-ground. One of the present buildings, the Kwan-non-dō, is one of the pilgrim's 33 stations in the Kinki district, and stands in a rather high situation commanding a fine view of the city of Ōtsu as well as Lake Biwa.

(k) *Ōtsu Hydrobiological Station, Kyōto Imperial University.*

On the bank of Lake Biwa near Miidera.

(l) *Hiyoshi-jinsha.*

In the small village of Sakamoto, skirting the E. side of Mt. Hiei-zan, there is a shinto shrine of 'Hiyoshi,' near which the brilliant autumn maple-leaves by a small stream can be seen.

(m) *Uji* (9 miles from Kyōto).

A small town lying by the left bank of the R. Uji-gawa and is an old-known centre of the tea-industry. A Buddhist temple, Byōdō-in, was originally a villa of a minister in 9th century and afterward converted into a temple. The present main edifice is the famous Hō-ō-dō (the Phoenix Hall), built in 1054 A.D. and is the finest example of wooden temples of the Fujiwara Period. From the architectural view-point, it deserves notice that here Japanese art had completely thrown off the influence of China, which prevailed in the various arts of the preceding Eras, and began to develop characteristic features of her own. The chief image of Buddha in the temple is attributed to the famous sculptor, Jōchō, of the Kamakura Period. Decorations and mural paintings in the interior were unfortunately much damaged during the Earlier Meiji Era, when people were, blinded by the introduced western civilization, cared not at all the value of old civilization of their own country.

(n) *Ōbaku-san Mampuku-ji* (6.6 miles from Kyōto).

A Buddhist temple founded in 1659 by a Chinese priest named Ingen who died there in 1673. The first 21 of his

successors were all Chinese priests. In numerous original buildings now standing in the temple ground we perceive a well-marked, half-japanesed, chinese style of architecture.

(o) *Momoyama Goryō* (Imperial Tomb of the late Emperor Meiji).

The Tomb is in the shape of a low mound, thickly covered with 300,000 pieces of fine granite, natural stones, after an old style once used in the 7th century. It has the advantage of preventing the growth of weeds over the Tomb. In this Tomb anything suggestive grandeur or brilliancy are avoided, as the late Emperor had loved simplicity and durability in His way of life.

Among many other places worthy of visiting, the following four are pointed out for examples :

(p) *Sanju-sangendō*.

An elongate Buddhist temple, of Kamakura style, erected in 1132 and rebuilt in 1251, situated near the Fine-Art Museum, and contains many old sculptures and 1001 Buddhist images. Formerly it was a custom for skillful archer to test their ability by seeing how many arrows they could shoot in one night over the entire length of the temple (392 ft. long). The highest number of trial in one night recorded in 1696. A.D. is 13053, of which 8133 were successful.

(q) *Kiyomizudera*.

A Buddhist temple, established in 805, situated high up on the hill, Otowa-yama, of a considerable elevation in the west slope of Higashi-yama, or eastern hill range of Kyōto. Among many buildings in the ground, the Main Hall, which were constructed in 1633 by order of the first Shōgun of Tokugawa family, stands on a cliff, facing the S. and has a fine view of the S. half of the city. From another buildings lying nearer

the background wood, visitors can have the best view of the main temple, noticing the fine curve of its roof.

(r) *The Ginkakuji or the Silver Pavilion Temple.*

A Buddhist temple, at the foot of thickly wooded hills, $\frac{1}{2}$ m. E. of the Imperial University. Originally it was built as a summer villa by one of Ashikaga-shōguns in 1479 A.D. Its quiet garden with a beautiful pond is one of the famous types in Japanese Garden.

(s) *Heian-jingū.*

A shinto temple dedicated to the Emperor Kammu-tennō, the founder of the capital Kyōto. The two-storied main gate way and the main worshipping hall of the temple are reproductions, though on a reduced scale, of an ancient great ceremonial hall (Daigokuden).

NARA.

The old city of Nara (population 33,000) was founded in 710 A.D. and lasted as the capital of Japan for 75 years, covering the reign of seven monarchs. Before that time it was customary in Japan for the Imperial Court to have no permanent capital, each ruler fixing his seat of government anew. The city of Nara when first planned was much greater in area than it is now, though perhaps not so dense in population. In this period Buddhism was at the height of its grandeur, and was the faith of all classes of people; priests were held in high honour, some of them being missionaries from China or India. Successive Emperors and Empresses, especially Shōmu-tennō, were very zealous in propagating Buddhism. Kwōmyō-Kōgō, the consort of Shōmu-tennō, was also a devout worshipper and assisted the Emperor in erecting many large temples in Nara, establishing at the same time asylums for the poor and the helpless, and charity hospitals for the sick.

(a) *Nara Kōen*. (Public Park).

This public park which covers an area of about 1,325 acres, is a beautiful plain nestling at the foot of clusters of green hills at the back and with scattered temples, old trees, and herds of sacred deer. Such important classical buildings as Kasuga-jinsha, Tōdai-ji, Kōfuku-ji and the Imperial Fine-Art Museum are located within its limits.

(b) *Sarusawa-no-ike*.

An old pond situated near the entrance of the park, and is stocked with carp and tortoises.

(c) *Kōfuku-ji*.

N. of the above-mentioned pond. Originally a Buddhist large temple, founded in 710 A.D., had altogether 175 buildings. Of a few buildings now standing, the Tōkon-dō and the 5-storied pagoda, both dating back to 1426 (Ashikaga Period) and the 4-storied pagoda of the Early Fujiwara Period are the most conspicuous. In front of the Tōkon-dō there is a big pine-tree, Hanano-matsu.

(d) *Kasuga-jinsha*.

A shinto-shrine founded in 768 by the Fujiwara Family as their tutelary shrine. The buildings, though they have been rebuilt several times, retain the original style, and many of them are so important that they receive the special protection of the government. An immense number of stone and bronze lanterns produces a striking effect. They are all lighted once a year during one night in February. The shrine is surrounded by the forest of Nagi (*Podocarpus Nageia* Zoll. et Monitz.) only. The sacred deer (*Cervus sika* Temm.) were brought from another temple in the province of Shimoosa (30 m. E. of Tōkyō) at the time of establishing this shrine. In ancient times death was the penalty for killing them. The Kagura, or an old-styled sacred music consisting of song, music and dance is performed in front

of the shrine.

(e) *Mikasa-yama.*

Mikasa-yama or correctly Wakakusa-yama (meaning Mt. of tender grass) is a hill spherical in shape, covered with turf, and is an ideal place for strolling promenade. Along the foot of this hill are Tamukeyama-Hachiman Shrine, Sangatsu-dō, Nigatsu-dō, &c. Of these, the Sangatsu-dō is the most interesting, especially in the following respects: (i) The edifice is composed of two different structures, i.e. one half of it, or the main sanctuary, dates back to the time of its foundation in 733 A.D. and has the characteristics of the architecture of that age (Nara Period), while the other half of the temple was added in 1200 A.D. in a style peculiar to itself (Kamakura Period); (ii) The temple contains a number of the highly-valued masterpieces of Buddhist statuary. It is said that the Empress Kōmyō-Kōgō offered her jewels for decorating the main Buddha in this temple.

(f) *Tōdai-ji.*

A Buddhist temple, famous for 'Dai-butsu' or the huge bronze Buddha, was founded by the Emperor Shōmu-tennō 1200 years ago, and the original site contained area of 20 acres. The first Dai-butsu, which was cast in 748, was twice destroyed by fire and the original work can be seen in the lower part of the image only. The present building of Dai-butsu was erected in 1708 (Tokugawa Period) and is smaller and less well-proportioned than the original one. The big bronze bell is of the Nara Period, having been cast in 752, while its belfry is a typical wooden building of the Kamakura Period.

(g) *Imperial Museum.*

A white stone-building of European style, situated in the centre of the Nara Park, contains numerous exhibits of sculpture, paintings, etc.

In the western and south-western suburbs of Nara, there

are numerous Imperial Mausoleums and old Buddhist Temples. In these parts of the province of Yamoto being the site of the Imperial court during the Asuka Period (or the Earlier Nara Period), some of these temples contain very important classical monuments, such as Buddhist images, sacred utensils and architectural models, either brought from Central Asia or made by the first artists who came along with Buddhism from Korea or China.

(a) *Yakushi-ji*. (ca. 3 miles from Nara).

This is a good example of the above-mentioned relics being founded in 680. The 3-storied pagoda (115 ft. high) has the appearance of a 6-storied one, owing to each story having a terrace on the outside, and belongs to the reign of the Emperor Tenji-tennō (662--670 A.D.). The top structure of this pagoda is famous in having figures of flying angels. The Main Hall, which is rather new, contains a bronze image of Buddha which has won the highest admiration of critics: the face being wonderfully beautiful and the folds of the dress being well-nigh perfect.

(b) *Hōryū-ji*. (5 miles from *Yakushi-ji*.)

Hōryū-ji is the oldest existing Buddhist temple in Japan, dating back about 13. century. The original edifices were founded in 586—587 by the Prince Shōtoku-taishi by order of the Emperor Yōmei-tennō, while several new buildings were added between 593 and 607. Kondō (Main Hall), five-storied pagoda and Chūmon (Middle Gate) with surrounding galleries, are of the oldest type. Inside the Main Hall, there are several images and sacred utensils very interesting as showing evidence of communication between the civilizations of Japan and Continental Asia. In the decorations of these national treasures, one will find designs characteristic of ancient Greek, Arabian, Assyrian and Indian Arts. The fresco mural paintings in this building are also a priceless memorial of the fine-arts thirteen centuries ago. The Daikō-dō or Great Lecture Hall is 1000 years old.

The Yume-dono (Hall of Dream) in an octagonal building in the centre of Tō-in or the East Quarter. It was originally a Palace of Shōtoku-taishi, but the present building is one rebuilt in 739.

ŌSAKA.

The city of Ōsaka is one of the oldest harbours in Japan, being 16 centuries old, first opened by the Emperor Nintoku-tennō, the 19th ruler of the Empire. At present it is the most active centre of commerce and industry with a population of more than two millions and embracing an area of 6590 square miles. The River Yodo-gawa, on the delta of which the city stands, is communicated by streams and canals which are crossed by several hundred bridges.

(a) *Tennō-ji.* (more correctly *Shitennō-ji*).

An old Buddhist temple, near Tennō-ji Railway Station, was founded by Prince Shōtoku (572—621 A.D.), but the present building date back to 1812, the older structure having been repeatedly destroyed.

(b) *Osaka-castle.*

A ruin of an old castle built in 1584 by Hideyoshi Toyotomi. Formerly the castle was much larger, being two and a half miles in circumference, surrounded by deep moats more than 8—16 yards wide.

(c) *Nakanoshima Public Park.*

The Municipal Office, the Public Library, etc.

(d) *Osaka Asahi-Shimbun* and *Osaka Mainichi-Shimbun.*

Two large newspaper offices with perfect equipment and noted for an immense daily circulation.

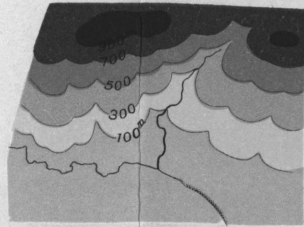


135°30'

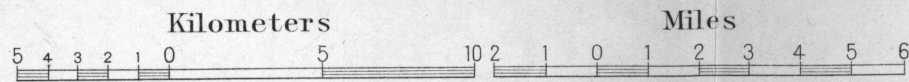
TOPOGRAPHICAL MAP OF CENTRAL KINKI

Environs of the Cities of Kyōto, Nara, Ōsaka and Kōbe

- Prefecture Boundary
- Province Boundary
- Municipal or County Boundary

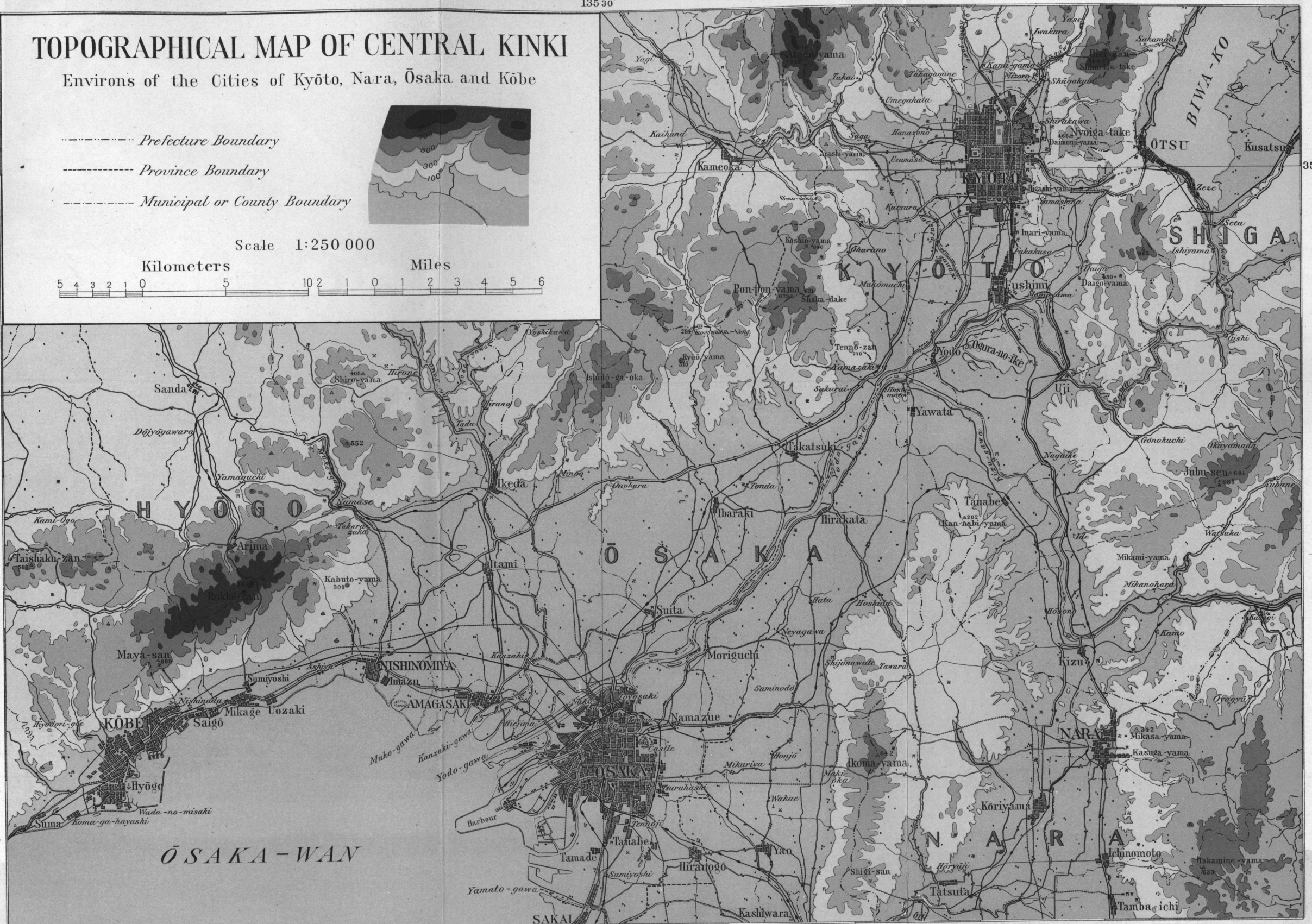


Scale 1:250 000



35°

35°



135°30'

GEOLOGICAL MAP OF CENTRAL KINKI

Environs of the Cities of Kyōto, Nara, Ōsaka and Kōbe

- | | | |
|---------------------|--|--|
| Alluvium | Paleozoic | Diorite |
| Younger Pleistocene | Metamorphosed Paleozoic (Gneiss, schist, etc.) | Granite-Porphyrty and Quartz-Porphyrty |
| Older Pleistocene | Andesite | Granite |
| Tertiary | Dacite | Schistose Granite |
| Mesozoic | Liparite | |

Scale 1 : 250 000

0 1 2 3 4 5 10 Kilometres 0 1 2 3 4 5 Miles



大正十五年十二月二十日印行

大正十五年十二月二十五日發行

第三回汎太平洋學術會議

印刷者 木 下 憲

東京市日本橋區兜町二番地

印刷所 東京印刷株式會社

東京市日本橋區兜町二番地

發賣所 東京地學協會

東京市京橋區木挽町九丁目二十九番地

Executive Office: Rooms of the National Research Council,
Department of Education, Tokyo

CABLE ADDRESS:—KENKYU, TOKYO.

Printed by the Tokyo Printing Co., Ltd.