narrow Sunda Strait from Java. Unlike Java, Sumatra has a series of considerable islands (Nias Islands, Mentawi Islands, &c.) arranged like outworks in front of the west coast, which faces the open Indian Ocean. The general physical features of the island are simple: a chain of lofty mountain ranges extends throughout its length, the western slopes descending rapidly towards the ocean and the eastern looking out over a vast alluvial tract of unusual uniformity.

Towards the north end of the island the spurs of the main chain sometimes extend towards the neighbourhood of the east coast and the eastern plain widens from north to south. Owing to this configuration of the island the watercourses of the western side are comparatively short: only very few of them are large enough to be navigable. Those of the eastern slope, on the other hand, such as the Musi, Jambi, Indragiri, Kampar, Siak, Rokan, Panei, Bila and Λsahan, are longer, and with many of their affluents are navigable in their middle and lower courses over considerable stretches for craft drawing 6 to 10 ft. Thc Musi and Jambi are navigable for 372 and 497 m. respectively. As waterways all the rivers labour under the drawbacks of rapids, mud-banks at their mouths, banks overgrown with forest, sparse population, and currents liable to serious variations due to irregularity of supply from the mountains and sudden rain­falls. In their lower courses some of them form enormous intercommunicating deltas. The mountainous regions contain numerous lakes, many evidently occupying the craters of extinct volcanoes. When, as sometimes happens, two or three of these craters have merged into one, the lake attains a great size. Among the larger lakes may be mentioned Toba; Maninyu, west of Fort de Kock; Singkara, south-east of Fort de Kock; Korinchi, inland from Indrapura; and Ranua, in the south-west.

*Orography.—*In order to appreciate the orography of the island the following sections of Sumatra should be discriminated one from another: (1) the valley of the Achin or Atjeh River. (2) The plains around the lake of Toba, which are of varied level and physical character. Those on the south and north lie at an elevation of 4000 ft., having the character of steppes, with scanty forest-cover, and, save in the narrow valleys and river-courses, are suitable for cattle-rearing. The plains on the east and west lie at a lower level and are eroded by larger rivers, clothed with forest, showing more sawahs and ladangs, or dry ricefields, and, near the rivers, planted with jagong (maize), coffee and fruits. Except on the south-east, where the Asahan flows away to the east coast, Toba Lake is sur­rounded by steep shores. According to R. D. Μ. Verbeek, P. van Dyk, B. Hagen and W. Volz, the lake had its origin in the collapse of a volcano. (3) the valley of the Batang Toru, with the plateau of Sipirok in the east and the mountain chain of Tapanuli in the west. On the south and south-east the valley is bounded by two volcanoes, Lubuk Raja and Si Buwal Buwali, whence were derived the volcanic tuffs of the valley and of the plateau of Sipirok, with their lakes, which are drained by the Batang Toru and its affluents. The valley varies in breadth from 51/2 m. to half a mile and less. Flowing in a deep bed cut in the tuff strata, the river is not navi­gable. (4) The longitudinal valley of the Batang Gadis, with its affluent the Angkola, and in the south the valley of the Sumpur, the upper course of the Rokan, between Lubuk Raja in the north and Mt Merapi in the south. This valley is 64 m. long, with a mean breadth of 4 to 5 m. All the rivers of this valley, flowing in deep beds of eroded diluvial tuffs, with a fall as much sometimes as 330 to 660 ft. a mile, are unnavigable. The valley is bounded east and west by chains of slate and Γalaeozoic rocks. The bottom is in many parts the diluvium of lakes drained by the rivers. (5) The section of middle Sumatra between the line of the three volcanoes, Singalang- Tandikat, Merapi and Sago on the north, and that of the three mountains Patah Sembilan, Korinchi and Tujuh on the south. This section is divided by the Middengebergte or middle chain into a northern half watered by the Ombilin or upper Indragiri with its affluents, and a southern half traversed by the Batang Hari or upper Jambi. To the north of the volcanoes, which rise to 9500 ft. or more, there is a high plateau of volcanic forma­tion, whose elevation declines in a direction from west to east from 2950 to 1640 ft., with the lake of Maninyu (about 40 sq. m. in area) filling the hollow of an old volcano, and with rivers which have eroded their beds in the tuffs to a depth of 300 ft. and more. South of the volcanoes the northern affluents of the Ombilin—Sumpur, Sello and Sinamar—flow through valleys parallel to one another in a north-west to south-east direction. Here, too, are found fertile tuffs, and the valleys are densely populated. The rivers, like those already characterized, and for the same reason, are not available as waterways. Singkara Lake (44 sq. m.) is of origin similar to that of Maninyu. The Ombilin, issuing out of the lake on the east side and flowing through a plateau of Eocene sandstone, has on its banks the coalfields of Sungei Durian, &c., but is not serviceable as a waterway for that part of Sumatra. The coal has to be transported by railway via Solok to Padang (Emmahaven), a seaport on the west coast. Solok lies on the Sumami, which, flowing from the south to the lake of Singkara, prolongs the valley of the Sumpur to the Midden­gebergte. Unlike the northern, the southern affluents of the Ombilin do not follow longitudinal valleys hemmed in by the Barisan range and ranges of slate, limestone and sandstone. Here prevailing granite and diabase give rise to a complicated mountain system through which the rivers cleave their way in a curved and irregular course. South of the Middengebergte, however, the northern affluents of the Batang Hari, the Seliti, Gumanti, Si Potar, Mamun and Pangean, at least those in the west, again run in longitudinal valleys. These affluents and the Batang Hari itself (except the part at the mouth, Mamun-Simalidu) are navigable only by praus drawing not more than 12 in, (6) South Sumatra, so far as known, presents everywhere in its valleys the same character as that of the Batang Toru, Batang Gadis, Sumpur, &c. They also are closed in on the north and south by volcanoes which have here produced similar masses of tuff, with lakes and rivers of the same formation as in the north. Such are the valley of Korinchi, with the river of the same name, between the peak of Korinchi and Mt Raja; the valleys of Serampei and Sungei Tenang (as imperfectly known as that of the Korinchi), in which arc to be sought the sources of the Tambesi and Asei, both affluents of the Jambi; the longitudinal valley of