

Geology. — *Concerning the Tertiary of Atcheen.* By Prof. K. MARTIN.

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In the north of Atcheen young tertiary sediments occur, that have been surveyed by the Survey-office of the Department of mines. More than 6000 mollusca from these deposits were examined to the following effect :

The fossils belong to 347 different species, which sometimes enable us to recognize distinctly a mutation of the species. So, for instance, a marked mutation occurs of the miocene *Melongena gigas*. To designate aberrant forms of species, already known from younger strata, the addition *prior* is adopted. Mutations and priores are of great significance in establishing the age of sediments.

Of the named species from Atcheen only 117 from the tertiary of Java are known, and most of them (77) are found in this island in the pliocene formation, while 66 % are still living in the present time. Moreover, a number of fossils are lacking that characterize the miocene of Java. So the strata of Atcheen must be considered to belong to the pliocene. As yet a perfectly similar formation from the East-Indian Islands is not known, but it may be that in the pliocene of Atcheen sediments occur that correspond to the Sondé-strata of Java.

The Palaeontologic data are insufficient for a grouping of the tertiary of Atcheen into zones of different ages, for the faunae of the consecutive zones, separated by the geologists, reveal a very close affinity. This appears not only from a direct comparison of all fossils, but also from the procentic amount of recent species, known in the several strata. The fossils examined have been gathered in a complex of 6 zones, whose thickness can be estimated at ± 3000 m. The pliocene geosyncline must, therefore, have subsided very quickly in this region, while the sedimentation was very intense.

The general character of the fauna is purely indopacific. European species are absolutely absent, and FROST's record of the presence of European fish-otoliths is erroneous. It is a mistake due to otoliths being unfit for the determination of the species. The connection between the Indian and the European sea was entirely broken during the pliocene time in the Indian Archipelago, as well as in British-India, where strata occur corresponding to the younger tertiary of Java.

An extensive treatise on the subject will appear in "Wetenschappelijke Mededeelingen", issued by the Mining Department in the Dutch East-Indies.
