

ZOOGEOGRAPHY

THE Malay Peninsula forms a portion of the Indo-Malayan Province of the Oriental Region—one of the five great areas into which the earth's surface is commonly divided for the purposes of the study of the distribution of life upon the planet.

Space does not here permit of discussion of this interesting problem, but it may not be amiss to briefly state a few of the conclusions that are derived from a study of the bird population of the Malay Peninsula as compared with that of the neighbouring land masses.

If we eliminate from our list all migratory birds it may be noted that the numbers of species inhabiting the Malay Peninsula, Sumatra and Borneo approximate in numbers, but decrease considerably in Java, as is only to be expected from its smaller area and greater remoteness—a question we will return to later. In the second place, if we disregard all those birds found only at elevations above 2500 ft., we find that in the case of the Malay Peninsula the residue contains no genus and extremely few species that are not represented in Sumatra or in Borneo, or in both. We are therefore forced to the conclusion that, in times geologically extremely recent, the low country of Borneo, Sumatra and the Malay Peninsula formed one land surface. The fact that an elevation in the neighbourhood of thirty fathoms would again unite these areas lends force to this supposition. Turning to the section of the avian population exclusively confined to the higher mountains we at once observe that the whole of the Indo-Malayan Province possesses a certain number of species in common, which have also an extremely wide range over Burma, Tenasserim, the Himalayas, and in some cases even the Philippines, which may be regarded as a residual population, possibly dating from a time when the climate was less tropical than is now the case, which has now taken refuge in a cooler zone. That this is probably true is shown by the fact that on the high mountains of Sumatra and Borneo we find resident species of thrushes which the lower, and consequently hotter, mountains of Malaya have not been able to maintain. Other Himalayan species also occur both in Sumatra and Borneo, which have not survived in Malaya, such as two small babblers (*Staphidia* and *Rimator*).

The montane populations of Sumatra and Malaya are much more akin, and indicate a much more recent separation from each other, than does that of Borneo, in which an element of unknown origin, but possibly derived from the

Philippines and Celebes, still persists. The lowland fauna of Borneo is also more specialized, and several forms occur there, including two genera of game birds, that are not represented elsewhere.

The avifauna of Java shows evidence of ancientness, and also of impoverishment, which is lacking in the other parts of Indo-Malaya. It has no argus pheasant and few jungle quails, while those that do exist are very distinct. Broadbills, very common elsewhere, are found only in the west of the island. Barbets are numerous and very distinct. There are two very distinct genera peculiar to the island—a small tit (*Psaltria exilis*) and a shrike-like bird (*Laniellus leucogrammica*)—with no very close affinities. But the most interesting fact bearing on the vertebrate fauna is the existence of a small group of birds and mammals found in Siam, Java and the north of the Malay Peninsula, but not in Southern Malaya, Borneo or Sumatra, amongst which may be mentioned the peacock (*Paro muticus*), a green-pigeon (*Trogon bicincta*), and one or two babblers. Possibly the coincidence may be due to a similarity in climate, but more probably is evidence of an ancient land connexion, possibly by way of Cochin-China, at a time when the area both of Sumatra and Borneo was very much less than it is at present.

If we make allowances for differences in climate from north to south, the avifauna of the Malay Peninsula is, on the whole, very homogenous, and may be taken to extend about as far north as Tavoy, in Tenasserim. But there is evidence of breaks in the continuity of the land surface, from the Isthmus of Kra to Johore, though it would not seem that these breaks have been extensive either in space or time. At some period, comparatively recent, there has been an obstruction to the extension of species coming from the north, southwards of North Johore, and it is also probable that the area south of Malacca has, for some brief period, been an island.

The north of the Peninsula has also in late geological epochs been cut off from the southern parts somewhere in North Kedah. Not a few forms from the north do not cross this line, while the converse is true of southerly forms.

The Straits of Johore, north of Singapore, and the Singapore Straits, south of the island, are beginning to have effect as faunal boundaries, and slight differentiation is commencing to occur in many species, though this is more marked in mammals, which have less powers of dispersion than birds. Differences are at present very slight, and possibly in some cases imaginary, or not established, but they certainly occur in a fair number of cases.