THE BALANCE OF NATURE

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The balance of nature is an expression which is apt to be loosely invoked for all manner of purposes, but where wild life is concerned it is often used as an argument to prevent any alteration to an existing state of affairs. Man, however, in actual fact is ceaselessly upsetting the equilibrium of nature and almost every action of his upsets a natural balance, for instance, to mention but a few—developing agriculture, planting forests, cutting out forests, draining swamps, constructing dams and reservoirs, building great airfields or making new roads and railways. All this change is unavoidable and inevitable and no one can foresee the effect it is likely to have on the local wild life; sometimes the results are indeed remarkable. But the narrower interpretation of upsetting the balance of nature refers mainly to a situation in which there is for a variety of purposes the deliberate intent to alter the status of wild life, may be by the introduction of an exotic species, maybe by the elimination of a species already present. Such drastic changes can, though not necessarily, be fraught with considerable danger to the other species, and introductions into a favourable environment where natural enemies are absent or do not develop may result in the unimpeded and disastrous multiplication of the introduced species, such as the well-known examples of the rabbit in Australia, and the English sparrow in the U.S.A. So far my remarks have related to what can be termed an artificial alteration of nature's balance, oblivious of the fact that nature is not static and that nature itself is in a never-ceasing state of change. When I refer to nature not only do I mean the climate, the physical features, the forests, the vegetation and the wild life, but I include primitive man who always was and is, where he still occurs, part of nature. Primitive man filled his own little niche in the order of things, and with his primitive weapons and implements had little lasting effect on the zoological and botanical world around him. It is civilized man with his highly developed lethal weapons and his ever-increasing numbers needing more and more of the open spaces to be converted to cultivation to feed him, who is such a despoiler of nature. I hope none of you will be disappointed when I tell you that my talk is not intended to be a scientific dissertation on the pros and cons of interfering with nature, which is a subject of considerable

complexity. Rather I want to give you facts, illustrated chiefly by events which I have seen or know of in Uganda, of how nature adjusts itself to alterations and how nature itself may be responsible for those very changes. The artificial introduction is not necessarily harmful, and in fact may be beneficial, which is well illustrated by the story of the water buffaloes imported from Timor in the East Indies between 1824 and 1828, for the use of the early settlements in the coastal region of the extreme north of Australia's Northern Territory. When the settlements were abandoned the water buffaloes were left behind and immediately found Australian conditions to be most favourable, also there were no natural enemies. The herds increased rapidly and spread far and wide wherever the terrain was suitable. To-day the buffalo is considered to be a " game " animal in the Territory and the export of hides, first started in 1886, has developed into a considerable industry with an annual output of about 10,000 hides—and all this in the relative short space of 125 years. But it is in Australia also where we see the other side of the picture—the debit side—with the appalling devastation caused by the virtually uncontrollable introduced rabbit, also the incredible spread of the introduced prickly pear. The cost to Australia of these two pests has in millions of pounds assumed staggering proportions.

And now let us turn to Uganda, and first of all let me remind you that the Protectorate is not yet sixty years old, although Speke discovered the Ripon Falls—the source of the Nile—90 years ago and Baker, coming from the north, discovered Lake Albert in 1864. These two dates are of interest, as at that time there were neither the dread cattle disease—rinderpest—nor virulent tsetse-flies in what is present-day Uganda. So let us examine the part played by nature in altering the natural balance in the early days of the Protectorate. In April, 1893, the hoisting of the British flag at the Imperial British East Africa Company's Old Fort, in Kampala, preceded the official Proclamation of the Protectorate in June, 1894, and British emissaries following in the wake of the Company's officers thrust westwards to negotiate with the native rulers. Nature had indeed been kind to those Company and Government officers who in the 1890–1896 period set forth on hazardous journeys to treat with powerful potentates, for nature had introduced from the north-east a terrible cattle disease, which also killed off vast numbers of the wild ungulates and which was subsequently known as rinderpest. Powerful tribes had been dealt a crushing blow by nature, at one fell swoop they had been deprived not.

only of their visible wealth and livelihood—their cattle—but of their prestige and they were not in a state to resist the white penetration. Nature had indeed made easy the occupation of much of Uganda. The disastrous mortality amongst the cattle and the wild ungulates, totalling hundreds of thousands soon resulted in a marked change in the vegetation, for many areas of open grassland which formerly had been grazed over by great herds of cattle and game began to revert to bush, which was nature's method of adjustment—a process which can be all too rapid under tropical conditions. Cattle herds can be built up again and the wild game recover, but regenerated bush can neither be destroyed nor even checked by mere grazing and browsing. Haphazard grass burning also will not restore the situation. Nature indeed had forced a great calamity upon Uganda by depriving it of much of its best grazing land. It would appear that rinderpest was something new for, in the oral tribal traditions, covering several centuries, there is no mention of any disastrous cattle plague. It entered northern Uganda about 1889 and by 1891 was widespread in the south, where 95 per cent of the cattle died and large numbers of the lordly Bahima, deprived of their customary diet of milk and ox-blood, perished.

When, in June, 1889, Stanley was on his way to rescue Emin Pasha in the Albert Nile region, he camped near the foot-hills of the Ruwenzori range and on the plains fringing Lake Edward, Dr. Parke who accompanied him saw herds of antelopes and giraffes feeding, but none of the latter survived the rinderpest's first grim visitation. Nature in its assault against the ungulates —the hoofed mammals—both domestic and wild had indeed altered the balance, but far worse was to follow and some ten years later nature struck again this time against both man and his cattle—the virulent tsetse fly, pathogenic to both, had arrived. The wild animals are not susceptible to trypanosomiasis, the disease of which the tsetse fly is the vector, though, unfortunately, they can act as carriers of the disease, thereby infecting susceptible species. It would appear that the tsetse fly was unknown in Uganda up to the time of the first great rinderpest epizootic, or if present was incapable of transmitting trypanosomiasis. But there is reason to believe that nature's interference with the balance through the rinderpest visitation did produce conditions conducive to the establishment and spread of the tsetse fly, as large tracts of country which were previously well populated returned to bush. In fact, the forces of nature had reoccupied what it had for a time lost to man and

his works. These forces include: the vegetation characteristic of the bush or savanna which naturally replaces cultivation; the game and other wild animals which are sustained and protected by the vegetation; the tsetse flies which are protected by the bush and sustained by the wild life; and the fly-borne parasites which, for the most part, are sustained by and derived from the wild life, principally game. Human trypanosomiasis (sleeping sickness) which in Uganda, in a few years, claimed more than 300,000 victims, necessitated the evacuation of the population from the whole of the northern shore line of Lake Victoria and the neighbouring islands, which according to tradition has been well-populated for centuries. It is about these islands I wish to speak for evacuation resulted in a most extraordinary state of affairs—the shy, swamp-frequenting situtunga or marsh antelope, in the absence of human contact, multiplied exceedingly and changed its habits to become a land-living woodland species, and before the islands were re-settled after twelve years' absence of the population they must have harboured the best part of 30,000 of these antelopes, compared with the previous hundreds.

In the island of Bugala, the largest of the Sese group in Lake Victoria, prior to the withdrawal of the population in 1909 the tsetse, *Glossina palpalis*, appears to have been entirely absent from the villages or their vicinity. Once the villages were abandoned they were rapidly obliterated by the thickest jungle, and the situtunga, suddenly relieved of its human enemies, left the shelter of the marshes and increased to an incredible extent. By 1914 the village sites were overrun with antelopes and thickly infested with tsetse and a year later the antelopes had become so numerous that they were destroying the jungle. By 1919 the jungle had been devastated and almost nothing remained except trees too large for the buck to break down. All trees, however, were denuded of foliage as high as a situtunga, uprearing, could reach. The ground was covered with close-cropped herbage and the village sites resembled a deer park. The complete destruction of cover had also resulted in the complete disappearance of the tsetse.

In the middle of 1920 the advance party of the islanders returned and the antelopes which had been living a park-like existence hastily withdrew to better cover. For a time there were neither fly nor game in the villages. With the disappearance of the situtunga the jungle regenerated with astounding rapidity; within two or three months it had become well over a man's height and penetrable only with difficulty. The cover regenerated

back came the antelopes in large numbers and, what was worse, with the return of the game the tsetse returned in even greater numbers than were recorded for 1914–15.

Economic development eventually solved the problem. The original small community expanded, but no special measures were taken to combat the fly except to promote economic development and the withdrawal of protection from the game. Fly remained in undiminished numbers until March, 1921, when a lessening seemed apparent; by midsummer there was a definite decrease and by the end of the year the tsetses had been greatly reduced. In June, 1922, the villages were virtually clear of fly, though there were far too many tsetse at certain of the watering places, but by the end of 1923 even these were clear. The fly had been driven out by a strong community solely by the promotion of economic development. Also, it is an excellent example of how game concentrations can crop down woody scrub to such an extent as to exclude tsetse—as well as illustrating the reverse process.[1]

Let us now turn to another of Nature's manifestations—this time it is a volcanic eruption in a mountainous, forested region, in the extreme south-west of the Protectorate, which divided a gorilla habitat in such a way that there was no hope of the two lots of great anthropoids being able to re-unite. The division—at least several hundred years old—has resulted in numbers of gorillas living within twenty miles of each other having developed very different habits. On the one hand they normally dwell in the dank, dripping, bitterly cold, elevated forest between the 10,000-ft. and 12,000-ft. levels and invariably make their massive beds on the ground. On the other they have perforce to live at altitudes from 6,000 to 8,000 feet, in a very different botanical environment which materially affects the nature of their food; here they have developed unusual arboreal habits and their bed " nests " are often constructed high up in the trees. Nature's adaptation of this great ape to its varied environment is extremely interesting, in fact striking a balance according to circumstances.

Before closing I would like to make a few remarks about the adaptability or otherwise of birds to changing environment. The townships of Entebbe and Kampala, the former on the shores of Lake Victoria, the latter six miles distant from the head of a tenuous arm of the lake, are barely sixty years old, yet six decades have witnessed an extraordinary change in their

[1] *Note.*—The only natural enemy of the sitatunga in the Sese Islands was the python. There were no large carnivores.

avifauna. The Entebbe peninsula was originally covered mainly with lake-shore forest, most of which has been cleared away, but fortunately for the local population many shy forest birds have adapted themselves to the changed conditions. Skulkers such as the lovely red-breasted shrike, the *cossypha*, sometimes called the African robin, which is a glorious songster, and the noisy marsh warbler are now common garden birds and so is the predatory coucal. The brilliantly plumaged, splendid starling which normally frequents the high forest, is abundant at Entebbe, and seasonally the grey parrot in flocks amounting to dozens visits gardens where the ripe fruit of the incense tree is an attraction. The enormous milky eagle owl driven from its forest haunts nests throughout the station and at the end of the breeding season its huge, whistling, fluffy owlets may turn up in any garden. But other changes have taken place since the days—some 34 years ago—when that great ornithologist, Sir Frederick Jackson, was Governor, for the progressive cutting out of the forest has changed the character of Entebbe's bird life from forest to savanna. Residential Kampala is equally fortunate and the elimination of forest and scrub and elephant grass has left in its wake the *cossypha*, the red-breasted shrike, several flycatchers including the forest *Bias musicus*, and various doves as common garden species. The largest of all Uganda shrikes—the grey-headed bush shrike—nests in Kampala, so does the African hobby and the magnificent eagle owl—the last-named sometimes laying its eggs in a convenient nook at the top of some large, lofty building. But the most remarkable change which has taken place in the vicinity of Kampala is due to swamp clearance undertaken in order to establish fuel plantations. This has resulted in two marsh-frequenting species—the grosbeak weaver and a rare black bishop (Ansorge's) with a red head—changing to a land existence and nesting freely in the patches of elephant grass on the outskirts of the township. All these changes at Entebbe and Kampala are a direct result of the activities of man, but another change within recent years in Uganda has a more sinister aspect and may indicate a southerly advance of desert conditions. Since Jackson's day a southern Sudan babbler has established itself through much of the Protectorate and as far south as within 60 miles of Kampala, and a southern Sudan dove has reached Butiaba on Lake Albert. Within the last twenty years the Somali (or Senegal) hoopoe, a dry-country species, and formerly a seasonal migrant, has become a common breeding bird at Kampala and Entebbe. And so never-ceasing change in nature either ordered or spon-

taneous goes relentlessly on. But it must not be forgotten that nature is resentful of undue interference and hits back. Equivalent to the well-known expression " to make haste slowly " is an African proverb—" Softly, softly, catchee monkey ", an expressive advocacy of the gradual approach to a problem and not a rush. Interference with nature on a large scale—and particularly in Tropical Africa—without the all-essential, preliminary exploration inevitably leads to costly disasters such as have been experienced with Tanganyika groundnuts and Gambia eggs.