# The Fate of a Fauna

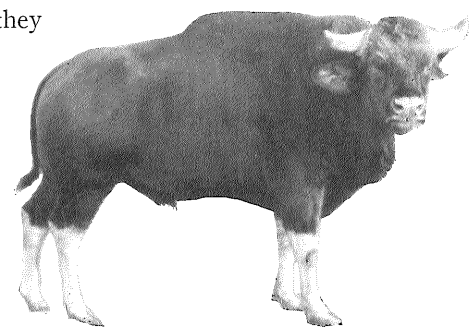
BULLETS are no respecters of persons—nor of animals. Warring armies, intent upon the destruction of the enemy, are not likely to pay much attention to any wild life that might get in their way, unless perhaps, some dangerous beast were to approach too close for safety, or some particularly toothsome variety were to stumble upon the scene at a time when rations were short.

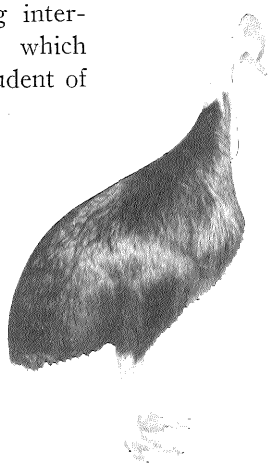
Now that the entire world is engulfed in the most deadly and far-reaching combat in history, animals of many kinds are seriously threatened. During the last war the wisent—the bison of Europe—all but received the *coup de grace,* and today there are many species so rare that only careful preservation and the establishment of reservations has kept them alive. What would happen if their native homes should lie in the pathway of the struggling armies? It would mean oblivion, perhaps, for some of them.

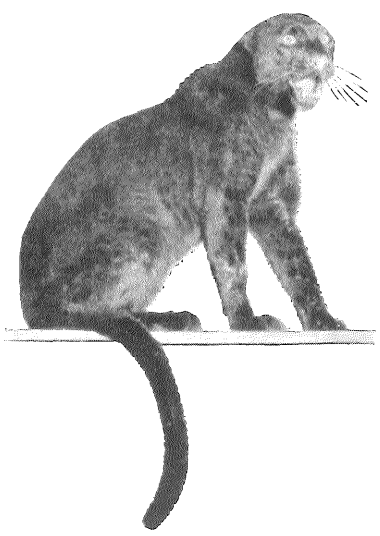
Malaysia, present scene of the melee in the Far East, has a fauna which in many ways is unique and unrivaled elsewhere in the world. It is the home of the orang-utan, saddle-backed tapir, gibbon, clouded leopard, golden cat, binturong, banteng and the Komodo dragon, largest of living lizards. Species after species is restricted to the region and many of the larger and more spectacular animals of Asia find sanctuary in the tropical jungles of certain of the islands. Asiatic elements dominate the fauna of the islands nearest to the Malay Peninsula, but as one travels farther and farther eastward they grow less common and are replaced by species which belong to some of the same queer types inhabiting the island continent of Australia. The result is a fascinating intermingling of faunas which has intrigued the student of zoogeography for more than a century. Malaysia is a naturalist's paradise and there, during the last century, the great Alfred Russell Wallace developed the theory of evolution contemporaneously with but independently of Darwin.

Overhunting, exploitation and the steady advance of civilization, with the resultant clearing of virgin forests to make way for plantations, have done much to decimate the wild life of the Malaysian Region. But during the past few decades the British and Netherlands Governments have accomplished a great deal to make amends. Numerous sanctuaries have been established, conservation laws have been passed and enforced, and the preservation of the important animals of Malaysia seemed assured. Now these efforts may go for naught.

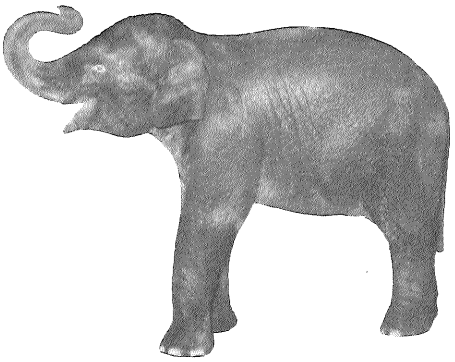
In order to present some conception of what may be in store for the zoological rarities of that part of the world, FAUNA has been in communication with a number of naturalists, all of whom have been members of expeditions to the Malaysian Archipelago or who have been especially interested in the general region. Their opinions, while somewhat at variance with one another, furnish a most interest-

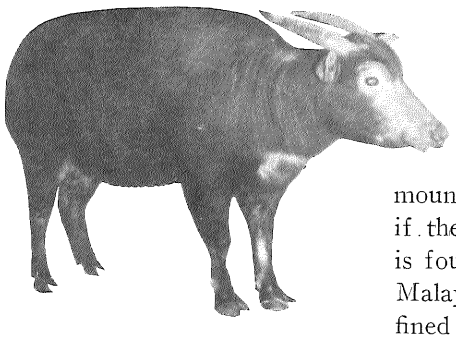






**The fauna of the Malay Peninsula and the East Indies, rich in zoological oddities of many kinds, lies directly athwart the battle lines in the Far East. Some species of animals are likely to suffer severely during the conflict; some may even be exterminated. The Black Leopard, naturally secretive and adept at keeping out of sight, doubtless will be little affected. Likewise the Cassowary, ostrich-like denizen of the forests of New Guinea, should have little difficulty in avoiding the belligerents. But grave fears are expressed over the possible fate of the Gaur, the giant wild ox. The few of these animals which remain in the Malay Peninsula have been carefully protected by the British, their whereabouts are well known and during the recent battling in the region more than one of them may have become the party of the first part in a jungle barbecue. The arboreal Gibbon should manage to keep out of harm's way.**





**The great Komodo Dragon, largest of lizards and the reptile which, in all probability, inspired the dragon motifs of Oriental artists, lives on only a few small islands near the center of the Malay Archipelago. Any destruction of its habitat or any sizable raid upon its numbers might well send it on its way to extinction. The Anoa, dwarf ox of the Celebes, probably is safe unless later exploitation should level the forests where it lives. So also may be the Bird of Paradise, although in years past its plumes were much in demand for millinery; a breakdown in present laws might endanger it again. The elephant is likely to suffer only if irresponsible soldiers should use it for target practice.**

ing composite of what may be in store for one of the greatest natural zoos still in existence.

Frederick A. Ulmer, Jr., Consultant in Mammalogy for FAUNA, and now in the United States Army, was a member of the Vanderbilt Sumatran Expedition in 1939. He writes, "It is hard to say just what the effect of this struggle will be upon the wild life of Malaysia, but certainly many sanctuaries will be destroyed by the struggling armies. The statement that dense Malaysian jungles are impenetrable to armies is false. Today there is no terrain that can stop a modern, well-mechanized army. The Japanese followed the roads and railroads in their advance down the Malay Peninsula, but in their landing operations and pincers movements around British points of resistance they penetrated the homes of the wild animals. The resultant disturbance probably forced the larger animals to flee to unfamiliar areas where they fell prey to combatants or hungry natives."

Dillon Ripley, also a member of the Vanderbilt Expedition and a veteran of several trips through the Indies, comments upon the sanctuaries by writing, "The banteng, in Java, is confined to reservations set aside by the government as is also the Javan rhinoceros, which, on that island, is found only in the park at the extreme western point of Java. If fighting occured in this region the animals may easily have been killed. Many of the other large species which are rare are confined to the mountains and are so shy that they would not linger if they heard guns. However, the Indian elephant is found wild in Negri Sembilan and Pahang in the Malay Peninsula; there the herds are small and confined to the lowland forest. The gaur—the seladang of the natives—is undoubtedly in the greatest danger. Only a few of them are left in Pahang. There they are in lowland jungle, are not hard to find (they have been photographed frequently in the last few years), and they might easily be killed off."

That important wild life areas lie within zones of military importance is pointed out by H. G. Deignan, of the United States National Museum, and long a resident of Thailand. He mentions that, "It is disquieting to note that one of the few areas still inhabited by a few rhinoceroses is the plains of Chiengrai Province, a district of great military importance. I am not sufficiently familiar with the former French colonies to judge of the dangers to wild life involved in the Japanese occupation of Indo-China. I may mention that the great restricted area which surrounds the ruins of Angkor has acquired military significance and has been bombed more than once in the past year, and that the military road running from Siem Reap to the Thailand frontier at Aranya passes through the wintering ground of the rare and isolated bustard, *Houbaropsis b. blandini,* a large species, desirable for the table and easily shot from a motorcar."

Harold J. Coolidge, Jr., of the Museum of Comparative Zoology and leader of two expeditions to Malaysia, has spent a great deal of time studying gibbons in their natural habitat. He writes, "I cannot help thinking of the effect of gunfire, bombing and land mines on the fauna where the actual fighting is being carried on. Gibbons and siamangs are high-strung animals and the slightest noise out of the ordinary is a signal for them to move off to some

other place. You can imagine what effect a real explosion must have on them. It is fair to say, though, that the Malay forest is much larger than most people think and there are considerable areas where the wild life might find a fairly safe refuge."

Jean Delacour, frequent visitor to Indo-China, former owner of the private zoo at Cleres, France, and now associated with the New York Zoological Park, believes that "Unless Allied and Japanese authorities take very strong steps to check it, it is certain that quantities of big game will be destroyed by troops. Also, protective regulations will be disregarded."

Several of the scientists agree that hostilities may well result in the natives' securing firearms, and that game is bound to suffer for this reason as well. The opinion is also expressed, that some of the natives, long held in check by the Colonial Governments, may seize the opportunity to wreak vengeance upon the game of certain districts.

Commenting upon this aspect of the situation, Dr. Ernst Mayr, of the American Museum of Natural History and veteran of several expeditions to New Guinea and the Solomon Islands, writes, "One effect of the war will be that a lot of rifles and bullets will get into the hands of natives who will use them to shoot animals for meat. Another effect might even be beneficial for wild life, and that is that a lot of land that has been cleared for plantations may now be neglected and go back to second-growth."

Mr. Delacour makes a somewhat related comment. "The state of war may curtail the activities of hunters. During the 1914-1918 war, game greatly increased in Europe, as all shooting of animals was stopped. During the present war, however, the Germans have encouraged the destruction of game to a tremendous degree, as a relief for food shortage, and the results are bound to be extremely serious for the status of wild animals and birds."

Rodolphe M. DeSchauensee, a member of the Board of Directors of the Zoological Society of Philadelphia, who has made three trips to Thailand and the East Indies, points out the fact that "The invaders are very likely to disarm the natives and give short shrift to anyone found in possession of firearms. Furthermore, the Japanese are not habitually meat eaters and for that reason they might not have much interest in killing numbers of animals. Since most of the fighting has been done in the lowlands and along the rivers, much of the wild life no doubt has taken refuge in the hills where it will be much safer."

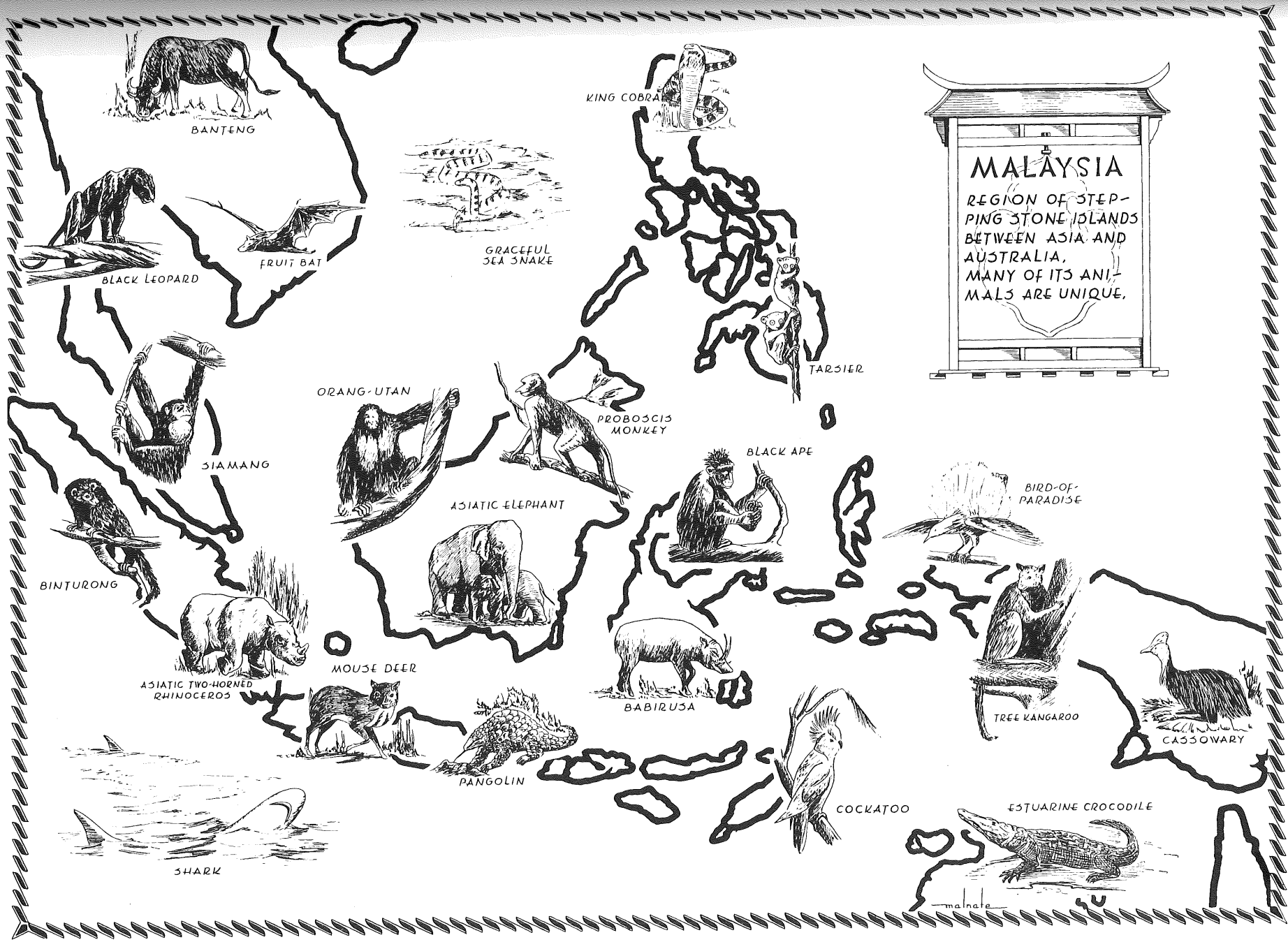
Almost everyone is agreed that certain of the large rare animals which have restricted ranges or habitats are likely to suffer severely. Those species, like the rhinoceroses and the hornbills, whose horns and casques, respectively, are in demand for Oriental "medicines," also are apt to be killed. Poaching activities, directed against them, are not unknown. The tapir, the species of deer and other animals widely used for food are likely to have their numbers greatly reduced, and of these the tapir, at least, can little afford any onslaughts against it. Everyone calls attention to the fact, however, that there are numerous, almost virgin areas which are so large and so difficult to penetrate that much of the fauna is quite safe, at least for the moment.

H. C. Raven, of the American Museum, who spent several years in Borneo and Celebes, writes, "In Borneo there is an enormous expanse of tropical rain forest covering by far the greater part of the island. The cultivated areas and grasslands are very small compared with the total area of Borneo and since the fauna is primarily a forest fauna, the effect of the current hostilities on the animals would be negligible. In Celebes and many of the islands of the Moluccas there is a greater proportion of grassland and in some places this land and the edges of the forest might conceivably be burned during the dry season by belligerents. However, in many places, the natives set grass fires annually and as the anoa and the babirusa, the two large animals peculiar to Celebes, dwell in the forest, they probably would not be unduly affected by additional fires."

It is generally agreed that there is more to fear from possible exploitation of the region than from actual warfare, and whether the United Nations or the Axis should manage to wrest final control of Malaysia, it seems inevitable that a tremendous effort will be made to develop the strategic raw materials of the islands and the peninsula to the utmost.

John T. Zimmer, of the American Museum and former Agricultural Expert to the Government of Papua (New Guinea) sums up what might happen in such an event by stating, "Destruction of a considerable part of the customary breeding or feeding habitats for any species would undoubtedly produce a definite change in its distribution and if the species in question had a very limited range, extinction might be the ultimate result, but this effect is not to be feared so much from military operations as from other pursuits. Wholesale destruction of forests for lumber or for extension of plantations, drainage of swamps, or other such procedure will produce profound alterations in the biota. Unless it is carried to an extent that makes survival impossible, the result will be a decrease in the ranges of the less

(*Continued on page* 24)


BANTENG
KING COBRA
GRACEFUL SEA SNAKE
MALAYSIA
REGION OF STEPPING STONE ISLANDS BETWEEN ASIA AND AUSTRALIA, MANY OF ITS ANIMALS ARE UNIQUE.
BLACK LEOPARD
FRUIT BAT
TARSIER
ORANG-UTAN
PROBOSCIS MONKEY
SIAMANG
BLACK APE
BIRD-OF-PARADISE
ASIATIC ELEPHANT
BINTURONG
ASIATIC TWO-HORNED RHINOCEROS
MOUSE DEER
BABIRUSA
TREE KANGAROO
CASSOWARY
PANGOLIN
COCKATOO
ESTUARINE CROCODILE
SHARK
malnate

produced by running the edge of a coin along the teeth of a comb. Ordinarily, katydids fold their wings so that the left one overlaps the right. This brings the file on top and the ridge on the bottom. Incidentally, that is the reverse of the procedure of the crickets; they normally fold the right wing over the left.

Only the males are musicians among the katydids—as is also the case among the crickets. The females listen to the serenades by means of oval openings on their forelegs, just below the knees. Literally, they carry their ears on their legs. How many times during the hours of darkness the males give out the ringing "Tzeeet! Tzeeet!" depends largely upon the reading of the thermometer. All the Orthoptera are governed by the temperature. The most famous example is that of the snowy tree cricket, the most melodious singer of all. Its mellow "waa-waa-waa" fills the night, the number of pulsations a minute varying so exactly with changes of the thermometer that scientists have worked out a formula by means of which the temperature can be determined simply by counting the rhythmic sounds of the insect. It is known as the temperature cricket.

While less sensitive to variations in warmth and cold, the katydids also speed up or slow down in their fiddling according to the rise and fall of the mercury. In the cool of early morning, these insect instrumentalists always play more slowly than during the warm hours of the evening before. One government scientist has calculated that, in a single summer season, a katydid may make as many as 30,000,000 to 50,000,000 strokes of its fiddle.

The life cycle of this insect, beginning with dormant months in the flat, oval egg and continuing through the awkward, early stages of the immature katydid, reaches its climax in the nocturnal music of the males—music that continues until late-autumn cold brings to an end the nightly concert of the insect orchestra.

## The Fate of a Fauna

(*Continued from page* 14)

adaptable forms and the continued existence or even increased ranges of the highly adaptable forms."

The fate of the animals living in areas now under the control of the invaders remains to be seen. Mr. Ulmer points out that "Japanese army officers may have been instructed to secure specimens of the rarer animals for the museums back in Japan. Other nations in previous campaigns have utilized this method of adding to the collections of the museums of their own countries."

Mr. Coolidge remarks that "The Japanese have some nature monuments and there is a definite element in that country that has educated itself into taking an interest in preserving natural scenery and wild life. Whether these people will have any influence on the activities of the military armies of occupation is, to my mind, extremely doubtful. I think that the Japanese are going to have their hands full without giving much time or thought to the preservation of the fauna. I am very much afraid that the big game will be shot off wherever it can serve as a source of food for the invading armies."

In regard to the work of conservation which has been accomplished in Malaysia, Dr. W. Reid Blair, Secretary of the American Committee for International Wild Life Protection, and Director Emeritus of the Bronx Zoo, sums up as follows: "During the past few years the Colonial Departments of the Netherlands Government have been active and instrumental in creating many National Parks, Nature Monuments and Wild Life Reserves in Sumatra, Java, Borneo, Celebes, the Moluccas and in the Lesser Sunda Islands. Unfortunately the difficult financial conditions throughout the world during the past few years made it impossible for the Government of the Indies to provide the necessary supervision and enforcement of regulations. The difficulty in obtaining uniform laws for the protection of the wild life of the Malay Peninsula is apparent when it is realized that the Peninsula is made up of a large number of semi-independent states, each of which exercises complete control over its own wild game."

Despite the many difficulties real progress has been made, but as Dr. Blair continues, "It was unfortunate for the cause of conservation that the Convention for the Protection of the Fauna in Tropical Asia and the Western Pacific, which was scheduled to be held in London in 1939, had to be postponed indefinitely because of the war."

What the future holds for the fauna of Malaysia remains to be seen, but it appears inevitable that many of the animals may suffer severely. The feelings of everyone sincerely interested in the conservation of wild life are succinctly expressed by Mr. Delacour who states, "It is really heartbreaking to think that wars ruin, at short intervals, the protective measures which have been established only at the price of long and patient effort. We can only hope for more settled times when human enterprises have a better chance of lasting results. But however disappointed and bitter we may feel, we must carry on stubbornly with our efforts, which will not be defeated in the end."