

THE FOURTEENTH INTERNATIONAL CONGRESS OF ZOOLOGY

THE fourteenth International Congress of Zoology, held in Copenhagen during August 5-12, was attended by some eight hundred delegates, members and associates from forty-eight countries, ranging from Argentina and Australia to Finland and U.S.S.R., from Japan and Hawaii to Canada and the United States; 104 attended from countries of the British Commonwealth. The Congress, under the patronage of His Majesty King Frederik IX of Denmark, enjoyed the hospitality of the University of Copenhagen, in the halls and lecture rooms of which the numerous meetings took place.

At the opening meeting in the Festival Hall of the University the Congress was addressed by the Minister of Finance, Dr. Thorkil Kristensen, who welcomed the members to Copenhagen on behalf of His Majesty; by the secretary-general of the Permanent Committee of the International Congresses of Zoology, Prof. Louis Fage; and by the president of the Congress and of the Danish Organizing Committee, Prof. R. Sparek. Prof. J. Z. Young then delivered his lecture on "Some Thoughts on Zoological Communication" in which he outlined his views on some aspects of the philosophy of zoology. The afternoon and evening were occupied by a visit to Elsinore and a reception by the Lord Mayor and Corporation of the City of Copenhagen at the Town Hall. The greater part of the following six days was taken up by the meetings of the sixteen sections, and of the International Union of Biological Sciences colloquium on the distribution and origin of the deep-sea bottom fauna, at which more than 250 communications were discussed; there were in addition four general meetings.

A colloquium called by the International Committee on Zoological Nomenclature had been in daily session for the week preceding the Congress; it had discussed a great number of nomenclatorial problems, and prepared resolutions for consideration by the Section of the Congress dealing with Nomenclature. These were discussed further by the Section, and the report and recommendations of the International Committee were presented to the final general session of the Congress, at which they were formally adopted. A survey of these proceedings follows this article.

It was appropriate that a large number of the communications laid before a Congress meeting in a country of such ancient maritime associations as Denmark should deal with various aspects of marine biology. A high proportion of papers in nearly all the sections was, as would be expected, based upon experimental work; and although no spectacular new discoveries were reported, the general quality of the communications was high, and the ensuing discussions were lively and instructive. It is impossible to mention even the titles of all the many papers presented, and the following remarks report only some items that particularly interested one delegate.

Prof. Emil Witschi (Iowa) proposed to conclude an agreement among vertebrate embryologists concerning some basic principles that should guide the standardization of numerical systems of embryological stages. This could be accomplished by ascribing to the nine great sections or periods of development a varying number of numeral standard stages. He suggested the following system: I,

Cleavage (1-6); II, Blastula (7); III, Gastrula (8-11); IV, Primitive Streak (12); V, Neurula (13-16); VI, Tail Bud (17-24); VII, Embryo (25); VIII, Metamorphosis (26-34); IX, Fœtus (35-36). Special investigators will differ in their needs for subdivision of periods, and the desire for greater specialization should be met by letter suffixes. The stages are based mostly on features of external morphology, and preference is given to embryonic over extra-embryonic characters, to axial over lateral organs, and to cranial over caudal conditions of differentiation. The terminally additive nature of evolution within the vertebrates is expressed by the conclusion of embryonic development at progressive stages: 25 in fishes, 30-32 in urodeles, 34 in anurans and 36 in birds and mammals.

Chr. Vibe (Copenhagen), in discussing the zoogeography of Greenland, pointed out that a study of the land fauna shows more and more clearly that it is the remnants of an old fauna which had a more or less circumpolar distribution before the glacial period, but which later on became confined to isolated localities distributed over the boreal and arctic area. The fauna has been able to exist during the glacial period and after because the straits on each side must have been more or less closed, restricting the polar currents, so that the Gulf Stream influenced the climate much more than it does at present.

In a study of the ethology of the roe deer, F. W. Braestrup (Copenhagen) concluded that the social organization of the species, which is much less developed in the red deer, is not due to the organization being patriarchal as claimed by Fraser Darling. Roe deer are not patriarchal, and the reason for the looser social structure is merely that roe deer are mostly inhabitants of thick bush.

C. B. Philip, J. F. Bell and C. L. Larson (Hamilton, U.S.A.) reported observations on peak populations of jack rabbits (*Lepus californicus deserticola*) in Nevada, and on evidence of exposure to infection or parasitic infestations which might influence population trends. Sick and recently dead animals were observed; but no major cause for decimation was discovered, nor has any recent 'crash' in population numbers occurred. Serological evidence showed exposure to Western equine encephalomyelitis, rickettsial spotted fever, brucellosis, and, to a much smaller degree, tularæmia. It is not evident that any of these diseases will be involved in the expected general die-off in the whole area. Hewitt's opinion that the cause of the sudden plague which kills off the rabbits at their greatest abundance is probably of a multiple nature may well prove to be correct.

Prof. A. Vandel (Toulouse) gave an account of the recently established "Laboratoire souterrain" at Moulis (Ariège). Part of the laboratory is actually within the cavern of the Grotto de Moulis, and is fully equipped for biological and physiological research. On the surface another building provides further laboratories, library and living accommodation for workers on all aspects of speleology including *biospéléologie*.

Prof. P. Drach (Paris) described his investigations on the coral reefs of the Red Sea, which he explored by means of a self-contained diving apparatus that allowed depths of 50-70 m. to be reached. The reefs

of the Far-San Archipelago are superficially very diverse, but are all remarkable for the extreme steepness of their sides, which descend in a series of almost vertical cliffs separated by narrow platforms. The distribution of organisms on the reefs is dependent upon the turbulence of the water, the intensity of illumination, the depth, and the slope of the sides. The physical conformation of the reefs, and the existence of a submarine cliff 650 m. high, fit Darwin's theory of the formation of coral reefs by subsidence.

In his paper on marine bottom substrata and their fauna, Prof. C. M. Yonge (Glasgow) showed that the major factors influencing the distribution of bottom invertebrates are food and the nature of the substratum. The main problem is the potential food value of the deposits, for detritus contains a hundred times more organic carbon than is contained in the total fauna and flora. Knowledge is urgently required about the nutritive value of detritus, and about the factors controlling its local concentration. Bottom associations cannot be regarded as consisting of interdependent organisms as are the members of associations on land. The carnivores depend upon the presence of the suspension- and deposit-feeders; but members of these are all competing for the same food and so would actually benefit if competitors were absent. In this connexion the paper by Prof. C. ZoBell (La Jolla, California) was of great interest; in it he discussed the occurrence of bacteria in the deep sea and their significance to animal life. It appears probable that they provide the first step in the chain of organic food substances at great depths.

But the communication of greatest general interest on marine biology was the lecture, illustrated by a colour film, given by Dr. Anton Bruun (Copenhagen) on the methods and results of the *Galathea* Expedition, 1950-52. The film showed all phases of the voyage, the object of which was to explore the greatest ocean depths, and it was a remarkable experience for most of the zoologists present to see close-up moving pictures of the extraordinary fishes and invertebrates as they were brought on deck from immense depths fresh and in their natural colours, and in many cases still alive. Many of the more striking specimens collected on the voyage were on exhibition in the University Museum, and the vessel herself was lying in the harbour.

A communication from Prof. C. Hubbs (La Jolla, California) gave news of one of the most interesting of the larger Cetacea, the Pacific grey whale, which had been very nearly exterminated by the early years of this century. It has lately made a great recovery in numbers, and as its migration route passes close inshore off La Jolla, the zoologists of the Scripps Institute have been able to make close observations on its numbers. The observations from land have been supplemented by surveys made over the sea and the lagoons of Lower California from a helicopter, and it has been ascertained that a population of many hundreds of the animals frequents these waters. The paper was illustrated by remarkable photographs of the whales taken at close range from the helicopter.

Other aspects of marine biology were discussed, among many others, in papers by G. P. Wells (London) on "Inherent Rhythms in the Behaviour of Worms", D. L. Ray (Washington) on the "Digestion of Wood by *Limnia lignorum*", and Prof. P.-H. Fischer (Vietnam) on "Gasteropodes Excavateurs de Roches littorales".

These communications are, however, no more than a random sample from the immense variety presented

to this most interesting and stimulating Congress—a variety ranging from "Paper Chromatographic Analysis of Taxonomic Relationships in *Drosophila*", "Polarized Light and Arthropod Vision", and the "Perception of Low-frequency Vibrations by *Semotilus atromaculatus*", to the "Display, Breeding Cycles and Phylogeny of Bower Birds", the "Influence of Spermatic Hormones on Spawning and Water Flow in the Oyster", and "Wirkungen der Epiphysectomie und der Epiphysolbehandlung bei Fischen".

The Danes are the most hospitable of hosts, and in addition to the scientific sessions they had prepared a very full programme of excursions, receptions, dances and other social functions that were greatly enjoyed and appreciated by the members of the Congress—at the closing banquet a footnote on the menu, in which all the main ingredients of the dishes were given their scientific names, warned "*Hac nomina sunt conservanda in spiritu vini*", an echo of the deliberations of the International Committee on Nomenclature.

At the closing General Session of the Congress an invitation conveyed by Dr. E. Hindle from the Royal Society of London to hold the fifteenth International Congress of Zoology in London in 1958 was received with acclamation, and Dr. G. R. de Beer, director of the British Museum (Natural History), was elected to be its president. British zoologists will hope that the Government will place funds at the disposal of the organizers of the fifteenth Congress on a scale similar to the support afforded by the Danish Government to the fourteenth. L. HARRISON MATTHEWS

ZOOLOGICAL NOMENCLATURE AMENDMENTS TO THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE

THE fourteenth International Congress of Zoology, Copenhagen, August 1953, carried through the second stage of the important and long overdue process of overhauling the International Code of Zoological Nomenclature, of which the first stage took place at the thirteenth congress held in Paris in 1948. The work on zoological nomenclature at Copenhagen was path-breaking as regards both procedure and achievements, because the procedure was new and without it the achievement would not have been possible.

The procedure differed from that at any previous Congress in two essential respects: first, very elaborate measures were taken to provide the Congress in advance of its meeting with an ample documentation on all the nomenclatorial problems to be considered; second, arrangements were made for the careful consideration and full discussion of this material at a colloquium on zoological nomenclature which sat daily at Copenhagen for a week prior to the opening of the Congress. The preparations for this meeting consisted in the publication by the International Trust for Zoological Nomenclature early in 1952 of a special volume (vol. 7) of the *Bulletin of Zoological Nomenclature* containing a discussion of the major problems of zoological nomenclature which had been remitted by the Paris Congress for further study and for consideration five years later at Copenhagen. This volume was communicated by the Trust to museum nomenclature committees and leading zoological and palaeontological institutions and served to secure for the Copenhagen