

OBITUARY NOTICES.

Dr A. C. L. G. Günther, M.A., Ph.D., M.D., LL.D., F.R.S., etc.
By William C. McIntosh.

(Read June 15, 1914.)

THE death of Dr Albert Charles Lewis Gotthilf Günther, who was elected to the Honorary Fellowship of this Society in 1895, has deprived science of the most distinguished ichthyologist of his day, and one whose labours in other departments of zoology were no less noteworthy. He was born in Esslingen in South Germany on the 3rd October 1830, his father being "Siftungs-Commissar" in Esslingen and "Estates-Bursar" in Möhringen, a descendant of a family which had been known in the locality for hundreds of years—indeed the Swabian branch of the Günther family was settled in and about Möhringen on the Filder Plateau at the beginning of the fifteenth century. His mother was Eleonora Nagel, whose family originally came from Bremen. Albert was the eldest son, and was sent for his early education to the Gymnasium at Stuttgart (1837-47); and subsequently he studied at the Universities of Tübingen (1847-52, 1856-57), Berlin (1853), and Bonn (1854-55), thus gaining a wide experience of University life and a breadth of culture which had an important influence on his future career. Descended from a line of clergymen, family tradition destined him for the ministry of the Lutheran Church, for which, indeed, he was trained at the Theological College of Tübingen, and for which he passed the qualifying examination. His natural bent, however, was wholly in another direction, and, after taking the degree of Ph.D. in 1852, he decided to study science and medicine, taking the degree of M.D. at the same University in 1862. Before this, however, he had chosen zoology as the field of his labours, and had published his first paper on a Distome as well as a treatise on *Fische des Neckars*, with the coloured figure of a form new to the river (1853), and a *Handbuch der medicinischen Zoologie* (1858). Visiting England in 1855, he met Sir Richard Owen and Dr John Edward Gray, who had been interested in the former work, and a friendship sprang up between them—resulting in the selection of Dr Günther, in October 1857, to arrange and describe the Fishes, Amphibians, and Reptiles in the British Museum; as well as to prepare

catalogues of the greater part of the collections. Thus settled with definite work before him, and amidst congenial surroundings, Dr Günther laboured incessantly at his great task; and though the apartments, which were cellar-like, in the old Museum in Bloomsbury were far less cheerful than in the New Natural History Museum at South Kensington, yet his interest and energy never flagged. From the first the Fishes, Batrachians, and Reptiles were prominent in his studies, though Birds and Mammals also received due attention, as shown in various papers to the Zoological Society. Thus his work in the latter group ranged from monkeys, carnivores, rodents, and ungulates to marsupials, and from diverse parts of the globe. Besides accounts of recent birds, he, along with Mr Newton, investigated the extinct birds of Rodriguez. Only a lifelong experience, rigid accuracy, and great natural ability could have enabled him to grasp the salient points of forms pertaining to such diverse types, and this not in single species, but often in hundreds, and whose close resemblances or intricacies of structure were in themselves sources of perplexity.

The extraordinary activity with which he laboured is demonstrated by the long list of his works, memoirs, and papers on all the groups mentioned. Amongst the more important are such as *The Geographical Distribution of Reptiles* (1858), in which he had forestalled many interesting features subsequently described by others; the memoir on *Ceratodus*, the lung-fish of the Burnett and Mary rivers of Queensland; that on the structure of *Hatteria* (*Sphenodon*) from New Zealand; "On the Giant Tortoises"; and the vast array of papers on the Fishes, Amphibians, Reptiles, and occasionally Birds and Mammals, of every important British expedition, as well as collections from every quarter of the globe—from Pole to Pole, and from river, lake, sea, and land. The mere perusal of the titles of his papers is no light task, whilst every one is the record of a painstaking, laborious research. Mr E. A. Smith, one of his colleagues, estimates that, besides the works and larger memoirs, there were about 300 papers published in the Journals of the London Societies, and that the whole of his writings occupy about ten thousand pages, illustrated by a very large number of fine plates and text-figures. It is a record remarkable alike for its unswerving devotion and notable results, and affords a splendid example to younger men. He accomplished much of this work when burdened with the cares of administration, preparing official reports "in connection with individual members of the staff, monthly and annual reports of progress and work accomplished, the supervision and editing of catalogues and guides issued by his department, besides the consideration of all proposed acquisitions"* and the con-

* E. A. Smith, *Zoologist*, March 1914, p. 115.

tinual correspondence. Moreover, to his fellow-workers, such as Charles Darwin and A. Russel Wallace, he was of much service in the chapters on the distribution and classification of Fishes, Amphibians, and Reptiles.

The memoir on *Ceratodus* in the *Philosophical Transactions* is one of special interest, as it details the structure and relationship of a Dipnoan fish, the ancestors of which were separated by the long gap between the present and the Devonian and Carboniferous periods. Yet the persistence of type, as pointed out by Dr Günther, is most remarkable. Further, those early representatives were not the beginners of a series, "but the last of many preceding developmental stages."

His labours in the British Museum resulted in the issue of eight volumes of the Catalogue of the Fishes, a work of immense research, patient investigation, and accurate description. In this work (4000 pages) he pays a tribute to Johannes Müller's ordinal arrangement, though he was not satisfied that the coalesced pharyngeal bones are of sufficient importance to unite the Acanthopterygii and Malacopterygii into one order. An idea of the vast labour spent on this task may be obtained by glancing at the number of species dealt with, no less than 6843 being well established, whilst 1682 others are doubtful. The carrying out of this gigantic task in the cellars of the old British Museum in Bloomsbury shows the indomitable energy of the investigator as well as his thorough grasp of the subject. It is indeed doubtful if such a task will ever again be attempted on the same lines, at least without the physical collapse of the investigator. Two volumes of a Catalogue of *Batrachia salientia* and Colubrine snakes complete the series of ten volumes. Moreover, the Ray Society published his fine work, with numerous illustrations by Ford, on the Reptiles of British India. His daily work in the British Museum ranged over snakes from West Africa and South America to those from Siam and Australia; fishes from the most recent British dredging expeditions, those from fresh waters in every quarter of the globe, and from the neighbouring seas; amphibians from widely distant regions; birds and mammals from diverse localities, and often of great interest. Amongst his other works are the *Challenger* volumes on the shore and deep-water fishes collected in the great expedition. The subject of the deep-sea fishes had long been of special interest to Dr Günther, and we may imagine the delight he felt in the study of no less than 266 species belonging to this category—many of weird form, with remarkable sensory appendages and phosphorescent organs. As he himself has stated, the *Challenger* series laid a broad and sure foundation to our knowledge of the abyssal fish-fauna, and he incorporated all the most recent work of the Norwegian, American French, and British investigators

of the deep sea. In the introduction to this fine treatise his experienced remarks on phosphorescence and on the nature and distribution of deep-sea fishes are of great value and interest. This volume is illustrated by no less than 72 plates, many of them double, and admirably drawn by Mintern Bros., the successors of G. H. Ford.

His report on the shore fishes collected by the *Challenger* was published before the preceding treatise, and comprised an account of 1400 species, of which 94 were new to science. Only a skilled ichthyologist could thus have worked out the collection with such rapidity, for it was issued in 1886, when Sir Wyville Thomson was still at the head of affairs. Rare forms from the tropical Atlantic, Bermuda, the temperate zone of the South Atlantic, of the Antarctic Ocean, the temperate zone of the South Pacific, of Japan, and the neighbouring regions were accurately described and figured. This and the foregoing volume would alone have made a reputation. Moreover, it gave Dr Günther an opportunity of widening our views with regard to the mutual relations of the fishes of deep and shallow water, and of demonstrating the wide range of many forms both in depth and locality.

One of his greatest services to the science of zoology as a whole, and one in which his work has directly proved a boon to all his fellow-workers, is the *Record of Zoological Literature*, which he founded in 1867 and edited for several years. Investigators have thus a ready means of making themselves acquainted with contemporary work in every country. This step alone would have earned the thanks of every zoologist, and its continuance to-day by the Zoological Society shows its permanent importance. The work must have given Dr Günther much thoughtful labour and care, and could only have been undertaken by one in a central position, and with the co-operation of a wide circle of zoological friends at home and abroad.

His *Introduction to the Study of Fishes* (1880) is another treatise which has had a widespread popularity—from the masterly way in which the author handled a subject to which he had devoted the best part of his life. No student of the group can find a more comprehensive yet concise treatise in any language, and none having an equal amount of reliable information. His chapters on the distribution of fishes—geological and geographical—are especially full of experienced remarks.

Though Dr Günther in his early days made a few of his own drawings, he soon became so occupied that it was necessary to employ others, and he was fortunate in securing for many years the services of G. H. Ford—who was *facile princeps* in lithography during his day, and who in the delineation of the lower vertebrata has never been surpassed—and he

acquired a special skill in illustrating the memoirs of Dr Günther, whose appreciation of a fine drawing was ever forthcoming.

Entering the British Museum in 1857, he by and by was appointed on the staff, and he rose step by step till in 1875 he became Keeper of the Zoological Department in succession to his friend Dr J. E. Gray, and he held this post for twenty years. His record in this institution is remarkable—as beneficial to the Museum as creditable to himself. His catalogues have already been alluded to, and the vast array of original contributions to the Royal, Zoological, and Linnean Societies formed an unbroken succession from first to last. The latter alone would have made a great reputation, yet they were but fragments of his daily work in perfecting the numerous collections committed to his care, in carrying out the endless duties of administration, and in devising improvements. Moreover, the construction of the New Natural History Museum at South Kensington, the scheme of Sir Richard Owen, likewise gave him increased responsibilities in connection with the arrangement of the galleries and cases, and still more with the transfer of the vast and valuable collections to their new premises. This task, perhaps, brought out the administrative talents and practical skill of the Keeper of the Department more prominently than anything else, and well merited the special minute of the Trustees on its successful completion. Amidst the array of vans, lorries, cabs, and conveyance by hand, no specimen of value was lost or broken. Nor was the rearrangement in the new Museum less successfully carried out, though not a few serious obstacles were encountered. Thus when the cases for the mammals on the ground floor were being arranged, it was found that the architect's ornamental projections on the walls were inimical to satisfactory adjustment, and thus this Class had to be placed on the first floor. He also insisted on the advantages of a separate building for specimens preserved in spirit, both for the greater safety of the extensive collections in jars, and for the security of the other portions of the magnificent building.

Some idea of the extent of the National Collection may be gained when it is mentioned that in 1880 there were 1,300,000 zoological specimens, and that when Dr Günther retired in 1895 there were 2,245,000. Known all over the world for his labours in zoology, and having an extensive acquaintance with naturalists and travellers, much of this progress was due to his tact and personal influence—and, it may be added, to his personal example, for from his earliest days he was a field-naturalist as well as a scientific author, and he never missed an opportunity of adding to the collections in the British Museum, whether as the result of his own

dredging and collecting expeditions, or by securing from friends such rare forms, for example, as *Leptocephali*.

In connection with the fittings of the National Collection at South Kensington, it is also interesting to remember that he favoured the construction of metal cases instead of wood, though the Government did not adopt this plan—probably on the score of expense. He was indeed one of the earliest in this country to show the advantages of such cases now fitted up in the most advanced museums. Further, from an early period of his career in the Museum he saw the importance of having a reference library in addition to a general library in connection with the Zoological Department, and he persistently exerted himself to carry out this aim. The severance of the collections from the proximity of the great library in Bloomsbury made this the more necessary, and now the New National History Museum has an important and invaluable general as well as a special zoological library—an inestimable boon to visiting naturalists as well as to the staff.

Yet another side of Dr Günther's services in the British Museum merits attention, viz. the development of the systematic work in the Museum. Thus he succeeded in increasing the scientific staff gradually from 4 to 13, and by a skilful modification of the duties of the attendants he managed to relieve the trained men from menial duties and enlist their services in highly skilled museum-work. Thus the scientific staff had at their disposal a body of experienced and reliable practical aids, so that their progress was rendered both rapid and satisfactory.

His services as a Vice-President of the Royal and Zoological Societies, and President of the Linnean Society, must have entailed a large absorption of his time and energies—especially as many of his memoirs and papers were communicated to one or other.

It might be supposed that one so constantly and so actively engaged in the pursuit of science had little time for attending to the interests of visitors to the collection. Yet, if he had done nothing more than inaugurated the fascinating and instructive cases containing the nesting of birds as now exhibited in the Museum, such would have been memorable. No feature in the great collection is more popular than these life-like illustrations of the British nesting birds of both sexes, their eggs, newly hatched young, and their environment. As he himself has stated, it was essential that the actual birds which made the nest, with their eggs or young, should be secured, and the surroundings taken from the spot, the only artificial elements being flowers, leaves, or structures which could not be preserved satisfactorily. In the case of such birds as the bustard and the ruff, the remarkable plumage and attitudes of the males

form an additional attraction in these charming scenes. None but a skilful field-naturalist in whose mind the actual scenes had imprinted themselves could have designed these wonderful cases; and Dr Günther has often said that he gained as much real knowledge from Nature as from the splendid libraries at his command.

His work in the other departments, viz. Mammals and Birds, was no less noteworthy. Every important and unimportant expedition consigned to him the fishes, amphibians, and reptiles, and occasionally the birds and mammals, and his conscientious treatment of them was uniformly the same, whilst his personal influence with the collectors was a constant source of rich additions to the National Museum.

By Dr Günther's recommendation many valuable collections were added to the British Museum, such as the Gould Collection of Birds, the Oates Collection of the Birds of Pegu, Goodwin-Austin's Indian Birds, the Sclater Collection of Birds, Capt. Shelley's African Birds, the Saville-Kent Corals, the Baly Collection of Phytophaga, the Bates Collection of Heteromera, the Zeller Lepidoptera, the Keyserling Arachnida, the Moore Indian Lepidoptera, the Pascoe Coleoptera, the Morelet Land and Freshwater Shells, the Atkinson Coleoptera and Rhynchota, the Grote North American Lepidoptera, and the Parke Foraminifera.

His great knowledge of zoology and ichthyology in particular, as well as his familiarity with the habits of animals, caused his services to be much sought after by Government Commissions and municipal bodies in regard to their fresh waters. Thus he reported on the pollution of the Thames and on that of several trout and salmon rivers. His evidence on the pollution of the Lower Thames was of great importance as well as conclusive, for his careful experiments proved the effects of such on fishes, and he indicated the length of time they would survive in various kinds of polluted water, *e.g.* sewage, effluents from gas-works, ink-works, etc. He went, for instance, minutely into the question, surveying the Lower Thames in a steam-vessel placed at his disposal by the Metropolitan Board of Works, and thus was enabled to give reliable advice to that body. His evidence in connection with the "yellow fins" of the Allan Water was another example of his acuteness and caution in dealing with a contested point.

Moreover, Dr Günther was ever ready to encourage local collections of objects of natural history, and his gifts to provincial museums, of tame birds for private parks and aviaries, are gratefully remembered. One of his last donations was that to the University Museum of St Andrews, to which he presented about fifty exquisitely coloured birds, ranging from Reeve's pheasant and the capercaillie to humming-birds, the group of the

Pittas being especially noteworthy for their striking coloration. The majority came from the collection of A. Russel Wallace, though some, such as the young kestrels, were reared by himself.

Since he came to England in 1856 he took an interest in the marine fauna—indeed in that year a local publication included his contributions to the marine fauna of Brighton. His holidays were generally devoted to the increase of the Museum's marine or freshwater fishes and other forms. At St Andrews he collected in a day or two various fishes and ten species of marine annelids. An excellent sailor, he sometimes was the only effective naturalist on board a boat or yacht, as, for example, when the distinguished Professor Kölliker of Wurzburg requested his aid off the south coast of England. His tanks for the preservation of the large fishes always accompanied him in these excursions. None enjoyed the freedom of forest, moor, or hill, or the quietude of a river bank more than he, and thus he gained an intimate knowledge of Nature—both animate and inanimate—so important for the head of the Zoological Department of the National Museum. This knowledge, gained by close observation on the Continent of Europe, in Britain, and in the adjoining seas, made him a delightful companion, and there were few who were more welcome than he at the country-seats both of England and Scotland. Moreover, he was an excellent shot—a reminiscence, perhaps, of his military experiences in South Germany—and an expert angler. At one time he took an active interest in the introduction of the Sheat-fish (*Siluris glanis*) to English waters, and with success; but the voracious habits of these large fishes proved disastrous to the salmonoids, and the attempt was not repeated.

Quite lately he prepared for the Trustees a brief account of the changes in the British Museum (Natural History) from 1858 to 1895—that is, during the period of his official connection with the institution. The continuous stream of important additions, many of which were due to the influence of the Keeper himself, the increase of the assistants, the inauguration of systematic publications by the staff, the transference of the greatest collection of the kind in the world from the old to the new quarters, and the introduction of every modern improvement in arrangement, are told with the characteristic modesty and restraint of the veteran investigator.

Dr Günther was the recipient of many honours both at home and abroad. He was a Vice-President of the Royal and Zoological Societies, President of the Linnean Society, President of the Biological Section of the British Association, and a Fellow of most of the learned societies at home and abroad. He was awarded a Royal Medal by the Royal Society, and the Gold Medal of the Linnean Society.

Dr Günther had a tall, somewhat lightly-built, wiry physique which for nigh sixty years stood without a break the stress and strain of official life, the unhealthy atmosphere in the old cellar in the basement at Bloomsbury, and the incessant demands of scientific work. His hair was fair, eyes blue, and his complexion fresh. Throughout his long period of public service, he was never known to have sick-leave. Of strong personality, and resolute when he had once formed a conclusion, yet he was not only an agreeable colleague, but a warm friend to a large circle of acquaintances. In his home he was one of the kindest parents, ever ready to sacrifice himself for the happiness of his family, who had an equally warm attachment to him. Of active habit, and delighting in his garden and his pets, he was ever busy and cheerful. His first home at Hampton Wick, and those subsequently at Surbiton and at Kew Gardens, all reflected the tastes of an enthusiastic naturalist whose pleasure lay in everything with life. His myrtles and other shrubs and trees at Surbiton, his maiden-hair tree and collection of rare shrubs and plants at Kew Gardens, his aviaries, house-pets, and his observations on the birds in Kew Gardens, were a never-failing source of interest and information to himself and others. His health suffered some years ago from a severe attack of pneumonia, but lately was satisfactory until an abdominal affection necessitated an operation from which he did not rally. He was buried in the quiet cemetery at Richmond, mourned by a large circle of scientific friends.

Dr Günther was twice married. His first wife, Roberta M'Intosh, of St Andrews, made the exquisite coloured figures of marine animals, many of which have been published by the Ray Society; their son, Robert, is a Fellow and Tutor of Magdalen College, Oxford, and the author of various able works and memoirs. Dr Günther's second wife, who, with a son, survives him, was Theodora Dowrish Drake, from Cornwall, a lineal descendant of a brother of Sir Francis Drake.

Dr Günther will ever be remembered as a great systematic zoologist who had early and independently worked out many of the problems of the distribution of animals which subsequently were more prominently associated with other names, as an original investigator and *facile princeps* in Fishes, Amphibians, and Reptiles, and as a man of untiring energy, remarkable power of penetration, and of great administrative capacity. Moreover, the interests of the public and of scientific workers at home and abroad were ever safe in his hands. Nowhere will the results of his life-long labours be more keenly appreciated than in the British Museum, the distinguished staff of which paid the last tribute to the veteran zoologist in the peaceful cemetery at Richmond.