

The question of works for the protection of forest from fire naturally has to be carefully gone into, and Mr. Broun's chapter on this subject is interesting and instructive, as also is the last chapter, in which the measures necessary for the fixation of unstable soils, whether of blown sand or of precipitous slopes, are described.

The book is illustrated by excellent wood-cuts, as well as by photographic reproductions of forest scenes, and these have chiefly come from Ceylon, representing a more or less wet country, or the Sudan, representing a dry one. We should have liked to see more reference to Indian experience and practice, for although no doubt the efforts of experienced foresters like Mr. Broun have done a great deal for Ceylon and the Sudan, the far greater and longer-continued work in India must now be certainly placed in the forefront of tropical forest experience.

The book is very well printed, illustrated and bound, though rather too heavy for a forester's wallet; and it contains a large amount of valuable and most interesting information which should make it a useful guide to foresters, especially in those countries which are chiefly referred to.

DR. RAMSAY H. TRAQUAIR, F.R.S.

WE regret to record the death of Dr. R. H. Traquair, F.R.S., of Edinburgh, which occurred early in the morning of November 22 after a long period of failing health. Born at Rhynd, Perthshire, on July 30, 1840, Dr. Traquair received his early education in Edinburgh, and at the age of seventeen became a student of medicine in the University of that city. In 1862 he graduated as M.D., and was awarded a gold medal for his thesis on the asymmetry of the flat-fishes, which was published four years later in the *Transactions of the Linnean Society*. He had studied medicine, not with a view to medical practice, but merely because this course seemed most likely to afford him an opportunity of gratifying an early ambition to devote his life to biological science, which had attracted him since childhood.

After obtaining his degree, Dr. Traquair accordingly remained at the University as prosector to Prof. Goodsir, and from 1863 to 1866 he was demonstrator of anatomy. After serving for a few months as professor of natural history in the Royal Agricultural College, Cirencester, he removed to Dublin in 1867 as professor of zoology in the newly founded Royal College of Science. Finally, in 1873, he was appointed keeper of the natural history collections in the Museum of Science and Art (now the Royal Scottish Museum) in Edinburgh, where he remained until his retirement in 1906.

Though interested from the first in all branches of natural history, Dr. Traquair soon began to devote most of his energy to the study of fossil fishes, which became the absorbing pursuit of his long and active life. While still a boy he had found part of a Palæoniscid fish in an ironstone nodule on the beach at Wardie, near Edinburgh,

and the impossibility of interpreting what he saw, even with the aid of the standard works of the time, led him to begin the long series of researches which have revolutionised our knowledge of Palæozoic fishes and thrown light on some of the most fundamental problems of ichthyology.

Beginning in this manner with material which he had himself collected, Dr. Traquair worked out in detail the osteology of several Carboniferous fishes, and with these he compared the imperfectly known fishes from the Scottish Old Red Sandstone. The first important result of these researches was reached in 1877, when he published the preliminary part of his "Monograph on the Ganoid Fishes of the British Carboniferous Formations" in the *Palæontographical Society's* volume for that year. He showed that the Palæoniscidæ and Platysomidæ, which had until then been compared with the existing *Lepidosteus*, were really primitive Chondrosteian fishes closely related to the modern sturgeons. He thus proved that the nature of the scaly covering of fishes was of little importance in classification compared with that assigned to it by Agassiz; and he was the first to point out the more fundamental characters of the internal skeleton which have subsequently been recognised as unailing guides to a natural classification. In short, he made it possible to distinguish between the phenomena of parallelism or convergence, and the marks of natural affinity in the early fishes.

While studying the Palæoniscidæ, Dr. Traquair also devoted much attention to the Crossopterygian and Dipnoan fishes, and published many exact descriptions of their osteology. He showed that the Devonian *Dipterus* and *Phaneropleuron* were closely related to the existing *Ceratodus*, while his interpretations of Crossopterygian skulls now prove increasingly important for comparison with the newly discovered skulls of the early Labyrinthodonts.

In his later years, Dr. Traquair made another important contribution to our knowledge of fishes by his numerous descriptions of the Upper Silurian Ostracodermi discovered by the Geological Survey in southern Scotland. He demonstrated that the armour-plates of such genera as *Pteraspis* and *Cephalaspis* are formed by the fusion of simple granules of shagreen with each other and with hard tissue developed in a deeper layer of the skin. He thus proved the truth of the theory of the origin of the vertebrate exoskeleton, which had already been formulated from the study of comparative morphology.

Apart from the successive instalments of his palæontographical monograph, Dr. Traquair's last work was his memoir on the Wealden fishes of Bernissart, Belgium, published in 1911 by the Royal Museum of Natural History, Brussels. This was to him a new subject, and involved much labour for several years, but it was eventually produced with his usual thoroughness, and will long remain a standard work of reference.

Dr. Traquair was an artist as well as a naturalist, and he made a large proportion of the beautiful drawings which illustrate his published works.

His numerous restored figures of the fishes he described are especially important, combining artistic style with the most minute accuracy, and left incomplete wherever there is the least doubt as to structure. Both in writing and in drawing, indeed, he always aimed at such precision that his publications were often delayed for a long period by hesitation, and his correspondents were accustomed to regard his dilatory methods with impatience. Even so unique a fossil as the Lower Devonian *Palæospondylus* was in his possession upwards of ten years before he ventured upon its description, and he only published an account of it when specimens seemed likely to fall into less competent hands. Dr. Traquair was, in fact, a genuine student, anxious only to make sure of the truth, and a large circle of friends will mourn the loss of one whose kindly spirit endeared him to all who came in close contact with him.

Dr. Traquair was elected a fellow of the Royal Society in 1881, and received the honorary degree of LL.D. from the University of Edinburgh in 1893. He was awarded the MacDougall-Brisbane medal of the Royal Society of Edinburgh, and also the Lyell medal of the Geological Society of London, in 1901, and a Royal medal of the Royal Society of London in 1907. A list of his writings and an excellent portrait of him accompany a biographical notice published in *The Geological Magazine* for June, 1909. A. S. W.

W. F. KIRBY.

WILLIAM FORSELL KIRBY, whose death on November 20 we regret to announce, was the eldest of the five sons of Samuel Kirby, banker, of High Street, Leicester. He was born at Leicester, January 14, 1844. When a boy of seven Kirby was taken to London, and saw the British Museum and Gould's collection of humming birds, and, while still very young, when the family moved to a house two or three miles from Leicester, his mother suggested that he should collect butterflies, and thus aroused his first interest in entomology.

Kirby was privately educated by tutors. He always believed that exclusion from the life and experiences of a public school was a permanent disadvantage to him.

Samuel Kirby died in 1854, and the family moved to Burgess Hill and to Brighton (1857-60). Kirby, although still quite a boy, joined the Brighton and Sussex Natural History Society, and began to publish notes in *The Entomologist's Weekly Intelligencer*. He went to London in 1860, joined the Entomological Society in 1861, and soon became acquainted with all its leading members—with Westwood, Hewitson, Stainton, Knaggs, and Perceval Wright. In 1866 he married Johanna Maria Kappel, daughter of J. W. Kappel, of Hilden, near Düsseldorf. Their only child, now W. Egmont Kirby, M.D., was born in 1867. Mrs. Kirby interested herself in all her husband's work, helping him in every possible way, and her death in 1903 darkened the last years of his life.

From 1867 to 1879 Kirby was an assistant in
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the museum of the Royal Dublin Society, afterwards the National Museum of Science and Art. On the death of Frederick Smith, in 1879, he moved to London, and entered the zoological department of the British Museum.

It is impossible on the present occasion to do more than allude to the series of volumes by which W. F. Kirby helped to stimulate and spread an interest in natural history. Among the numerous works which he wrote for the student of insect systematics special mention must be made of the "Synonymic Catalogue of Diurnal Lepidoptera" (1871). Few books have done more for their subject than this careful and accurate work, which was suggested to the author by the sight of H. W. Bates's MS. lists.

Between 1869 and 1884 Kirby wrote the reports on Lepidoptera, and later on the greater part of the insects for the "Zoological Record"—a work for which he was specially qualified by his wide knowledge of languages. Kirby's publications also deal with Scandinavian and Finnish folklore, a subject which deeply interested him. He was for a time one of the hon. secretaries of the Entomological Society, and was honoured by foreign scientific societies. He was ever ready to put his great knowledge at the disposal of other workers.

E. B. P.

NOTES.

THE anniversary meeting of the Royal Society for the election of council and officers will be held on Saturday next, November 30, at 4 o'clock p.m. There will be no meeting of the society to-day.

FULL particulars of the meeting, held at the Mansion House on October 23 last, to consider the whole question of the proposed memorial to Lord Lister were given in an article in the issue of *NATURE* for October 31 (vol. xc., p. 254). The meeting unanimously decided that the most suitable form of memorial would be:—(1) A tablet with medallion and inscription in Westminster Abbey; (2) the erection of a monument in a public place in London; (3) the establishment of an International Lister Memorial Fund for the advancement of surgery, from which either grants in aid of researches bearing on surgery, or awards in recognition of distinguished contributions to surgical science, should be made, irrespective of nationality. To carry out these proposals a large sum of money will be required, and the executive committee is appealing for donations to all persons who wish to pay a tribute to the memory of a great man of science and a great surgeon. Before the issue of this appeal subscriptions had been received amounting to something like 2700*l.*, and we notice that the first list of donations includes 500*l.* each from Lord Iveagh and Mr. W. F. D. Smith, 250*l.* from Mr. Otto Beit, 100 guineas each from Lord Northcliffe and Sir James Whitehead, Bart., and 100*l.* each from the Duke of Bedford, K.G., Sir Ernest Cassell, G.C.B., Sir W. Watson Cheyne, Bart., F.R.S., and Lord Rothschild, G.C.V.O. It is proposed to form committees in the provinces, in the dependencies of the Empire, and in