so destructive to a man's capacity or more likely to force him into a lower scale of labour than a prolonged spell of unemployment.

There are those who hope that in time the normal wage may in all ranks of labour be at least adequate to maintain workers and their families through all uncertainties and vicissitudes. They believe that the progress of invention will immensely increase productivity; that improved business methods on one side and rising standards of work on the other will make each worker more productive; that ultimately education will raise all workers to the ranks of those whose work is worth much. But until that Utopia arrives it is well to recognise that, except by making wages abnormal, we cannot at present expect them in all cases to do what is required of them.

It is blindness to pretend that the normal wage must necessarily provide for all needs, or that the worker is necessarily to blame if it does not. Those more fortunately placed among the workers, as well as among other classes of the community, often gain by the cheapness of the goods made by workers whose work is worth little because their numbers are great. But the community as a whole does not gain, because the workers receiving low wages are part of the community.

It is roughly true that the normal wage distributes labour well through distributing wealth ill. Redistribution of wealth is therefore necessary. Redistribution in the name of wages tends to interfere with the distribution of labour; for this reason it might be well to leave wages to mean normal wages and to redistribute wealth by other methods.

Obituary.

SIR WILLIAM SCHLICH, K.C.I.E., F.R.S.

THE death of Sir William Schlich, who succumbed to an attack of bronchitis on September 27, at eighty-five years of age, removes from the world of forestry one of its outstanding figures of the past half-century. A native of Hesse-Darmstadt, Schlich studied at the University of Giessen, taking his degree of Ph.D. in 1866. The same year he was offered and accepted a post in the Indian Forest Department, then in its infancy, and was posted to Burma, where he served as deputy conservator of forests until 1870, when he was transferred to Sind, where he remained for two years. In 1872 he was promoted to the conservatorship of Bengal, which in those days comprised the present provinces of Bengal, Assam, and Behar and Orissa. For seven years he threw himself with energy and conspicuous success into the arduous work of organising forest operations in this huge tract. After a spell of leave to Europe, followed by a short period of service as conservator of forests in the Punjab, he was appointed towards the end of 1881 to act as inspector-general of forests to the Government of India: he was confirmed in this appointment in 1883, when his predecessor, Dr. Brandis, retired from the service, and held it until 1885, when he proceeded to England to take up the post of professor of forestry in the newly created forestry branch at the Royal Indian Engineering College at Coopers Hill.

During Schlich's period of service in India, the work to be done consisted largely of preliminary organisation, and the conditions were by no means easy. In the earlier years the superior staff consisted for the most part of men without any scientific training in forestry, although by the time he left India matters had improved vastly, owing to the steady flow of British recruits trained at the Nancy Forest School in France, and to a smaller extent in Germany. These earlier years of the forest department were marked by strong opposition, not only from the timber trade and other interested parties, but also from Civil officials, many of whom regarded the conservation and national management of the forests as an uncalled-for innovation. Perhaps the most important advance which marked Schlich's term as head of the department was the creation of a special working plans branch in the office of the inspector-general of forests; this provided for the expert scrutiny of all forest working plans before they received final sanction, thus ensuring their preparation on correct lines.

So far as his work and activities were concerned, Schlich's appointment in 1885 to the professorship of forestry at Coopers Hill marked the beginning of a new era. From that year onwards he was destined to devote himself to the teaching of forestry, and it is in this sphere of activity that he was best known to the present generation. Combining sound knowledge and judgment with an enthusiasm for his subject which was infectious, and possessing a keen sense of humour and a remarkable capacity for winning the confidence and affection of his pupils, he was the embodiment of those qualities which go to make the ideal teacher. What the British Empire owes to him may be realised from the fact that his old pupils are to be found throughout its length and breadth. Immediately prior to the War, some ninety-five per cent. of the Indian Forest Service, from the inspector-general to the latest joined assistant conservator, were old pupils of his, while at the present time there is not a single senior officer of that service who was not trained by him.

Schlich became a naturalised British subject while at Coopers Hill. His educational duties there covered a period of twenty years, during which time he was responsible primarily for the training of recruits for the Indian Forest Service, although a few forestry students of the College obtained appointments in other parts of the Empire. On the abolition of Coopers Hill in 1905, its forestry branch was transferred to Oxford. Here Schlich, although sixty-five years of age, threw himself energetically into the work of organising the school of forestry in its new home and making it worthy of the great University which had adopted it. Through the generosity of St. John's College, aided by other benefactors, a building was erected with lecture rooms and a museum. In 1911 Schlich severed his official connexion with the India Office when he retired under the Civil Service rules; he was thereupon appointed reader and, by decree of Convocation, given the status of professor of forestry. By this time the Oxford school of forestry had fully established its reputation, and had become responsible for the training of numbers of forestry students destined not only for the Indian service, but also for many other parts of the empire. Schlich's

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chief ambition while at Oxford was to bring forestry into line with the other main scientific departments of the University and to obtain for it that recognition which its growing importance deserved. He therefore set to work to collect funds for the endowment of a permanent chair of forestry, and his appeal met with a sympathetic response from various sources, both official and private. He had the satisfaction, not long after the conclusion of the War, of seeing the realisation of his dreams, for a permanent professorship of forestry was constituted in 1919, and in the same year a statute was passed placing forestry among the degree subjects until then it had ranked as a diploma subject only. He finally laid down the reins of office on January 1, 1920 when he was succeeded by one of his old pupils.

Schlich was an honorary fellow of St. John's College, Oxford. He was elected a fellow of the Royal Society in 1901, and was created K.C.I.E. in 1909. His best-known work is his "Manual of Forestry," in five volumes, of which three were written by himself and two by his former colleague, the late W. R. Fisher. Among his other publications may be mentioned "Afforestation in Great Britain and Ireland," "Forestry in the United Kingdom," and a large number of papers, reports, and other writings. He was a member of the Forestry Sub-Committee of the Reconstruction Committee which was appointed in 1916 and issued its final report in 1918. He held the office of president of the Royal English Arboricultural Society in 1913–14, and was on the governing council of the Empire Forestry Association at the time of his death. In spite of his advanced age, he retained his mental vigour unimpaired until the end, and worked hard at the revision of his "Manual of Forestry" after retiring from his post at Oxford; he brought out new editions of vol. 1 in 1922 and vol. 3 in 1925. He was married twice, and is survived by a widow, a son, and four daughters. R. S. TROUP.

PROF. ANDREW GRAY, F.R.S.

THE many old students of emeritus Professor Andrew Gray, some of whom are scattered all over the world, will be sorry to hear of his death. His strong personality, ability as a teacher, and unwearying patience in explaining difficulties, must have endeared his memory to many thousands of students. There are few men who worked harder or have left a greater record of work. His life was a full and a happy one, and his sympathy with the early struggles of young men considerably lightened his onerous duties as a professor. He belonged to the diminishing band of mathematical physicists, and he once told the present writer that what he called the "Laodicean" attitude of many scientists towards mathematical physics was seriously discouraging research in this direction. In a letter some years ago, written when revising his "Absolute Measurements," he complained of feeling tired, but added that he must finish his work for ἔρχεται νύξ. The night has now come, and he sleeps well who toiled during many years to advance our knowledge of Nature.

Born in 1847 at Lochgelly, in Fifeshire, Gray began his mathematical studies in the subscription school at the time of the Indian Mutiny. His text-book was "Practical Mathematics," by John Davidson. Modern educationists might consider the book a collection of mathematical scraps, but Gray often spoke of the intense interest it excited in the boys. By means of a measured base line, 10,110 feet long, they could measure the distance of Nelson's monument on the Calton Hill at Edinburgh, the lighthouse on the island of Inchkeith, the Martello Tower at Leith Harbour, North Berwick Law, and so on. The solutions of such problems had an interest that no mere diagrams with their letters A, B, C . . . could ever give.

At the University of Glasgow, Gray studied very hard and gained many honours. He once told the writer the reason why he did not obtain more. On one or two occasions he had to leave a fortnight before the end of the term in order to assist in farming operations at home. On one occasion this probably lost him the gold medal which is given to the best student in the senior Greek class. He ever put duty before personal ambition. He graduated as M.A. with honours in mathematics and natural philosophy. Gray was an excellent classical scholar, and in his later years he derived much pleasure from reading Latin and Greek poetry. Like his friend Prof. Chrystal, he was a great admirer of Schiller's poems and knew many of them by heart. His Greek testament was his constant companion.

Gray was private secretary and assistant to Sir William Thomson (Lord Kelvin) from 1875 until 1880, and official assistant to him from 1880 until 1884. About this time electric lighting was gradually coming into use, and electrical measurements became of practical importance. Gray wrote a series of elementary papers on the subject for NATURE, which attracted considerable attention. They formed the nucleus of his treatise on "Absolute Measurements in Electricity and Magnetism."

To be an assistant to Lord Kelvin was not an easy post. Having many interests which took him away from home, his assistant could never tell before the lecture what aspect of the subject the professor was going to discuss or what apparatus he would want. He kept all his staff busy with his work and their individuality was apt to be submerged. In 1883 Gray published the first volume of "Absolute Measurements," which has been a great help to many. Kelvin told him that he ought not to have published it so long as he was his assistant. Nowadays this would be an impossible attitude for a professor to take up. No one, however, had a higher opinion of Kelvin's abilities than Gray, or more reverenced his memory.

In 1884 Gray was appointed to the chair of physics in the newly founded University College of North Wales. Amongst his new colleagues were Henry Jones, the distinguished philosopher, James J. Dobbie, later the principal of the Government Laboratory, and George Ballard Mathews, a mathematician possessed of rare gifts, with whom he co-operated in writing the well-known "Treatise on Bessel Functions." While in Wales he took the leading part in the foundation of the County School for Girls in Bangor, and championed the cause of the higher education of women. At this time he was also an enthusiastic mountaineer, and made weekly excursions with some of his colleagues into the Welsh hills.

On the death of Lord Kelvin in 1907, Gray was

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