Since then two valuable contributions have appeared: (1) "Air-Raid Precautions in Museums, Picture Galleries and Libraries" (British Museum Trustees, 1939) and (2) "Preservation of Paintings in War-Time" by G. L. Stout (Fogg Art Museum, Harvard University, U.S.A., 1942). Meanwhile, data are being assembled from day to day as the result of experience in war-time repositories. Much of it would never have been obtained in years of peace. Some of it will doubtless be significant for future planning of museums and galleries.

OBITUARIES

Sir Daniel Hall, K.C.B., F.R.S.

SIR DANIEL HALL—long known simply as A. D. Hall—had an unusually wide circle of friends who will deeply mourn his death on July 5 at a nursing home in London.

He was born at Rochdale on June 22, 1864, and was educated at the Manchester Grammar School, where he already showed wide scientific interests and was equally keen on chemistry, physics and the field sciences, botany and geology. From Manchester he gained the Brackenbury Science Scholarship to Oxford and entered Balliol College in 1881. Here he was soon recognized as possessing entirely exceptional qualities and he lived a very full life. At no time was he a narrow specialist, least of all during these formative years at Oxford. Everything he touched he did well, whether it were science, athletics, or participation in the various movements then forming part of Oxford life. He rowed in the Balliol eight and he laid the foundations for those wide intellectual and artistic tastes which characterized him throughout his life and added so much to his personal charm. At Oxford, too, he was fortunate in his choice of friends, many of whom afterwards had distinguished careers. He did not remain at Oxford, but left in 1884 to become a science master at King Edward VI Grammar School, Birmingham, where he met his first wife, Mary Brookes, and wrote his first book, a little text-book for the use of his students. He soon gave up school teaching and for a time served as lecturer in the university extension movement then beginning; Kent and Surrey were his counties; they were then more rural than now. Here he became interested in agricultural education and he soon saw that if it was to be effective it must be systematic and continuous; occasional lectures were quite inadequate. He was able to persuade a very public-spirited gentleman, E. J. Halsey, of the soundness of his views, and Mr. Halsey saw that funds were provided for establishing an agricultural college. Hall knew the two counties well, and selected the old Latin school at Wye as the proper place; it was a medieval foundation with attractive old buildings that gave the setting he always liked so much. He took possession in 1894 and was able to add laboratories and new buildings without doing violence to the old ones.

Hall was ably supported by a group of able men: F. B. Smith, J. Percival, F. Theobald, T. R. Robinson and H. H. Cousins, and between them they worked out systematic courses on agricultural science and practice, and trained numbers of young men who afterwards held very important posts at home and abroad. Hall insisted that the teaching must not only be based on sound science but must also constitute a new science, always drawing on practical agriculture for its materials and its illustrations. He set the example by becoming a first-class grower of fruit, hops and flowers, especially roses, tulips and sweet peas; he could hold his own with any expert, and the farmers and gardeners of Kent quickly recognized him as a fellow-craftsman of outstanding distinction. He was equally successful in dealing with farmers; he was a remarkably shrewd observer and could quickly detect the flaw in management which had led to some unsatisfactory condition of crops or animals. The early prejudice against agricultural education could not stand up against ability of this sort, and before long the high position of Wye was assured.

Hall always recognized, however, that both the teaching and the advisory work then beginning to develop were limited by the amount and value of the science on which they were based, and very soon this began to be insufficient. There was at that time no provision for research; education was supposed by the administration to be a proper object for State aid, but not research, which was regarded as something entirely distinct and unrelated. Hall set himself to remedy this defect; he gave up Wye at the height of its success and in 1902 went to Rothamsted in succession to Gilbert; he found the whole place moribund, but with characteristic energy and devotion proceeded to put new life into it. He had neither staff, apparatus nor funds and was snubbed by the Board of Agriculture when he asked for a grant, yet his infectious enthusiasm attracted first men then money, until finally he had built up a compact team of research workers who opened lines of investigation that have since proved very fruitful. The Goldsmiths Company gave a handsome endowment for soil research and this lead has been followed by a long line of generous supporters.

Once again, however, Hall felt impelled to give up the work when he had got it well on the road to success. In 1909 Mr. Lloyd George set up the Development Fund for the purpose of developing agriculture and improving rural life, and he appointed a small Commission, including Hall, to administer it. Hall soon became the dominating figure and in October 1912 was induced to give up Rothamsted so as to devote his whole time and energy to the work. The full story has not yet been written, and reference can be made here only to that part dealing with research and education. It was agreed that agricultural research was to be greatly developed. Two methods were possible: the establishment of a large central research station covering all branches of agriculture on the model of the United States Department of Agriculture at Washington; or a number of smaller stations attached to the universities, where different branches of agriculture or agricultural science would be studied. The latter method was chosen, and there is no question that the decision was sound. Agricultural science has developed remarkably well in Great Britain as the result of the freedom conferred by the new arrangements, which were indeed the envy of scientific workers from other countries when they came over here. A very effective advisory service was also set up and the educational machine was greatly improved. Later experience has shown that these three services could well have been more closely linked, but there is no evidence that Hall was responsible for that defect. He certainly achieved a great amount of most useful constructive work.

Then in the War of 1914–18 came another change; at the crisis in 1917, when 'total war' was forced upon us and all peaceful activities had to be abandoned, Hall gave up the Development Commission and became Permanent Secretary to the Board of Agriculture under his old friend Prothero (afterwards Lord Ernle) as Minister. Here he was less happy than in his previous posts; he gave the impression that he found office routine very irksome; all his life he had been accustomed to prompt decision and speedy action, and in any event the times were unpropitious. When Bateson died in 1926 Hall accepted the directorship of the John Innes Horticultural Institution at Merton, retaining only a part-time connexion with the Ministry of Agriculture as its scientific adviser. Once more he was back in the atmosphere he loved; his coming, Darlington said, was like a breath of fresh air; and he rounded off a life-time of experience and observation of tulips and apples by producing two monographs which are not likely to be superseded in our time. He stayed on until 1939 and then retired, but only to change his occupation. He had always been interested in the Lord Wandsworth Agricultural School at Wantage, and as chairman of the governors he went to live there so that he might keep closer touch with its activities.

Few men can have lived a fuller life or one more helpful to the community. His influence will last long after our time, and the beneficial activities he started will go on bearing fruit, while his memory will be an abiding inspiration to all who had worked with him.

E. J. RUSSELL.

Prof. D. la Cour

PROF. DAN LA COUR, director of the Meteorological Institute of Denmark, died at Copenhagen on May 19 at the age of sixty-five; his death will be deeply regretted by geophysicists throughout the world. During the past fifteen years or more he took an increasing part in international leadership in geophysics, the science for which above all others international co-operation is essential; at the time of his death he was president of the International Union for Geodesy and Geophysics. He was elected to this office at Edinburgh in 1936, and would normally have vacated it in 1939, but at the Washington conference of the Union, held just after the outbreak of the present War, new elections of officers were postponed; his advice and guidance in re-starting the work of the Union when peace returns will be greatly missed.

Prof. la Cour was born at Copenhagen on September 12, 1876, of a family of high distinction in Denmark; his father was a High School physics master. After completing his university studies at Copenhagen, he became an assistant of the Meteorological Institute in 1900, under the directorship of van Ryd; in the year previous to this he took part in a Danish auroral expedition, and during 1900 he was leader of this expedition. From 1903 onwards he took charge of the Department of Weather Services, and from 1920 also of the Magnetic Department. In 1923 he became director of the Institute. From 1908 onwards he lectured on meteorology at the famous Copenhagen Polytechnic Institute. In 1927 he was elected to the Danish Academy of Sciences, and in 1939 to the Danish Academy of Technical Science. He received also many honours from other countries, and held numerous important offices in international scientific bodies.

Among the services la Cour rendered to the advancement of geophysical observation, one of the greatest was connected with the plans for the repetition, in 1932–33, of the International Polar Year of 1882–83, when the leading nations co-operated in sending expeditions to various parts of the north polar regions, in order to make meteorological, magnetic, auroral and other observations throughout a whole year. The project for a renewal and extension of this work, with modern instruments and methods, in the jubilee of the original polar year, was mooted in good time for new expeditions to be planned, and in 1928 the International Meteorological Committee appointed a commission to organize the work. In 1931, however, the world economic crisis deepened, and there was danger of the project being abandoned; la Cour was foremost in withstanding this, and under his leadership, as president of the International Polar Year Commission, the great enterprise was carried through to success.

In facilitating afterwards the use of the large mass of new data thus obtained, la Cour likewise played an important part, with the enlightened generous support of the Danish Government. An international bureau was set up in his Institute, and there he organized the reproduction, on micro-films, of the magnetic and some other data. In this and his other work he and the skilled staff he gathered around him achieved first-rate results with great economy of money and effort.

He extended the scope of Danish observations in geomagnetism by establishing (in 1927) a permanent magnetic observatory at Godhavn, in Greenland (only 10° from the pole of the earth's magnetic axis), in addition to the long-existing Copenhagen observatory (now at Rude Skov). He also started a new series of Danish geomagnetic publications ("Communications Magnétiques") to supplement the Danish magnetic observatory yearbooks.

La Cour also aided geomagnetic science very greatly by his many improvements in the design of magnetic instruments, through which the accuracy and reliability of magnetic observations and records were notably raised. He overcame several inveterate difficulties that long hindered the attainment of the high degree of precision aimed at in geomagnetic measurements. One such difficulty was connected with the use of fine quartz suspension fibres. The usual clamping of their ends did not prevent slipping, and injured the fibres: la Cour, who was himself an adept in their manipulation, left a quartz drop at each end of the fibre, and placed each drop in a simple mounting of special design; subsequent light heating fused the quartz and provided a safe connexion with the holder. Again, the magnetic balance, for the continuous measurement of the vertical magnetic force, is exceptionally sensitive to slight changes in the position of the magnet relative to the knife edges on which it is balanced; la Cour avoided any such displacements by making the magnet, knife-edge and mirror in one piece, of tungsten steel, weighing in all only 2·5 gm. He also introduced a simple, ingenious and satisfactory method of optical temperature compensation for magnetic recorders. His improvements probably have valuable applications in other branches of observational and experimental physics. Only a few of his instruments and devices are mentioned here; a paper describing the latest of his instruments, for the measurement of the vertical magnetic force, reached England only a few days ago.