

Huxley: the presence of the 'S' in UNESCO is largely due to him

JULIAN HUXLEY was the leading experimental biologist of his day at a time and in a place in which the ever more detailed validation of the concept of evolution was still thought of as the principal task of biology. The supplanting of comparative anatomy by what everybody came to call 'experimental biology' is a fascinating episode in the history of ideas. In the early days of the Darwinian revolution the elucidation of homologies and the working out of family trees had the same kind of appeal and confident self importance as molecular biology has today, and I know from personal conversations with him that E. S. Goodrich, the former Linacre Professor of Zoology and Comparative Anatomy at Oxford and the only British comparative anatomist of the same stature as Gegenbaur and van Wijhe, still regarded himself even quite late in life as a torchbearer and adventurous pioneer of the great new doctrine.

But, alas, comparative anatomy became an abuse and an impediment to progress, just as comparative physiology became in the next quarter of a century and as molecular biology will surely become in 10 or 20 years (for I foresee clearly a time when, regardless of what major problems in biology remain to be attended to, the sequencing of a protein will still be regarded as an intrinsically meritorious activity which will be taken to represent the courageous holding aloft of the banner of what was once a great revolution in biological ideas).

Because of his intellectual vitality and the great compass of his interest and understanding Huxley rightly earned for himself the position of acknowledged leader of the newer biology. Certainly nobody since has made contributions of comparable magnitude to fields so diverse as ethology (his papers on the courtship behaviour of the great crested grebe are acknowledged classics); physiological genetics; developmental physiology including the study of allometry or differential growth; and ecology, especially in relation to speciation.

And then again, Huxley was, as his grandfather had been, a great expositor of the notion of evolution, although sometimes his ideas on the subject were felt by his juniors, rightly or wrongly, to be wrong-headed—mainly because Huxley never really mastered the modern population-dynamical approach to evolution theory; and so great was Huxley's enthusiasm for the idea of evolution that he came in his later years to treat evolutionism as a sort of secular religion.

Huxley was a great tutor in the old

Oxford style, a man who, because he loved it, chose to teach the whole of his subject instead of teaching only the parts of it that interested him and for the remainder farming out his students to specialists in other fields. The influence of a really good tutor lasts through many generations of pupils, pupils' pupils and so on. It is pleasing therefore to reflect that through a lineage which can be worked out with names and dates in detail, Julian's son Francis was his own great grand-pupil. (The lineage is Julian Huxley—Gavin de Beer—J. Z. Young—P. B. Medawar—Francis Huxley.)

With these qualities of character it is not at all surprising that Huxley was kind and helpful to the young, for although people in his position are bombarded from all quarters of the Earth by manuscripts of which the authors profess to seek their recipient's candid opinion, Huxley bore with this kind of imposition very handsomely and often made the time to answer his correspondents at length—sometimes in his own handwriting.

I do not know and cannot imagine any scale of evaluation of scientific merit along which Huxley would not stand out as one of the foremost biologists of the 20th century. □

Peter Medawar

THE contribution that Julian Huxley made to the work of UNESCO in the field of science was remarkable and, in several respects, decisive.

In the first place, he fought to ensure that science was given a place among the organisation's concerns on an equal footing with education and culture. Thirty years ago, when the conference convened to adopt the Constitution of UNESCO was about to meet in London in November 1945, the issue was still in the balance. On one side, the followers of the classical humanist tradition thought it better to deal only with education and culture, since they both centred on the preservation and development of moral values. On the other, some scientists took the view that science had become far too complex as an intellectual and social activity, and too important on account of its practical applications, to be only one of the fields of competence of an institution; they looked for a distinct organisation solely and totally concerned with science. Huxley was one of those who checked these separatist tendencies. The presence of the 'S' in UNESCO is largely due to him.

Had the organisation restricted itself to dealing with education and culture,

it would have been no doubt easier to manage, with probably a greater immediate efficiency. But none of the difficulties encountered outweighs, in my opinion, the paramount advantages and significance of the existence of an organisation which embraces, through the inter-relationship of its various fields of competence, the comprehensive unity of the minds as a whole.

Once this inter-relationship of education, science and culture was adopted as the fundamental principle of UNESCO, no one could have been better qualified than Huxley, with his manifold gifts, varied experience and wide-ranging earlier ventures, to provide the framework of the new organisation's programme. And that was the main task to which he devoted the best of his energies and abilities, as Secretary-General of the Preparatory Commission (1946) and thereafter as the first Director-General (1946–48).

In the field of natural sciences, with the help of Joseph Needham, he devoted special attention to the restoration and reshaping, in collaboration with the International Council of Scientific Unions (ICSU), of the international scientific community which had been shattered by the war. But Huxley was no less interested in the social sciences, which he thought should have a part to play in all sectors of UNESCO's activities. Thus, he put an ethnologist in charge of the first 'fundamental education' pilot project in Haiti. His efforts to bring together scientists, educationists and users of the mass media in a wide-ranging movement for the modernisation of science teaching and, more generally, for the popularisation of science, provides another instance of his multidisciplinary approach to problems.

Science for him was not merely a body of knowledge and skills; it was the most advanced form of culture, the very basis of all values. This feeling of the close kinship of science and culture suggested to him the idea of a *History of the Scientific and Cultural Development of Mankind*. He put the proposal to the General Conference at its first session in 1946 and succeeded—though not without difficulty—in securing its adoption. And after he had relinquished his functions as Director-General he played a very active part in carrying it out as Vice-President of the International Commission which had the editorial responsibility for the work.

One final aspect of his contribution to UNESCO's science programme which deserves special mention is that he wished the organisation to foster among both governments and the

general public a better awareness of certain major issues affecting the future of mankind. With his biological background and his evolutionist approach, he was admirably equipped to understand such problems and put them in perspective. In matters concerning the preservation of nature and its ecological balances, the proper management of the resources of the biosphere, the quantitative and qualitative implications of population growth, and the problems of human settlements, the views and the programmes that Julian Huxley recommended to UNESCO were a quarter of a century ahead of the ideas of the time. They showed a remarkable perception of the true mission of international organisations, which we are now just beginning to discover. That mission is not simply to help member states in solving their particular problems. It is above all to bring the people of the world to understand the vital problems of mankind as a whole, which require for their solution a sense of togetherness and the joint efforts of the community of nations. □

René Maheu

By the death of Sir Julian Huxley we lose not only a distinguished scientist but a man with whom it was as easy to talk of art or literature as of biology. I met him first, I think, in 1921 in the exciting society at Garsington, where he and his wife were staying with Lady Ottoline Morrell.

At that time Huxley was a Fellow of New College and Senior Demonstrator in Zoology at Oxford. Though about as much archaeologist as biologist, I attended his course on genetics. In the practical classes which accompanied it we studied the inheritance of eye colour in a small superficially shrimp-like animal, a species of *Gammarus*. Chancing to make an unexpected observation which seemed to open up certain possibilities of general interest, I discussed the matter with him. In a flash he saw the point and greatly extended my ideas in our subsequent talks and in our delightful excursions to Plymouth to study the animal in its natural habitat and to obtain further material for our investigations. He, already a well known scientist, and I, an unknown undergraduate, at once started to research together. Our first account of that work appeared in *Nature* in 1925, and we published extensively on it in the next few years. And here I would stress a quality entirely characteristic of Julian Huxley. When we published our major article (in the *British Journal of Experimental Biology*), giving a detailed account of our results with the conclusions to be drawn from them, it appeared not under

the names of Huxley and Ford but of Ford and Huxley. It has been a lesson to me all my life: to encourage and give priority to my junior colleagues.

This seems to have been among the last pieces of experimental work in which Julian Huxley took part. His scientific writings, extending over many years, have been of fundamental importance; his success as Secretary of the Zoological Society of London, and as Director-General of UNESCO was outstanding and needs no encomium from me. I would, however, like to draw attention to his greatest and least recognised achievement.

In his position, he was frequently visiting universities and scientific institutes of various kinds. He would talk to those researching there and from this something unprecedented would emerge. He would encounter those who had, perhaps for months or years, been devoting their time to some biological problem of which, often enough, Huxley would know very little. In a short conversation he would almost invariably be able to throw a new light on it, and those who talked with him felt that his visit had been an outstanding occasion. It was a contribution to science of a most unusual and unselfish kind; one which only a genius could make. He obtained little recognition for it, but its cumulative effect was great and can never be assessed.

It is difficult to impart an idea of Julian Huxley's friendship. It can, perhaps, be comprehended in this. He would always speak of a friend better behind his back than to his face: few indeed deserves such a tribute. □

E. B. Ford

JULIAN HUXLEY was a great teacher, and not only in the early academic phase of his career. The extent of his influence on zoologists of my own and younger generations is not always realised.

He was a leader of the movement which gathered so much momentum in the early 1920s, away from conventional comparative anatomy and the construction of evolutionary family trees to experimental embryology, genetics, comparative physiology and functional analysis. In 1923, with Hogben, Crew and J. B. S. Haldane, he launched the Society for Experimental Biology and its journal, then called the *British Journal of Experimental Biology*; Hogben has described the quartet as the Founding Fathers of the society—and the society has done more to guide the development of biology and of young biologists in this country in its half century of thriving expansion than any other.

My association with Julian was closest in the late 1920s, when we col-

laborated with my father, H. G. Wells, in writing *The Science of Life*. This was conceived by H. G. as a companion to his earlier *Outline of History*, to set down plainly and clearly "everything that an educated man—to be an educated man—ought to know about biological science . . . We three got together in 1927 and we made a scheme that covered every division of our immense subject. We worked very harmoniously throughout and, after a part publication, produced the book in 1930." My quotations are from H.G.'s *Experiment in Autobiography*.

Those were strenuous years. Julian has written in considerable detail about *The Science of Life* in the first volume of his *Memories* (1970), and told how the harmony of the three authors was occasionally obscured by superficial dissonance. Most of the text was first written by Julian (who produced far the greater portion) and myself. H.G.'s functions were to edit what we wrote and to drive us on to write it. There were times of special stress in 1929, when the first of the fortnightly parts were published while others were in page proof, others in galley, others in typescript and some even in the planning stage. H.G. was never an easy man to work with, as many tempestuous episodes in his life reveal, and he could be furious when his collaborators failed to deliver their copy as soon as he wished, or wrote at much greater length than had been planned. But the storms soon subsided; in Julian's words "H.G. lost and recovered his temper, and so did I, but on the whole the atmosphere was gay and friendly". I am sure that the violence of H.G.'s storms was lessened, partly by his great respect for Julian's store of vivid and accurate information and partly by his realisation that he himself was being educated. He had studied under Julian's grandfather at the Royal College of Science; now he was learning from the grandson how far and how excitingly the subject had evolved since those days.

In any event, the book was written and widely read, appearing over the years in several editions and revisions and in several languages. In Julian's own assessment, "The work was indeed an important achievement . . . It is now out of print . . . but its effects are still manifest in the increased space allotted to biology in the educational curriculum, and the greater interest of the general public in biological facts and their consequences." What he does not say is that the work would never have seen the light had it not been for his enthusiasm, his great abilities, and, as I have hinted, his fundamental friendliness and generosity. □

G. P. Wells