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THE CHALLENGE OF OUR TIME

The Challenge of Our Time

A SERIES OF ESSAYS BY

Arthur Koestler

E. L. Woodward

J. D. Bernal

E. M. Forster

Benjamin Farrington

Michael Polanyi

J. B. S. Haldane

V. A. Demant

C. H. Waddington

A. D. Ritchie

Lord Lindsay

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ARTHUR KOESTLER

Born in Budapest in 1905. He now lives, inaccessibly, in an old farm house on the top of a minor mountain in Wales. He was educated at the University of Vienna and then spent two years in the Middle East doing all kinds of varied jobs from lemonade selling to farming. After that he became Correspondent in the Middle East for a German newspaper; then Correspondent in Paris. In the early nineteen-thirties he joined the Communist Party and travelled in Soviet Central Asia from 1932-1933 as a guest of the Soviet Union. He reported the Spanish Civil War in 1936 and 1937 for the *News Chronicle*; was imprisoned by General Franco for some months in Malaga and in Seville, and was condemned to death by the Fascist military court. After he managed to get out of Spain he was interned at the beginning of the world war by the French, but succeeded in reaching England where he served with the Pioneer Corps till 1942. His best-known books are *Darkness at Noon* (he left the Communist party in the years immediately before the war and this remarkable novel contains a study of the mentality behind the confessions of some of the accused in the Russian political trials); *Scum of the Earth*, *The Yogi and the Commissar* and *Thieves in the Night*.

E. L. WOODWARD

is Professor of Modern History at Oxford and a Fellow of Worcester College. He is one of the two official editors of *Documents on British Foreign Policy*, 1919-1939. His historical work is mostly modern (e.g. *Great Britain and the German Navy*; *French Revolutions*; *The Age of Reform, (1815-1870)*), but he has also written on the later Roman Empire and has recently published a short *History of England*. His autobiography *Short Journey*, written mainly in the train on his journeys between Oxford and London during the war, reveals a personality of wide and rich interests extending beyond the field of scholarship and covering a London childhood and travels in Africa and the Far East.

Notes on Contributors

J. D. BERNAL, F.R.S.

is an Irishman by birth though he was educated mostly in England and studied physics at Cambridge. He started research work at the Davy Faraday Laboratory under Sir William Bragg and became Lecturer in Cambridge and Assistant Director of Research in Crystallography. He became Fellow of the Royal Society in 1937 and was appointed Professor of Physics at Birkbeck College in 1938. His chief scientific work has been on the structure of both simple and complex substances. His research was interrupted by the war when he worked on protection against bomb damage for the Ministry of Home Security and acted as adviser both to the Air Ministry and to Combined Operations. Even now that he has returned to research at Birkbeck, he is still showing in all kinds of ways his lively interest in the social implications and responsibilities of science. He became Chairman of the Scientific Advisory Committee to the Ministry of Works and was much concerned with the Housing Programme; he is an active supporter of the Association of Scientific Workers and has lately been advocating the mobilisation of scientists in peace to meet the economic crisis on a scale parallel with their mobilisation in war. He has published two books: *The World, the Flesh and the Devil* and *The Social Function of Science*.

E. M. FORSTER

is a Cambridge man; was once a Lecturer in English Literature at King's College and has recently returned to do some teaching there. His fame as a novelist rests on a few books; outstanding among them are *Howard's End* and *A Passage to India*. His reputation as a man of letters rests on such critical writings as *Aspects of the Novel*, *The Development of English Prose between 1918 and 1939*, *Abinger Harvest* and *Virginia Woolf*. His interest in the relation of writers to the State is seen in his pamphlet, *Nordic Twilight*.

BENJAMIN FARRINGTON

is Professor of Classics at University College, Swansea. He has made a special study of the development of science and scientific thinking in classical times, and his writings reflect this special interest. His published work includes *Science and Politics in the Ancient World* and *Greek Science—its meaning for us*. He is also greatly interested in contemporary politics and lectures frequently on historical and cultural subjects.

Notes on Contributors

MICHAEL POLANYI

is Hungarian by birth; was until recently Professor of Physical Chemistry in Manchester and is now Professor of Social Studies. He was trained in Hungary and in Germany, but he resigned his position in the Kaiser Wilhelm Institute for Physical Chemistry in 1933 as a protest against anti-Jewish legislation. He is outstanding among the scientists interested in the relation of science to society. His published work reflects this. He has written not only on *Atomic Reactions* but on *Patent Reform, Full Employment and Free Trade* and *Science, Faith and Society*.

J. B. S. HALDANE

has been Professor of Biometry at University College, London, since 1937. He has been a Reader in Biochemistry; Professor of Physiology and Professor of Genetics, and is probably best known as a geneticist. He is also very much interested in contemporary politics and is Chairman of the Editorial Board of the *Daily Worker*. Among the books he has published are *New Paths in Genetics, Science and Everyday Life* and *The Marxist Philosophy and the Sciences*.

V. A. DEMANT

comes from Newcastle. He was originally trained as an engineer and still gets his greatest leisure enjoyment from working with his hands. He left engineering to take Holy Orders, and, after studying in England and in France, served parishes in Oxford, London and Richmond. He has been Canon Residentiary and Chancellor of St. Paul's Cathedral since 1942. His house, in the midst of the bombed area which surrounds the cathedral, was built by Wren. He is a sociologist as well as a theologian; was Director of Research to the Christian Social Council; travels constantly to lecture in England and the United States. Among his published works are *This Unemployment; God, Man and Society* and *The Religious Prospect*.

C. H. WADDINGTON

is Professor of Animal Genetics at Edinburgh University. His own researches have been concerned mostly with animal development and heredity. He has held the Gerstenberg Studentship for philosophy and is the author of *How Animals Develop, Introduction to Modern Genetics, and The Scientific Attitude*.

Notes on Contributors

A. D. RITCHIE

is one of the few philosophers of academic standing who have also held academic posts as scientists. After having been a chemist in the Naval Airship Service between 1914 and 1918, he became lecturer in Chemical Physiology at Manchester University. He was later appointed Professor of Philosophy at Manchester and recently was appointed to the chair of Logic and Metaphysics at Edinburgh. He has written on *Scientific Method*, *The Comparative Physiology of Muscular Tissue*, *The Natural History of Mind*, and *Civilization, Science and Religion*.

LORD LINDSAY OF BIRKER

is a philosopher who has been Master of Balliol since 1924. Before that he was Professor of Moral Philosophy at the University of Glasgow. He is greatly interested in contemporary affairs and takes an active part in politics. Among his published works are *The Philosophy of Bergson*, *Karl Marx's Capital*, *Kant*, *The Modern Democratic State*, *Christianity and Economics*.

RUPERT CRAWSHAY-WILLIAMS

took a degree at Queen's College, Oxford, in Modern Languages and is now engaged in work on philosophy and the psychology of language and reasoning. He is author of *The Comforts of Unreason: A Study of the Motives behind Irrational Thought*.

THE STORY BEHIND

The Challenge of Our Time

EVERY NOW AND THEN a series of broadcast talks arouses a special degree of interest. 'The Challenge of Our Time' was one of those series. But from a broadcasting point of view it was a risk. Other series which attracted great audiences, the later group of talks on 'Atomic Energy', for instance, or the earlier 'Jobs for All', dealt either with subjects which were obviously pressing upon the public mind or else with those possessing an immediate practical point. 'The Challenge of Our Time' was different: it was the direct result of a decision to broadcast, in the agitated first spring of peace, when people's minds were still occupied with demobilisation and housing and prospects of work, an important group of talks on a subject variously described as 'values' or 'the human spirit'.

It was under these vague headings that the talks were first discussed. There was then no Third Programme which could accommodate such a series, and the talks were to go out in the Home Service on successive Sundays after the nine o'clock news. This meant that they had to be planned to attract an audience of millions. It was decided, however, that quality was to be essential and that 'good broadcasting' should, if necessary, be sacrificed to 'good thinking'. It was also decided that authorities in the Universities and the professions should be widely consulted before the subject of the series was more closely defined. This was not to be an occasion for the views of the common man; it was one when those whose business in the community was thinking were to be asked what, in their opinion, should be the subject of an important group of broadcasts at this moment in history, given that the view was to be long term rather than topical and human rather than technical. So leading scientists, philosophers, churchmen, historians, artists and others were severally asked for their advice.

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When their reports were put together there was a surprise; for, instead of the results being a dozen or so subjects from which a choice would have to be made, one subject was, in various forms, seen to be outstanding. This was the lack of synthesis in modern thinking and in particular the wide gulf between the scientific and the humanistic approach to life. There were a thousand cross currents: differing stresses were laid upon the effects and causes of the decline of religious feeling; the importance of atomic energy and the shadow of the atomic bomb; the results of the 'Freudian and Marxian revolutions'; the validity of the idea that our time should be regarded in any way as a special crisis of civilisation; and there was a notable difference between what seemed to be the relative pessimism of the humanists and the relative optimism of the scientists.

Dr. Demant, Canon of St. Paul's, sociologist and theologian, acted as adviser on the humanistic side and drew up a list of questions: 'Is this a time of transition like others in the past and from what to what? Or has it unique features which make it finally critical for the human race?' and 'Is power morally neutral and is human nature free to use it equally for good or ill?' among them which could be used when approaching other possible speakers as a general indication of the nature of the series. On the scientific side a number of scientists were asked for advice, and finally Professor J. D. Bernal, who himself was invited to be one of the speakers, suggested as contributors a varied list of scientific personalities.

It became clear that if essential points of view were not to be omitted and if the series were not to be grossly unbalanced, there must be more than the six talks originally envisaged, and it was decided to extend the number of talks to ten or eleven. From the broadcasting point of view the first talk was crucial. The succeeding talks would probably be more difficult, would demand a closer attention, than the majority put over the air to a large audience. How was this audience to be induced to make the effort to listen to them? One possible method was to make certain that the first talk should be human rather than academic and delivered with passion rather than with detachment. It would be an advantage,

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also, if it could make clear to a British audience that the subject was not limited to anything peculiarly British, but was concerned with civilisation and with man. All these points would be covered if Arthur Koestler were to give the opening talk. His writing, and in particular his novel, *Darkness at Noon*, showed how living and dramatic he could make a conflict of ideas; he would be speaking from a cosmopolitan background which would from the outset prevent the series having too insular a tone; and he would almost certainly speak with a passion derived from his own experience of suffering in contemporary Europe. Following this opening, a historian would be wanted to give perspective; a scientist, J. D. Bernal, to answer Koestler; and then perhaps should come the point of view of an artist. It was important, too, that the series should not give the false impression that there were two carefully defined camps with scientists in the one and artists and philosophers and historians in the other. A classical scholar such as Professor Farrington whose speciality was the place of science in classical history would correct this view. So would a contribution by Professor Polanyi, a distinguished chemist with a special interest in economics and morals, and from Professor Waddington, who had written on the relationship between science and art. The series began to take shape. The differing views would have to be brought together. Professor A. D. Ritchie was remarkably qualified to review the ideas of both scientists and humanists since he was a scientist as well as a Professor of Moral Philosophy. And Lord Lindsay was invited to give a final commentary. This was the series as broadcast. In the version printed here an epilogue by Rupert Crawshay-Williams has been added to counteract what many listeners felt to be a bias towards humanism in that the two final talks were both largely humanist in tone.

Perhaps, as the working producer responsible for the detailed handling of the broadcasts, I may be allowed to mention one or two points which struck me personally about the series. The first was the nature of the response from the audience. Listening figures never fell below three million for any broadcast and rose for individual speakers to nearly five million, and hundreds of letters came in asking that the talks should be published. This

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was a remarkable result for a series of this type. The main reason for it, I think, was the personal approach and the undoubted sincerity of the speakers in the series. And this in turn was due, I believe, to the nature of the subject. It was remarkable that many of the speakers in the series said, when invited to broadcast, that this topic had already been much in their minds. They were peculiarly ready, therefore, to struggle with all the difficulties of broadcasting; of putting difficult thought on a great subject into fifteen minutes of simple speech; of speaking it simply; of being concrete rather than abstract; of giving examples without taking up too much time in doing so; of abandoning the academic habit of impersonality and taking to the use of the personal pronoun; of being willing, above all, to express personal convictions.

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ARTHUR KOESTLER

What the Modern World is Doing to the Soul of Man

I WOULD LIKE to start with a story—it is a story which you all know, but it will lead us straight to the heart of our problem.

On the 18th of January, 1912, Captain Scott and his four companions reached the South Pole, after a march of sixty-nine days. On the return journey Petty Officer Evans fell ill and became a burden to the party. So Captain Scott had to make a decision. Either he carried the sick man along, slowed down the march and risked perdition for all; or he let Evans die alone in the wilderness and tried to save the rest. Scott took the first course; they dragged Evans along until he died. The delay proved fatal. The blizzards overtook them; Oates, too, fell ill and sacrificed himself; their rations were exhausted; and the frozen bodies of the four men were found six months later only ten miles or one day's march from the next depot which they had been unable to reach. Had they sacrificed Evans, they would probably have been saved.

This dilemma, which faced Scott under eighty degrees of latitude, symbolises the eternal predicament of man, the tragic conflict inherent in his nature. It is the conflict between expediency and morality. I shall try to show that this conflict is at the root of our political and social crisis, that it contains in a nutshell the challenge of our time.

Scott had the choice between two roads. Let us follow each of them into their logical extensions. First, the road of expediency, where the traveller is guided by the principle that the End justifies the Means. He starts with throwing Evans to the wolves, as the sacrifice of one comrade is justified by the hope of saving four. As the road extends into the field of politics, the dilemma of Captain Scott becomes the dilemma of Mr. Chamberlain. Evans is Czechoslovakia; the sacrifice of this small nation will buy the safety of bigger ones—or so it is hoped. We continue on the straight, logical

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metal road which now leads us from Munich No. 1 to Munich No. 2: the Ribbentrop-Molotov Pact of 1939, where the Poles go the way the Czechs have gone. By that time the number of individual Evanes is counted by the million: in the name of expediency the German Government decides to kill all incurables and mentally deficient. They are a drag on the nation's sledge and rations are running short. After the incurables come those with bad heredity—Gypsies and Jews: six millions of them. Finally, in the name of expediency, the Western democracies let loose the first atomic bombs on the crowded towns of Hiroshima and Nagasaki, and thus implicitly accept the principle of total and indiscriminate warfare which they hitherto condemned. We continue on our logical road, which has now become a steep slope, into the field of party politics. If you are convinced that a political opponent will lead your country into ruin and plunge the world into a new war—is it not preferable that you should forget your scruples and try to discredit him by revelations about his private life, frame him, blacken him, purge him, censor him, deport him, liquidate him? Unfortunately your opponent will be equally convinced that you are harmful, and use the same methods against you. Thus, the logic of expediency leads to the atomic disintegration of morality, a kind of radioactive decay of all values.

And now let us turn to the second alternative before Scott. This road leads into the opposite direction; its guiding principles are respect for the individual, the rejection of violence, and the belief that the Means determine the End. We have seen what happened to Scott's expedition because he did not sacrifice Evans. And we can imagine what would have happened to the people of India had Mr. Gandhi been allowed to have his saintly way of non-resistance to the Japanese invader. Or what would have been the fate of this country had it accepted pacifism, and the Gestapo with headquarters in Whitehall.

That both roads end as blind alleys is a dilemma which is inseparable from man's condition; it is not an invention of the philosophers, but a conflict which we face at each step in our daily affairs. We all have sacrificed our Evans at one point or another of our past. And it is a fallacy to think that the conflict can always

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be healed by that admirable British household ointment called 'the reasonable compromise'. Compromise is a useful thing in minor dilemmas of daily routine, but each time we face major decisions, the remedy lets us down. Neither Captain Scott nor Mr. Chamberlain could fall back on a reasonable compromise. The more responsible the position you hold, the sharper you feel the horns of the dilemma. When a decision involves the fate of a great number of people, the conflict grows proportionately. The technical progress of our age has enormously increased the range and consequence of man's actions, and has thus amplified his inherent dilemma to gigantic proportions. This, therefore, is the reason for our acute awareness of a crisis. We are like the patient who for the first time hears in a loudspeaker the irregular ticking of his heart.

The dilemma admits no final solution. But each period has to attempt a temporary solution adapted to its own condition. That attempt has to proceed in two steps. The first is to realise with open eyes that a certain admixture of ruthlessness is inseparable from human progress. Without the rebellion of the Barons, there would be no Magna Carta; without the storming of the Bastille, no proclamation of the Rights of Man. So the more we have the moral values at heart, the more we should beware of crankishness. The trouble with some well-meaning ethical movements is that they have so many sectarians and quietists and cranks in their midst.

But the second and more important step is to realise that the End only justifies the Means within very narrow limits. A surgeon is justified in inflicting pain because the results of the operation are reasonably predictable; but drastic large-scale operations on the social body involve many unknown factors, may lead to unpredictable results, and one does not know at what point the surgeon's lancet turns into the butcher's hatchet. Or, to change the metaphor; ruthlessness is like arsenic; injected in very small doses it is a stimulant to the social body, in large quantities it is deadly poison. And to-day we are all suffering from moral arsenic poisoning.

The symptoms of this disease are obvious in the political and

social field; they are less obvious but no less dangerous in the field of science and philosophy. Let me quote as an example the opinions of one of our leading physicists, Professor J. D. Bernal. In an article called *Belief and Action* recently published by the 'Modern Quarterly', he says that the new social relations require 'a radical change in morality', and that the virtues 'based on excessive concern with individual rectitude' need readjustment by a 'change from individual to collective morality'. 'Because collective action is the only effective action, it is the only virtuous action', says Professor Bernal. Now let us see what this rather abstract statement really means. The only practical way for Tom, Dick or Harry to take 'effective collective action' is to become a member of an army, political party or movement. His choice will be determined (a) by his nationality, and (b) by his political opinions or prejudices. Once he has joined the collective of his choice, he has to subordinate his 'individual rectitude' to the interests of the group or party. This is precisely what, for instance, the accused in the Belsen Trial did. Their excuse was that they had to service the gas chamber and push the victims into it out of loyalty to their party, because their individual responsibility was subordinated to collective responsibility. Counsel for the Defence of Irma Grese could have quoted verbatim Professor Bernal's reflections on ethics—though politically Bernal is a staunch opponent of Nazism and supports, to quote his own words, 'the theories of Marx and the practice of Lenin and Stalin'. His article actually contains some reservations to the effect that there should be no question of 'blind and obedient carrying out of orders', which, he says, leads to the Fuehrer Prinzip. He doesn't seem to have noticed that blind obedience plus the Fuehrer Prinzip are nowhere more in evidence to-day than in the Party to which Professor Bernal's sympathies belong. In short, I believe that much confusion could be avoided if some scientists would stick to their electrons and realise that human beings do not fit into mathematical equations. And it should be realised that this is not an abstract philosophical quarrel, but a burning and very concrete issue on which it depends whether our civilisation shall live or die.

Let me return to my starting-point, the dilemma between

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expediency and morality. In the course of our discussion, the symbolic sledge of Scott's small party has grown into the express train of mankind's progress. On this train expediency is the engine, morality the brake. The action of the two is always antagonistic. We cannot make an abstract decision in favour of one or the other. But we can make temporary adjustments according to the train's progress. Two hundred years ago, during the train's laborious ascent from the stagnant marshes of feudal France towards the era of the Rights of Man, the decision would have been in favour of the engine and against the brake. Since about the second half of the nineteenth century our ethical brakes have been more and more neglected until totalitarian dynamism made the engine run amok. We must apply the brake or we shall crash.

I am not sure whether what the philosophers call ethical absolutes exist, but I am sure that we have to act as if they existed. Ethics must be freed from its utilitarian chains; words and deeds must again be judged by their own merits and not as mere make-shifts to serve distant and nebulous aims. These worm-eaten ladders lead to no paradise.

PROFESSOR E. L. WOODWARD

Has All This Happened Before?

I LISTENED LAST WEEK to Mr. Koestler's broadcast describing, so I thought at times, a mortal sickness of our civilisation. I am a historian, and for me, as a friend of mine once said, questions run to history as a cabbage runs to seed. Therefore the first question I should ask would be: 'Has this crisis of civilisation happened before?' Everyone is apt to think his own headache the worst that ever was, but a headache is not a new or a rare complaint.

Have we, in fact, lost something our forefathers possessed? Have we lost all sense of security? A historian would answer that a sense of security is something relatively new in human experience. Consider this ancient prayer, familiar to many generations of our country and drawn up about twenty years before the birth of Shakespeare: 'From lightning and tempest, from plague, pestilence and famine; from battle and murder and from sudden death; from all sedition, privy conspiracy and rebellion, Good Lord, deliver us. . . . In all time of our tribulation, in all time of our wealth, in the hour of death and in the day of judgment, Good Lord, deliver us.'

It can hardly be said that these words imply a sense of security about human fate or that the contemporaries of Shakespeare's childhood found the world any less sombre than it appears to us. Shall we then say that the crisis of our time lies in the realisation that we shall not be delivered; that there is no interpretation of life except in tragic terms; that all causes, all the desire of the eyes, all the pride of living are vanity; that there is no hope of justice; no certainty that what we think right must in the end come to pass.

Such thoughts are not new. Remember the words of Ecclesiastes, the preacher, over 2,000 years ago: 'I returned, and saw under the sun that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise nor riches to men of understanding,

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nor yet favour to men of skill, but time and chance happeneth to them all.' We too have returned—returned from too much hoping—nevertheless we are not the first to say 'time and chance happeneth to them all'.

What then do we mean by asserting that our own age is one of special crisis? In the first place, I think we mean that the oppression of time and chance is heavier because in our mechanised world people find less relief or consolation in their daily work. In earlier ages, in an age of continual struggle against nature, life itself, without question, was enough. Labour was harsh, but it was done to a long familiar rhythm and in a setting which men had always known and to which they had adapted themselves over many centuries. To-day, our huge urban agglomerations are full of people living, one might say, as strangers in their own homes, surrounded by devices which they have made, they hardly know why, and which, having made, they cannot control. Our trouble is deeper because we have none of the old binding associations of habit. We are far away from the instinctive life of animals, and yet our minds and bodies are not fully attuned to any other mode of living.

The crisis of our time also seems more serious because there is more general awareness of the possibility of total calamity. The power of destruction in human hands is terrifyingly great. It seems like wishful thinking to suppose that this power which has been misused up to yesterday will be employed to good purpose in all the to-morrows. It is equally hard to suppose that, if our rapidly accumulating instruments of destruction are used again, there can be any material recovery.

Above all, I would suggest a third feature which, although not wholly new, is relatively new in our time. We cannot easily compare the anxieties of different ages. To the Hebrew prophets the destruction of a few small places in Palestine implied the end of significant history. To the contemporaries of St. Augustine, the sack of Rome, the imperial city, by the Gothic barbarians was a calamity which threw doubts upon Divine Providence. It is hard to know whether there is anything more numbing, as such, in our fears about European civilisation, but what can be said to-day is

Professor E. L. Woodward

that there is no compensation, nothing to set against this tyranny of time and chance. The pessimism of Ecclesiastes, the preacher—the view which I have called the tragic interpretation of history—at least implied an acceptance of the inscrutable laws of God, and in such resignation there was peace of mind. St. Augustine, finding little hope in temporal affairs—in time and chance—could turn with confidence to a vision of the City of God. So, again, to the Hebrew prophets, the destruction of their people was not ultimate: ‘Fear, and the pit and the snare are upon thee, O inhabitant of the earth. . . . He who fleeth from the noise of the fear shall fall into the pit; and he that cometh up out of the midst of the pit shall be taken in the snare, for the windows from on high are open, and the foundations of the earth do shake.’ This picture is 2,500 years old, but so far it is also a description of something within our own experience. Yet consider the words which follow: a forecast of recovery and of the rule of God in Mount Zion: ‘The Lord of Hosts will destroy in this mountain the face of the covering that is cast over all peoples, and the veil that is spread over all nations. He will swallow up death in victory and the Lord God will wipe away tears from off all faces.’

We have no such hope in Mount Zion. We do not know whether there is a City of God. Many of our generation thought to find in Marxist communism a transferred or substitute Messianic hope. For my part I doubt whether we can continue long to hold the illusion that any reshaking of the dice of power in the iron box of history can win us release from the tyranny of time and chance.

And yet—and yet, the more honest we are to ourselves about ourselves, the more we try to attain to an integrity of sight, the more plainly does one thing stand out for us. We see that our refusal to surrender a belief in the good purpose of things is not simply a refusal from which we shrink as we should shrink from touching a highly charged electric wire. We keep to this belief in purpose—or rather I keep to it; I have no right to speak except for myself—because any other interpretation fails to take account of the only evidence of which I can be directly sure—the evidence, behind my five senses, of the nature of life which comes to me because I am myself a living being.

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Here then is what we really mean by the crisis of our civilisation: the crisis is not something external; it is within ourselves. We are in confusion because our method of approach to understanding must be through the intellect; because the scientific method is the best instrument which our intellect has devised, and yet we also know that the results obtained by this instrument do not ultimately make sense. At the same time we cannot explain why they do not make sense. It is not that we have been looking for the wrong things; the achievements of the scientific method have resulted from a search for the right things in the right way, but somehow, somewhere we have missed the point. An illustration used by the psychologist William James sums up the matter. He says, human beings, in investigating the universe, are like cats and dogs in a library. They miss the point of the place and are infinitely unaware of missing it.

It may be, of course, that no better analysis is possible. It may be that the result cannot make sense because there is, in fact, nothing of which sense can be made. After all, if the cats and dogs could read the books they would be no further on than we are; the wisest dog would discover in bewilderment only that there seem to be two kinds of knowledge, of which one kind may be accurately measured and the other kind defies measurement but has to be considered in terms of the beliefs of the wisest minds over many centuries. Thus all a historian can claim is that there is perpetual crisis; there is perpetual doubt, and yet there is final affirmation.

Affirmation of what? Put simply, I mean affirmation of the religious view of the universe, but if I am asked how this affirmation of the religious view of the universe can be made for our own time, or for the whole of society, or what rules of conduct flow from it and apply to the relations between man and man, or for that matter between nation and nation, I have no answer—only guesses at an answer. I cannot myself find this answer in terms of the dogmatic beliefs of the Christian creeds. The words of the Church liturgy are of great beauty, but to me they are not more revealing than other words—for example, about the daffodils

‘That come before the swallow dares, and take
The winds of March with beauty.’

Professor E. L. Woodward

I cannot expect others to feel as I do. I cannot set out to convert anyone. I think it likely that to some people what I am saying may sound foolishness. Perhaps, for this reason, I may be allowed one personal comment—not in defence—I do not regard my position as needing defence; one might as well ‘defend’ the star Aldebaran. If I were asked who in modern times has come nearest to an expression of this religious view which might or might not save our civilisation—it might even assist in its destruction as something unworthy, but it would at least allow us, like St. Augustine centuries ago, to envisage without despair a widespread material catastrophe—if, as I say, I were asked to give one name, I should choose Wordsworth. A modern critic has described Wordsworth as the only poet who bears reading in times of distress. Wordsworth himself wrote with this intention. He said that either he must be considered as a teacher or as nothing. Let me quote two passages from the lines composed above Tintern Abbey. The first—about conduct—is only incidental, but it takes one a very long way.

‘That best portion of a good man’s life,
His little, nameless, unremembered acts
Of kindness and of love.’

The other passage is vaster—a statement of final comprehension:

‘For I have learned
To look on nature. . . .
 Hearing oftentimes
The still, sad music of humanity,
Nor harsh nor grating, though of ample power
To chasten and subdue. And I have felt . . .
 A sense sublime
Of something far more deeply interfused,
Whose dwelling is the light of setting suns,
And the round ocean and the living air,
And the blue sky, and in the mind of man:
A motion and a spirit that impels
All thinking things, all objects of all thought
And rolls through all things . . .’

These words, to me, are something stable in the crumbling of the age. That is all I have to say. I should find it intellectually dishonest either to say more or to say less.

PROFESSOR J. D. BERNAL

The Social Responsibility of Science

A CHALLENGE is something to be taken up, not something to be bemoaned and evaded. If to-day we have to face greater dangers and disasters than ever before in human history, it is also to-day that we have far greater possibilities and greater hopes. We cannot leave this challenge to be taken up by soured intellectuals with their eyes fixed on the past. It must be taken up by those who have the hope, the knowledge, the ability and the drive to define the problems of our time and to solve them. We will throw off our anxieties and quell our fears not through any metaphysical searchings of heart but by getting down to the urgent practical job of securing the conditions for a good life for all the people of the world.

This is the first time in human history that men have had the knowledge and with it the power to tackle this job. That is why the crisis of our time is something new and different from any of the crises of the past. What is new is that science has now come of age. Before, it could explain things, help to make useful machines and gadgets, advise here and there; now it has become the dominating feature of our time.

This did not happen all at once. Ever since the time of Newton the movement of science and invention has run on with increasing impetus through the industrial revolution to the dawn of the atomic age. The harnessing of nuclear energy—the energy of the sun and stars—to men's needs, is the greatest conquest they have ever made, far greater than agriculture or fire or steam; but great as it is it is only a symbol of what men can do, and know they can do, in all fields of endeavour. The methods of organised research and development which have grown over many years and were tried out and perfected during the war have put in our hands powers which are literally unlimited.

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The major fact we must now face is that with these powers man must now for the first time accept the responsibility for running his own world in a sensible way. It is especially the scientist's responsibility because he is the first to see what can be done, but it is none the less everyone's responsibility. For some people this responsibility is too terrible to face. They would prefer to turn back to old ways, to the ages of faith and custom. But whether we like it or not, there is now no turning back. The dangers of the world to-day and to-morrow are no longer what Professor Woodward described on a preceding page as the dangers of time and chance but those of failing to control and to direct wisely the conscious efforts of organised human beings. We have now one world; we must see how to run it. For hundreds and thousands of years, it is true, it has run itself—piccemeal. There was a basic customary life of village and town which continual wars, pestilence and famine could disturb but not destroy. Seed time and harvest, hearth and home, were more important during all those years than kings or warriors, philosophers or saints. Now all that has gone and gone for good. The world won't run itself any more. It is for us to think out afresh what kind of world we want and how we are going to get it.

In this task we have before us the example of the Soviet Union where the first efforts towards a rational communal plan were made. That example inspires the world to-day, even those who would repudiate the inspiration. It underlies our plans in this country for industry and agriculture, it will underly the future organisation of world production and world trade.

There are some people who would like you to believe that once you start trying to run the world in a sensible and conscious way, something terrible will happen to human values, that man will be considered only as machines, that human society will be reduced to that of the white—why not red?—ants. This is sheer nonsense. In fact, it is the other way round. It was the thoughtless and blind pursuit of profit that led to the mechanised horrors of the industrial revolution and the tropical plantations. The running of the world in a conscious way will be such an enormous and complicated job, that we will not be able to afford not to make use of every scrap

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of intelligence, every scrap of goodwill, every scrap of initiative that every person in the world possesses. The position of the individual in the new world will be far more important and interesting than it ever was in the old, and the way individuals will work together will be something far more democratic than anything we have known.

Of course, none of this will happen of itself; it is happening now because of the common will of men derived from their experiences of the recent struggles and from their knowledge of the new powers that science can bring. The job of providing enough food, housing and general consumer goods for all the two thousand million inhabitants of the world is a big, practical job, but we know it is technically possible and we have a pretty good idea of how to carry it out administratively. It cannot be done by dictation; it will have to be done through the integrated and voluntary co-operation of hundreds and thousands of small groups of people working together in their farms and factories and communication services.

The scientists who have given thought to their social responsibilities are fully aware of these problems. Science is not something limited to electrons, chemicals and machines; it ranges over the whole field of living creatures and it is now coming more and more to deal with human beings in their social and economic relations. Thousands of scientists, in production and in operational research, have had concrete experience in dealing with them during the war. The scientist is thus the man least likely to underrate the importance of the individual, and the need for the democratic working of society. Let me quote, in proof, from the argument of my article in the *Modern Quarterly* which Mr. Koestler would like you to believe is a new bible of Belsen. . . .

1. The most important job in the world to-day is to ensure that all human beings have a chance of full development.

2. This can be done only by a conscious, organised effort under the direction of the people themselves. The majority of the people can be trusted; no superior or elite groups can be.

3. The material and social conditions necessary for the realisation of human possibilities can be achieved only through a well-organised productive and distributive system.

4. A new outlook and transformation of values are needed to effect these changes. The new values must incorporate the old tradition but also bring it into relation with present needs. The essentially immoral influence of capitalist individualism must be replaced by a morality which emphasises intelligent working together for common good.

5. Art and culture should become a common living heritage actively shared in by all and not a dead achievement to be admired by a selected few.

The morality which I have advocated there bears no resemblance to Mr. Koestler's caricature. It does not mean blind obedience to a nation or party. It does mean a recognition of what is now a plain fact, as the Bible has it—'We are all now members one of another', and we must all participate consciously and willingly in the framing and carrying out of common policy rather than in seeking our own personal success or salvation. In the new world everyone has the responsibility, not only of doing well in his own job, but of seeing where and how his job fits in with collective human effort. He must be an organiser as well as a worker. As Lenin, 'Every cook must learn to rule the State.'

The dilemma between means and ends that Mr. Koestler puts before us is unreal and delusive. The scientist knows that the achievement of any human purpose is a unitary thing; in planning it there is no separation of means and ends. The lives, health and happiness of the people working in a factory are as much part of its planned production as the finished goods which it sends out. Of course we do not know all the consequences of our actions but our job is to make as good provision as we can for everything we can foresee, to keep the plan flexible, to cope with unforeseen complications, and to learn by our mistakes. The danger lies not in clear-cut and conscious action but in pious and cowardly refusing to act, in continuing to muddle through in the old way. Many times more people have died and suffered from avoidable famine and disease due to selfish ignorance and inaction than have ever been killed or wounded in all the wars in history. Action may be wrong sometimes; inaction in the face of evil is always wrong.

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Those who foster the fear of using our powers are doing the gravest disservice to humanity; for fear paralyses generous action and creates suspicion and still more fears. There is one fear that is with us now, which is holding up everything constructive in the world, the fear of war. Why? Compare our position now to what it was ten years ago when we had before us the growing peril of the armed might of fascism and, behind it, the poisonous doctrines of race hatred and the tortures of the concentration camps. That force is smashed. What are we afraid of now? The atom bomb, of course; this horrible new product of science which multiplies the destruction of which we have had a small foretaste in our blitzed towns. But the atomic bomb does not make itself or blow itself up. The real danger lies in the creation of a world situation which might allow and even force statesmen to order its use. And why is there this danger? Because, we are told, of the attitude of the Soviet Union; the people who by the sacrifice of twenty millions of their brothers and sisters saved us from any commensurate sacrifice; the people now bent on repairing destruction of which we in this country have but a faint experience.

We are afraid of another war which can only occur if we deliberately sabotage the effective international collaboration of which the United Nations Organisation is the first embodiment. The real danger does not come from the Soviet Union, or the atom bomb, or from the inherent wickedness of man, or from our intrinsic inability to co-operate in building a new world based on common effort for common good. It comes from those who do not want this kind of world; those who talk of wars and rumours of wars; those who have discovered the special values of 'Western Civilisation', the defence of which we can now take up from the defeated Germans. These are the enemies of promise: these are the real heirs of the Nazis. Unless we can stop them splitting the world into two camps in men's minds, the fatal division will grow and war will be inevitable.

We know that if, and only if, we can maintain peace, will we be able to use the new powers to give us a far better and freer world than we have ever known. We can maintain peace by thinking less about the old British and Imperial interests that have done so

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much to enslave and bedevil the world in the past and more about the constructive work that is going on in the world to-day. The movements that grew up with the resistance, the movements of the common people, are trying to repair the ravages of war, to use the resources of their countries for a fuller life for their people. These are the forces we should be supporting instead of hindering. Above all we have to keep the friendship of the Soviet Union that we held in the war and show that this is our will and intention by acts and not by words. If we can do this the fear that hangs over the world will be lifted and the work that has to be done can be started with full hope of success.

Already in this country we have begun to make a decent, ordered, human world. With social security, with a national health service, with new education, with new planned towns and factories and mines, we have something to look forward to, and if we preserve peace as well that work can go on to the greater task of raising the standard of living in India, China and the rest of the world.

Pay no attention to those who want to put a brake on progress and who try to distract you from these tasks by preaching despair and suspicion. Leave them to their own futility and spite. We want faith, not to endure disaster, but to avert it and build anew. There are plenty of us in this country who have this faith already and plenty more who will get it. We will find, in the old words of Cromwell—'men who know what they fight for and love what they know.'

E. M. FORSTER

The Point of View of the Creative Artist

THIS IS A LARGE SUBJECT—far beyond my powers. Temperamentally, I am an individualist. Professionally I am a writer, and my books emphasise the importance of personal relationships and the private life, for I believe in them. What can a man with such an equipment, and with no technical knowledge, say to you about the Challenge of our Time? Like everyone else, I can see that our world is in a terrible mess, and having been to India last winter I know that starvation and frustration can reach proportions unknown to these islands. Wherever I look, I can see, in the striking phrase of Robert Bridges, ‘the almighty cosmic Will fidgeting in a trap’. But who set the trap, and how was it sprung? If I knew, I might be able to unfasten it. I do not know. How can I answer a challenge which I cannot interpret? It is like shouting defiance at a big black cloud. Mr. Koestler and Professor Woodward share my diffidence here, I think. Professor Bernal does not. He perceives very precisely what the Challenge of our Time is and what is the answer to it. Professor Bernal’s perceptions are probably stronger than mine. They are certainly more selective, and many things which interest or upset me do not enter his mind at all—or enter it in the form of cards to be filed for future use.

I belong to the fag-end of Victorian liberalism, and can look back to an age whose challenges were moderate in their tone, and the cloud on whose horizon was no bigger than a man’s mind. In many ways it was an admirable age. It practised benevolence and philanthropy, was humane and intellectually curious, upheld free speech, had little colour-prejudice, believed that individuals are and should be different, and entertained a sincere faith in the progress of society. The world was to become better and better, chiefly through the spread of parliamentary institutions. The education I received in those far-off and fantastic days made me

soft and I am very glad it did, for I have seen plenty of hardness since, and I know it does not even pay. Think of the end of Mussolini—the hard man, hanging upside down like a turkey, with his dead mistress swinging beside him. But though the education was humane it was imperfect, inasmuch as we none of us realised our economic position. In came the nice fat dividends, up rose the lofty thoughts, and we did not realise that all the time we were exploiting the poor of our own country and the backward races abroad, and getting bigger profits from our investments than we thought. We refused to face this unpalatable truth. I remember being told as a small boy, ‘Dear, don’t talk about money, it’s ugly’—a good example that of Victorian defence mechanism.

All that has changed in the present century. The dividends have shrunk to decent proportions and have in some cases disappeared. The poor have kicked. The backward races are kicking—and more power to their boots. Which means that life has become less comfortable for the Victorian liberal, and that our outlook, which seems to me admirable, has lost the basis of golden sovereigns upon which it originally rose, and now hangs over the abyss. I indulge in these reminiscences because they lead to the point I want to make. It’s really my only point.

If we are to answer the Challenge of our Time successfully, we must manage to combine the new economy and the old morality. The doctrine of *laissez faire* will not work in the material world. It has led to the black market and the capitalist jungle. We must have planning and ration books and controls, or millions of people will have nowhere to live and nothing to eat. On the other hand, the doctrine of *laissez faire* is the only one that seems to work in the world of the spirit; if you plan and control men’s minds you stunt them, you get the censorship, the secret police, the road to serfdom, the community of slaves. Our economical planners sometimes laugh at us when we are afraid of totalitarian tyranny resulting from their efforts—or rather they sneer at us, for there is some deep connection between planning and sneering which psychologists should explore. But the danger they brush aside is a real one, and Mr. Koestler has done well to point it out in his contribution to this series. We are assured that the new economy

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will evolve an appropriate morality, and that when all people are properly fed and housed, they will have an outlook which will be right, because they are the people. I cannot swallow that. I have no mystic faith in the people. I have in the individual. He seems to me a divine achievement and I mistrust any view which belittles him. If anyone calls you a wretched little individual—and I've been called that—don't you take it lying down. You are important because everyone else is an individual too—including the person who criticises you. In asserting your personality you are playing for your side.

That then is the slogan with which I would answer, or partially answer, the Challenge of our Time. We want the New Economy with the Old Morality. We want planning for the body and not for the spirit. But the difficulty—I expect you've already seen it—the difficulty is: where does the body stop and the spirit start? In the Middle Ages a hard and fast line was drawn between them, and according to the mediæval theory of the Holy Roman Empire men rendered their bodies to Cæsar and their souls to God. But the theory didn't work. The Emperor who represented Cæsar collided in practice with the Pope, who represented Christ. And we find ourselves in a similar dilemma to-day. Suppose you are planning the world distribution of food. You can't do that without planning world population. You can't do that without regulating the number of births and interfering with family life. You must supervise parenthood. You are meddling with the realms of the spirit, of personal relationship, although you may not have intended to do so. And you are brought back again to that inescapable arbiter, your own temperament. Are you like me? When there is a collision of principles would you favour the individual at the expense of the community? Or would you prefer economic justice for all at the expense of personal freedom?

In a time of upheaval like the present, this collision of principles, this split in one's loyalties, is always occurring. It has just occurred in my own life. I was brought up as a boy in one of the home counties, in a district which I still think the loveliest in England. There is nothing special about it—it is agricultural land, and could not be described in terms of beauty spots. It must always

have looked much the same. I have kept in touch with it, going back to it as to an abiding city and still visiting the house which was my home, for it is occupied by friends. A farm is through the hedge, and when the farmer there was eight years old and I was nine, we used to jump up and down on his grandfather's straw ricks and spoil them. To-day he is a grandfather himself, so that I have the sense of five generations continuing in one place. Life went on there as usual until this spring. Then someone who was applying for a permit to lay a water pipe was casually informed that it would not be granted since the whole area had been commandeered. Commandeered for what? Had not the war ended? Appropriate officials of the Ministry of Town and Country Planning now arrived from London and announced that a satellite town for 60,000 people is to be built. The people now living and working there are doomed; it is death in life for them and they move in a nightmare. The best agricultural land has been taken, they assert. The poor land down by the railway has been left; compensation is on the 1939 basis and inadequate. Anyhow, the satellite town has finished them off as completely as it will obliterate the ancient and delicate scenery. Meteorite town would be a better name. It has fallen out of a blue sky.

'Well,' says the voice of planning and progress, 'why this sentimentality? People must have houses.' They must, and I think of working-class friends in London who have to bring up four children in two rooms and many are even worse off. But I cannot equate the problem. It is a collision of loyalties. I cannot free myself from the conviction that something irreplaceable has been destroyed, and that a little piece of England has died as surely as if a bomb had hit it. I wonder what compensation there is in the world of the spirit, for the destruction of the life here, the life of tradition.

These are personal reminiscences and I haven't kept to the part for which I am billed—that of the creative artist. But you will gather what a writer, who also cares for men and women and for the countryside, must be feeling in the world to-day. Uncomfortable, of course. Sometimes miserable and indignant. But convinced that a planned change must take place if the world is not to

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disintegrate, and hopeful that in the new economy there may be a sphere both for human relationships, and for the despised activity known as art. What ought the writer, the artist, to do when faced by the Challenge of our Time? Briefly, he ought to express what he wants and not what he is told to express by the planning authorities. He ought to impose a discipline on himself rather than accept one from outside. And that discipline may be æsthetic, rather than social or moral; he may wish to practise art for art's sake. That phrase has been foolishly used and often raises a giggle. But it is a profound phrase. It indicates that art is a self-contained harmony. Art is valuable not because it is educational (though it may be), not because it is recreative (though it may be), not because everyone enjoys it (for everybody does not), not even because it has to do with beauty. It is valuable because it has to do with order, and creates little worlds of its own, possessing internal harmony, in the bosom of this disordered planet. It is needed at once and now. It is needed before it is appreciated and independent of appreciation. The idea that it should not be permitted until it receives communal acclaim and unless it is for all, is perfectly absurd. It is the activity which brought man out of original darkness and differentiates him from the beasts, and we must continue to practise and respect it through the darkness of to-day.

I am writing like an intellectual, but the intellectual to my mind, is more in touch with humanity than is the confident scientist, who patronises the past, over-simplifies the present, and envisages a future where his leadership will be accepted. Owing to the political needs of the moment, the scientist occupies an abnormal position, which he tends to forget. He is subsidised by the terrified governments who need his aid, pampered and sheltered as long as he is obedient and prosecuted under Official Secrets Acts when he has been naughty. All this separates him from ordinary men and women and makes him unfit to enter into their feelings. It is high time he came out of his ivory laboratory. We want him to plan for our bodies. We do not want him to plan for our minds, and we cannot accept, so far, his assurance that he will not do this.

PROFESSOR BENJAMIN FARRINGTON

What Light from the Ancient World?

I PROPOSE TO DEAL in this essay with the problem of the use of science. This may seem rash since I have spent my life teaching Greek and Latin. But precisely these studies have taught me how disastrous it is when society neglects or misuses science. More than two thousand years ago the Greeks had achieved a scientific outlook. They were experimenting with steam and compressed air and seemed to be on the threshold of a machine age. But the scientific spirit then was defeated, or broke down, because society, as I think, having slaves did not trouble to develop the machine. And so it is only in the last 300 years that science has worked again so strongly as to revolutionise our way of life. Now the release of nuclear energy threatens a new revolution as great as the discovery of fire, and immense material benefits are in sight. We must not fail as the ancient world did. We must not permit a breakdown of the scientific spirit. And this is not an idle fear. The scientific spirit will break down if science is not fully used for the benefit of mankind. The proper use of science has again, in fact, become a challenge. In a moment I shall be attempting to put this question in its historical setting. But first let me say how much I sympathise with Mr. Forster's wish to assert the value of the independent human personality. But I think he is wrong to suppose that it is menaced by the scientists. It was an excellent joke to call on the scientist, in the person of Professor Bernal, to come out of his ivory laboratory. But this, it seems to me, is just what Bernal is trying to do. I mix a great deal with the scientists of this country, young and old, and if I interpret their mood aright, they are appealing to everybody and saying: science can do untold good or untold harm to humanity. Come and help us to solve the problem of its use. The scientist does not want to plan Forster's mind, but he does want Forster to use his own mind to help

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him with the plan and even to explain where planning is not in place.

I have said that the proper use of science constitutes the challenge of our time. And the essence of that challenge is that it is a challenge of plenty, for science can bring plenty. This may seem mockery at the moment, when we are in the midst of the famine conditions due to two destructive wars and a misspent peace. Nevertheless, science offers us unlimited power to create material wealth and distribute it throughout the world. And in this our time differs profoundly from all the past. In ancient times men suffered from an absolute scarcity of material goods, and leisure and security could only be for the very few. But science, in giving us the machine is giving us plenty. The obstacles to plenty are no longer scientific and technical but psychological and organisational. The psychological difficulty is an obvious one. We are not accustomed to a regime of plenty and we continue to fight and to hoard as if there were not enough for all.

But this psychological difficulty has, of course, deep social and political roots conditioned by the scarcity of the past. The internal structure of our states has always been based on a sharp difference between the living conditions of rich and poor. And though this is out of date it takes time to abolish. In their external relations the great nation states have been engaged in protecting competitive interests of powerful groups. They will have to put their political machinery in reverse if they are to achieve collaboration. For this threat of plenty is really a new thing. It means that all over the world people could be better fed, better housed, better cared for medically and better educated. It doesn't only mean more swing and motor cars. It means more schools, more theatres, more libraries, more research institutes, more educated and independent minded men and women, more democracy. And the world is hungry for it and will not be put off.

This is a new problem and we can see how new it is if we observe a great silent change which has quietly taken place in men's minds since science began to revolutionise the world. Men's eyes have been turned in a new direction. In all former ages men turned for their ideal to the past. For the Greeks and the Romans

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the Golden Age lay in the past. In Christian times the leaders of the Reformation looked to the past, seeking to recover the purity of the first centuries of the Christian Church. At the Renaissance, the beginning of the modern world, men still laboured to recover the wisdom of pagan antiquity. Even in quite recent times some social reformers have wished to retreat from the industrial revolution and take refuge in the feudal ideal of peasant agriculture and handicraft production. But most of us know in our hearts that the challenge of our time cannot be conjured away by retrospective dreaming. We may have good reason to hate the machine. We remember the sufferings that accompanied the industrial revolution and we have experienced the horrors of mechanised war. But we know that the machine represents not only a triumph of man's ingenuity but the promise of a better life. We know that we must master the machine and subdue it to human ends, and not break it. The question is, Can we do it?

But here past history certainly lends some comfort. Why should not man solve the problem of plenty seeing how well he has solved the problem of want? Consider the story of man's achievement in the brief period in which he has been civilised. 'Tis full of failure and of horrors to be sure, but enough remains to be a source of confidence and inspiration. Only some seven or eight thousand years ago humanity was represented by scanty groups of savages wandering about in search of food. These poor ancestors of ours drifted about the untamed earth in the wake of the wild animals and wild plants on which they depended for their life. Then the first farmers appeared on earth. For the first time men did not depend on nature's careless giving but themselves acted on nature and forced her to give more generously. Man had begun a new thing which was destined to transform himself and to transform the world. To-day, by reason of man's growing power to act upon his natural environment, humanity is represented by about two thousand million souls. True most of them are miserably poor, and the best fed are not always the most lovable. But all have made some progress in the arts of living together and, all over the world, men are acquiring a sense of their common humanity.

The message of past events, then, as I read it, is one of hope.

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But I find myself sometimes, when I express this confidence, accused of being materialistic. I am asked, are material benefits enough? I would reply that it is not only tools and machines that have been created in the few thousand years of civilisation, but literature and art, and all the values of civilisation. We should be poor defenders of the spiritual values if we affect to ignore the material conditions under which alone they are known to exist. We like to speak of the things of the mind as imperishable, eternal. So, in a sense, they are. We are only animals unless we live the life of the mind. And that life transcends ours in time and space. But it was the English philosopher, Francis Bacon, who saw and said that man's mental and material progress are inseparably linked with one another. And it is reasonable to suppose that from happier material conditions in the future would spring not only new machines but new arts, new thoughts, new sensibilities, new triumphs of man's mind. The spiritual life of the individual cannot soar much above the society in which it is nurtured.

Take a fundamental idea—the idea of freedom. It provides a good illustration of the way in which spiritual values depend upon material conditions. Freedom is not a material thing—yet human freedom does depend upon the control of nature. Primitive man was not free. It took all his energies to maintain his wretched physical existence. Only the slow conquest of nature by man created the conditions under which man could be free. The Greeks did indeed see the connection between science and freedom. They came to understand nature as a domain of law. And they taught the brilliant and fruitful paradox that in order to make himself master of nature man must subject himself to nature's law. But, as I said just now, they failed to use science to emancipate man from the heaviest burdens. They relied upon the slave and failed to develop the machine.

A partial solution to the problem was all the Romans, too, could provide. They developed the idea of freedom in society as dependent on the reign of law. Just as the Greeks had taught that man wins freedom from nature by obedience to nature's law, so the Romans taught that the condition of freedom in society is subjection to the law of society. But the technical level with the

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Romans as with the Greeks was so low that freedom remained the privilege of the minority. For the physically and mentally destructive drudgery of mining, quarrying, grinding corn and carrying heavy loads the Romans used slaves. Their law protected only the freedom of those with the status of citizen. Freedom for the slave did not come through the development of the law but through the mastery of non-human sources of power. It was better harnessing of animals, and the use of the windmill and the watermill, that by the thirteenth century had lifted much of the burden off the backs of men. We ought not to allow ourselves to forget that in the great task of human emancipation that lies ahead of us, we need the freedom science can give us as well as the freedom of the rule of law.

Let me now try to bring this argument to a point. I am a student of Latin and Greek. This means that I have two essential keys to history. European civilisation is about three thousand years old and for about two thousand five hundred years the mental life of Europe found expression either in Greek or Latin or both. That means that Greek and Latin are the key for five-sixths of the whole period of European culture. Studying European civilisation through Greek and Latin, I find certain conclusions forced upon me: and the central one is that we must put in the forefront of the picture of human development the story of science, of tested knowledge. This tested knowledge has a double aspect—material and mental. On the one hand it is the means by which man has learned to master his material environment. On the other hand it is a discipline without which his mind could not have grown to full human stature.

I should like then to leave you with these three thoughts. The first is the newness of the phenomenon called civilisation, the rapidity with which it has been achieved. The second is the close historical connection between material and mental progress. The third is the dependence of the priceless boon of freedom not only on political institutions but on the control of natural forces.

If we remember these things we shall not make the mistake of supposing that our only responsibility to backward peoples is to teach them to read Burke.

PROFESSOR MICHAEL POLANYI

Can Science Bring Peace?

WHEN I WAS A BOY, and preparing to become a scientist, I used to cherish great hopes for a new world organised by science. At that time, about forty years ago, I was living in Budapest. I was a great reader then of Mr. Wells's novels and I devoured them almost as they came from the press in England. They made me impatient with traditional statesmanship and I firmly determined to follow Mr. Wells in sweeping aside all this gimcrack world—as he thought it was—and putting in its place a new world run on scientific lines.

However, two great wars and a number of revolutions have taught me to look upon human affairs in a different light. I still remain grateful to Mr. Wells for his bold inspiration, and I share his enthusiasm for radical reform, as I share that of his modern successors such as Professor Bernal, but I no longer believe, as they do, that the decisive problems of our world can be solved by applying the methods of science. Our troubles to-day are political and not technical. After all, if all we wanted was scientific planning, we could have had that through Hitler. Had Hitler been allowed to conquer the planet, the Germans would certainly have planned the resources of the world quite scientifically. And even now if world planning were our paramount need we could just sit back and wait for someone to conquer the world by atomic force. For there is no doubt that any future atomic dictatorship of the world would be scientifically planned to the last button. Yet the prospect of world dictatorship does not fill us with hope but with dismay. So you see, it is not true to say that planning is what we desire above all.

And this brings us to the real problem of our time, the principal starting-point of which is at least fairly simple and pretty well recognised. Nations armed with modern weapons are so dangerous

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to one another that they cannot continue to live together on this planet as independent states. In consequence of this, the present political organisation of the world threatens to collapse. It is even now heading towards a clash which would inevitably lead straight to the establishment of a world dictatorship. We all know, of course, that our task is to prevent this, and the only way is to establish world control by a free co-operation of states. We must radically revise the political organisation of mankind and establish a democratic international authority with supreme control over all armed power. And we have to do this without delay. It is useless to say that the task is too big for we have no acceptable choice.

So let us look at our task and see where to begin. A free government can be set up only by groups which sufficiently trust each other. Mr. Churchill could safely allow Mr. Attlee to overthrow him because he knew that on taking power Mr. Attlee would not order him to be shot. Two rival groups can continue to sustain together a system of free government so long as they mutually trust each other to observe the constitution of the country. A free control of world power could accordingly be set up straight away—if, but only if, the nations of the world would sufficiently trust each other to observe the future constitution of world government. Every plan for the pooling of atomic power turns on this very difficulty at some point or other. If these plans fail from the start to-day it is because nations dare not place their freedom and their very existence in the hands of a machinery of power which they fear might be captured overnight by one of their rivals.

The essential condition for free world government is, therefore, to establish the necessary confidence between nations all over the planet, and the great question is on what grounds such confidence can be based. This is a decisive problem.

Suppose we consider two nations inhabiting opposite sides of the globe and speaking different languages. They may have few direct contacts, in fact only just enough to realise that they form a potential menace to each other. If they are to trust each other in spite of this, the reason must lie in some universal belief concerning the nature of man. They must believe that all men, as well as all

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nations, are subject to certain moral obligations and that, on the whole, people can be relied on to observe these obligations. Otherwise there is no reason, that I can see, why millions of men and women in one country should trust millions of unknown men and women in another country. For if man were essentially rapacious and ready to steal, lie and kill unless the police keep him under constraint, then each nation would have to expect any other nation to take the first possible opportunity to break the constitution of world government and try to capture absolute power over the planet. And so long as suspicion of this kind is general, world government remains impossible and world dictatorship approaches inevitably.

Here lies the challenge of our time. Our task it would seem is to gain general acceptance for certain beliefs about the nature of man, and make these the basis of a new and free world-government. You may think this a strangely abstract way of approaching the problems of world politics, but let me just show what it would mean.

We might start with a declaration of the Duties of Man, of his duty to respect the truth and to keep his promises. We should declare these obligations equally valid both between individuals and groups. We should add justice, equity and general decency to the list of man's moral obligations, and so go on to compile a complete code of moral behaviour. This might constitute our 'Declaration of the Duties of Man'.

I believe that we should find that all the essential rights of man follow clearly from a recognition of his moral obligations. For such recognition implies the demand that man be left to act freely according to his own conscience. And it implies likewise certain political demands. For in order to fulfil his moral duties, man must have protection and support by a set of free institutions. But our declarations would mean little, and our political demands would be unattainable unless we achieve first an important change of outlook. The principal obstacle to our programme lies in fact to-day in the widespread acceptance of a certain philosophy which contradicts it. This philosophy, which has many forms and many branches, regards man as a bundle of appetites restrained only by

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social discipline. In one way or another this philosophy tends to reduce, or tries to reduce, the moral aspirations of man to some form of material desires. It tries to debunk the spiritual endeavours of man by glaringly exposing, and with a false emphasis, the material conditions to which they are subject. It reduces love, which is essentially unselfishness, to sex, which is essentially selfish. It makes conscience, which is the very rock of fearlessness, appear to be the product of fear. It identifies justice, which springs from our will to do right, with envy, which is a temptation to the contrary. And it makes us regard freedom, which is at the root of all social aspirations of man, as a mere ideological product of capitalism. It supplies us, in fact, with a bag of intellectual tricks, by the help of which any youngster of fourteen can explain away, with a sense of superior wisdom, all moral manifestations from the conversion of St. Paul down to the Battle of Britain. There is no interpretation of history—of art, politics, science, law, religion—so absurd that it will not be accepted uncritically to-day so long as it is couched in terms of ‘complexes’ or ‘social needs’ or some other similar reach-me-down theories.

We must undertake to sweep away this whole way of thinking. We need a new enlightenment to reassert the spiritual life of man and to re-interpret it once more in spiritual terms. Such a movement will release the great moral forces of our time, which are led astray by the false and degrading theories of man’s nature. It should redeem all the patriotic devotion corrupted to-day into Fascism, and it should, above all, set free the great craving for brotherhood and social justice which is harnessed to-day to the engines of class war. If only we could persuade good men to believe again in goodness, and generous men to trust once more in the force of generous sentiments, a peaceful world would arise even to-day. Here is the point, I believe, where the doctrinal religion will play its part. The religions of the Bible are a great source of moral certitude. Christian theology and Christian worship are penetrating guides to a reasonable balance between man’s physical desires and his spiritual obligations.

Yet I do not think that a future recognition of moral reality as the basis of our lives need be achieved, or is even likely to be

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achieved, through a general reversion to the Church. For the spirit of man is revealed to-day most vitally in the great social movements and creative activities of our age. It is embodied in our aspirations for justice and peace, which are higher and more insistent than those of any time before us. It lives in the integrity of our scientists and scholars, and in the incomparable force of our pictorial arts. Once the bearers of this spirit fully recognise the danger to freedom in our days—and are resolved they must have freedom and must uphold freedom—they will turn round and secure recognition once more of the true nature of man. It is by this recognition of man's moral nature that men will find that mutual confidence which is needed for the establishment of a free order of the world.

I would predict that in the long run this will bring men back to the Christian faith and the Christian churches. Modern men will find their way back to God through solving the problem of social freedom for they will discover more and more that the foundations of freedom are akin to the foundations of religion.

PROFESSOR J. B. S. HALDANE

The View of a Biologist

EVERY PEOPLE IN EVERY AGE has had to face the challenge of its own time and place. What is the special challenge of our time? Mr. Koestler, in his opening contribution, told you that 'ruthlessness is like arsenic. . . . And to-day we are all suffering from moral arsenic poisoning.' This seems to me to be utter nonsense. If it were true, we should see strong men shouldering women and children out of the way in bus queues, murders would be as common in the streets of London as in Wild West films, and the demonstration called to Trafalgar Square to urge the Government to cut down food supplies to Germany would have been a huge success, instead of which it was broken up. According to the theories of Mr. Koestler, and of those who think morality impossible without religion, we ought to be getting worse; but we aren't, though of course some important individuals are ruthless.

Nevertheless something is pretty badly wrong with us, and we have terrific moral problems, which may prove too big for us. The reason is fairly simple. There are centenarians in England to-day, men and women who were born in 1846. In the lifetime of one of them, there have been bigger changes in production, that is to say, in the way the ordinary man spends his working hours, than there had been in the whole time between Christ's birth and 1846. And this has happened all over the world. In fact, the changes have been bigger elsewhere than in England, for a hundred years ago, the Industrial Revolution had gone a long way here and had hardly started in most countries. No wonder we find the tempo of change unsettling and even terrifying. I don't think we are less happy than our grandparents, but certainly we feel less secure.

This great change has been due to the application of science. Now the application of a new scientific principle does not necessarily make people happier, or healthier, or richer. To say it does is mere

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sales talk. What it does is to make them more powerful. Because I know the laws of heredity, I can breed animals or plants more or less healthy than the average, as I choose. The same physical principles which were used during the war to destroy much of London can be used to rebuild it. Science does, in the long run, make us behave better because it magnifies the effects of evil conduct until they become utterly intolerable.

Three hundred years ago, the ruling class all over Europe walked about with swords which they drew if they thought they were insulted. We do not go about to-day with an automatic pistol and a couple of hand grenades; we had to stop that sort of nonsense when better killing machines than the sword were invented. I could multiply such examples indefinitely.

Now we have not moralised our international relations as we have moralised some of our social relations. In consequence, we got the blitz, the flying bombs, and the rockets in the last six years, and we shall get atomic bombs if we don't mend our ways. War was very nice for Londoners in the nineteenth century when it meant Jolly Jack Tar bombarding a Chinese port or Tommy Atkins storming an African village, after which, there were new markets for British exports. It isn't so nice in the twentieth century. Science is going to make us behave better or else kill us. Everyone now knows that we should have avoided the war which has just ended had our Government kept its promise to abide by the Covenant of the League of Nations. If our Governments go on breaking promises of this kind, we shall be destroyed by fire from heaven, to use the old phrase.

The challenge, then, amounts to this. It is not enough to behave as morally as our forefathers did. We have got to behave better than they did, because we live in a world where the consequences of collective wrongdoing are much more dangerous. Now collective wrongdoing is largely economic, or due to economic causes; and the remedy for it is not a lot of good deeds by individuals, but planning by the community. For example, unemployment is a cause of war, for it leads to an international struggle for markets and to war preparations as a means of providing work. Hitler's preparations relieved German unemployment almost completely.

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There is another cure of unemployment, namely, Socialism. There has been no unemployment in the Soviet Union since 1931 when they got Socialism working. No third cure is known. Socialism does not automatically make people good, but it takes away many possibilities of individual wrongdoing, and makes some kinds of collective wrongdoing less likely. Of course it raises new moral difficulties; so does every social change.

Mr. Koestler recognises that there is a moral problem, but he stated it about as wrongly as was possible. He spoke of the 'express train of man's progress. On this train expediency is the engine, morality the brake'. Those were his words. Morality he thinks, is a brake on progress; in fact, progress—or, at any rate, quick progress—is, to him, an evil. On the other hand, I believe that in public affairs it is expedient to be moral. If we had followed a moral foreign policy before the war, we should have avoided it. Moralists have said for centuries that it was wrong that some people should overeat while others starved. During the war we suddenly found out that it was also inexpedient, and for the first time in history, we got something like a fair distribution of food.

I think there is a fundamental cleavage between those who, like Mr. Koestler, believe in a negative morality, a morality based on 'Thou shalt not', a morality which is a brake, and those who believe in a positive morality, a morality which makes you do things, a morality which is an engine. As a result of our technical achievements, collective morality has become more important than individual morality, as Professor Bernal said. And let me prove this by a simple example. You would, almost all of you, go without food for a day to save the life of another man or woman, even if you had never seen them before. According to General Hendriksson, until recently the American Deputy-Director of UNRRA, between five million and fifteen million people in India are in danger of death from starvation in the next few months. Grain which is being used for bread and beer in Britain could save something like a million of them without killing any of us. If a million people here each sent a food parcel to someone in India, this would merely overburden the Post Office; the Government action in cutting down our loaves and beer is

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vastly more efficient. Individuals in England can only save lives in India by supporting this action and calling for even more drastic cuts if they think these would be right. If in this particular case anyone asks Cain's question, 'Who made me my brother's keeper?' the answer is 'The Act for the better Government of India', passed in 1858, under which India is controlled by the King and the British Parliament, and not by the people of India.

Now I want to answer some questions which people have asked me about our present problems. Aren't our troubles due largely to specialisation of thought? Isn't science so complicated that no one can grasp it? My answer is that it is quite easy to have a fair knowledge of most branches of science if you start on it young enough, and that we *are* suffering from specialisation of thought. This is due to the fact that many of us got what Mr. Forster is afraid of in the Socialist state, namely, planning for the spirit. When I was at school, I had to go to two religious services a day and to write Latin verses for some hours a week. This was planned to make me into a Christian gentleman. The plan didn't work in my case. But the products of this education, who were ruling Britain until recently, didn't know the difference between uranium and radium, between a Slovak and a Slovene, or between typhoid and typhus fevers; all of which are pretty important for politicians.

The plain fact is that we are all suffering from spiritual planning which has been so efficient that most of us have not even noticed it, and described any protest against it as 'subversive propaganda'. Professor Polanyi, who opposes scientific planning in the name of freedom, has suggested that 'we should compile a complete code of moral behaviour'. I only wonder he didn't suggest a world conference on Mount Sinai to draw up the code. How easily one is led into spiritual planning if one rejects economic planning.

Here is another question: 'Can't you biologists show us the way out? Can't we speed up human evolution, so that our moral and intellectual development will catch up with our technical development?' My answer is: 'Hitler and many other Germans thought that political problems could be solved biologically, and look what happened to them.' Biological and social evolution have different time scales. It usually takes about half a million years to make a

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new species of mammal. You can't expect any noticeable biological change in ten thousand years, and all human history is compressed into the last six thousand. Some day our descendants will probably know enough to control their evolution if they want to; but it is futile to guess what they will want to do.

Finally I am asked, 'Can't you apply your scientific method to these moral and political problems?' My answer is: Yes, we can; and the man who showed us how to do it was old Karl Marx. If he was right, our conduct to-day is largely determined by economic facts. But, when once we realise this fact, we can break our bonds and take control of economics, instead of being controlled by economic laws. Many people still fight against this idea, as their grandparents fought against the idea of man's animal ancestry. If Marxists said: 'Your conduct is determined economically and there is nothing you can do about it'; and if Darwinists said: 'You are only animals, and can only expect to behave as animals' then they would be messages of despair. Actually, they are messages of hope, because they tell us some of the things which are wrong with us and show us the way out. Though, because we can control our economics, we cannot yet control our evolution, Marx's message is the more hopeful of the two.

I close on a note of hope. We are up against a terrific challenge. To meet it, we need hard thinking and determined action, particularly collective action. It is a challenge to all mankind. May the British people play as big a part in meeting it as they did in meeting the challenge of Fascism.

DR. V. A. DEMANT

Canon of St. Paul's

The Fairy Ring of Civilisation

SO FAR IN THIS SERIES two main questions have come to the fore. It has become in the main a debate about collectivism—is it a cause or a cure of our troubles—and about science, have we too much or too little of it.

This discussion has revealed an astonishing thing: eminent men of science, like Professor Bernal and Professor Haldane, are saying that what we need is more morals—but a collective rather than a personal morality. Science has put enormous powers at the disposal of the human race, and here they were joined by Professor Farrington—to improve our conduct so that these powers may do good instead of harm.

This is astonishing because such advice assumes a degree of freedom in men which scientists for the most part have been denying to mankind for a century. It ignores entirely that while men have freedom to act, they are not altogether free and their conduct is very much determined by the tools they use. It overlooks too that power over things tends always to be used as power by some people over others—and you know it is much harder to free collective conduct from such group egotism than the behaviour of individuals.

I think therefore it is putting far too much upon the human being to take any amount of power equipment for granted as a benefit, and then hope to overcome the dangers by a vast increase in wisdom and morality. I also think it is unscientific because it certainly is not the result of untendentious observation of human behaviour.

And then, is it not a fact that there must be something wrong with a civilisation if it demands a tremendous level of moral heroism in order to keep it going at all? What is our civilisation

doing to men? Man is a curious mixture: he has a certain freedom to act and at the same time he is very limited, and he loses what freedom he has when he ignores his limitations—that is the cause of the evils that afflict human existence. Civilisation is the work of the spirit of man seeking to embody his aims and beliefs in institutions, human groupings, cities, industrial habits, cultural works, and their equipment. All this provides a framework which supports his mind and his will and helps him along—for a time. That is the period of growth. But after a space of years or centuries, two things happen which bring trouble. One is that men come to live for the equipment instead of the purposes it was meant to serve. We all become a bit the slaves of our tools. Take the newspaper, for instance—we do not only go to it for the news we want to read, we read what we do not want to read and when we do not want to read—just because it is there and handy. That is to say there comes a point when men surrender their freedom to the instruments of life.

And the second cause of trouble is that the apparatus of civilisation tends to grow at the expense of its natural and spiritual roots. Here, I ought to explain the title of this talk. Fairy rings are circles of rich grass one can see in some pastures, with a patch of dried and dead vegetation inside the circle. The ring is produced by a fungus that fertilises the ground so richly that the growth it promotes completely exhausts the life-giving powers of the first patch. Then the outer ridge is stimulated in the same way by the spores of the fungus, and this outer ring then dies and kills the soil underneath—and you have a series of widening rings consisting of exuberant foliage leaving inside a growing circle of devitalised soil. That I believe is what is happening to our civilisation—its government, its organisation, its machinery, its knowledge, and the sophisticated habits of its people—all these are developing at the cost of weakening the common ground of human existence, out of which the whole thing grows.

I am maintaining that our modern civilisation has been doing this for over a century on a scale and at a rate never known before in the history of man. And it has spread over the world to such an extent that there is very little more room for the Fairy Ring to

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expand. Therefore, our outlook and policies should all be directed towards replenishing the sources out of which civilisation grows.

There are three main sources to be attended to. First, we have to remember that Society must be fed and be aware of responsibility for the earth on which it lives; then, men must feel that they have some support in the community, and also, they must have a sense that what they do has a purpose over and above that of keeping themselves and society going. We may call these the three foundations of all life that is truly human; the vital, the cultural, and the religious.

Take the vital first. Quite apart from the war, the earth upon which we live is being drained of its power to support plant, animal, and human life. Its vital reproductive cycle is being broken under the spur of technical, urban and commercial aggressiveness. Modern man, with his arrogance in manipulating inorganic nature, has treated the earth as he has behaved towards Almighty God; he has lived on it without acknowledging his dependence; he has used the life it gives him to exploit it, and he turns to it, panic-stricken, in emergencies, for a quick recovery from calamities. The benefits we should have reaped from the machine have been spoiled because vast industrial populations have to go on making more and more machine products in order to keep employed—and compete to sell them. The town ceases to be the seat of a community, and tends to be the place of work; men escape from it when they can, living in dormitories that bespatter the countryside. Both city and country are prevented from co-operating mutually for the well-being of mankind.

This brings me to the second requirement. It is that man needs to know that he is the member of a community that satisfies his domestic, social and emotional life, which gives him an attachment to a locality and a cultural tradition on which he can count. The human soul needs support and settlement in some things in order that the will and the mind can act freely in other things. We all know, for example, how a personal or family discord hinders one in clear thinking or in good workmanship. It is the same in society—the human being cannot be in a state of tension in everything. We need to feel that the community has a vitality

of its own, which goes on without too much attention. Just as we would be complete wrecks if every action of our digestions depended on acts of thought and will.

Beyond these two requirements there is a third and the deepest of all. At the roots of all civilisation building is a spiritual urge, an insatiability in man which demands something more than self-preservation or happiness or security. If this is denied its proper course, then it takes the form of just wanting more and more things and more and more activity to escape the feeling of purposelessness. 'I have no more territorial ambitions,' said Adolf Hitler when he annexed Czechoslovakia. Possibly he was speaking the truth, for we all think the next thing we want will content us, and it does not. We chase every fugitive satisfaction because of that emptiness in ourselves.

This feeling of emptiness in ourselves and our civilisation will not be overcome by appeals to work for the social good. We can only work for the social good when we know what will satisfy men at all levels of their nature. If I am told that my purpose in life is to serve you, then I must know a good deal more about you than that you exist to serve me—or that we two should serve others. Nor is it enough to be told that all of us to-day exist for future generations. That would mean that the whole history of mankind is for the sake of the last man on earth, which is nonsense. There is surely something flat and weak about a civilisation if men have to be nagged into being co-operative. Human beings co-operate easily when they have a common task in which they believe. And men only believe in a civilisation when it fulfils certain needs in them for the expression of their spiritual nature. It must stand for some excellence beyond itself. If it does not—then men will be expecting it to be something it cannot be—namely, the object of supreme loyalty and devotion. That belongs only to God who is above and behind the world process—transcends it, as we say. This gives each part and event a meaning in relation to the transcendent reality, and not only in relation to the social whole, and to the past and the future. Modern man has come to see himself only as an item in the historic process, and to recognise no reality apart from the temporal world. This obscures the really religious

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truth, which was phrased by a Danish author of a hundred years ago, Kierkegaard, in the words 'man is the point of intersection of time and eternity'.

But from denial of the transcendent and the outlook that man is only a creature of time—I derive the terrible paradox that modern man is in great control over things and is also carried along by a process he cannot control. It is this sense that social development has a momentum of its own, at variance with true human purposes, that gives all sensitive people the feeling that even apart from dangers of atomic destruction there is a doom on our civilisation. We have lost the up and down dimension in existence—the penetration of eternity into time—the spiritual depth in all finite things that can give meaning to the temporal process. And with this has disappeared not only belief that human life owes an obedience to the Divine Will, but also any conviction that there is a permanent structure of human life. Without this there can be no test by which we can detect whether what is going on is in the truly human interest. Man then is like a minnow whirled along in an impersonal flood he has set flowing.

Thus, in brief, the challenge of our time is presented to us by an over-developed (hypertrophied is the scientific term) technical side of life which tends to destroy the natural, the cultural and the spiritual soil of all human achievement. Of course, there are immediate problems of power and security that rightly look largest at the moment, but behind them and largely causing them are the deeper problems which I have just mentioned. There is no way of meeting their challenge with a simple formula—it requires first of all a change of outlook—for example, there is only one question of importance to ask about any social and economic proposal and it is this: 'does it make for the old goal of expanding the equipment of our civilisation? Or does it help men to put down their roots in nature, in community and in eternity?'—since these are the springs from which all human achievement draws its force.

PROFESSOR C. H. WADDINGTON

Can Science be Reconciled with the Humanities?

THIS SERIES OF TALKS is called 'The Challenge of Our Time'; but to my mind the voice of our time speaks not so much a challenge as an invitation—even an invitation to a party. Throughout the whole of man's previous history, it has needed the hard labour of the many to produce leisure for the few. At the moment there is, of course, widespread famine and want in the world, but that is the sequel to the destruction of war. We know that given twenty or even ten years of uninterrupted effort, we could brush aside the old spectres of poverty, disease and famine over most of the world at least. We are like children who have been playing at pirates under the watchful eye of Mother Nature; and now she has given us the keys of the whole house—including the pantry with plenty of jam for everyone, and the gunroom, with the guns loaded. It is entirely up to us whether we continue to play pirates with the loaded guns, or settle down sensibly to have a good time.

The characteristic of our age is that the problem it poses is entirely a human problem. The things we need to do are, of course, largely economic and material things. But there are no real material difficulties in our way. The snags are concerned with human motivation. Why have we any doubt that we can use our enormous physical powers for our own good? Ordinary people might be powerless if a restrictive economic system was so deeply rooted that we could not get control of it. But that is certainly not true in England, or in many other parts of the world. No, the real difficulty is that we have lost confidence in our own ideals. Dr. Demant, for instance, in his contribution to this series seems to think it is making impossible demands on man's moral sense to ask him to use his technical skill, not to murder his fellows, but to improve his own conditions of life. I do not think our ancestors would have thought this was asking too much moral heroism.

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Our present lack of confidence is largely due to a split between the scientific and the humanistic methods of approach to the problems confronting us; and my argument is that this split is due to a mistaken notion of what science has to say about human motives and ideals.

In the past, the science of human affairs has been neglected. The sciences we have encouraged have been those concerned with inanimate matter and non-human animals and plants. They have acted in two ways on our systems of moral beliefs. Firstly, they have seemed to give a complete account of the world in terms which left no room for moral ideas at all. Professor Woodward in his contribution to this series quoted a very moving and profound passage from Wordsworth:

‘And I have felt a sense sublime
Of something far more deeply interfused,
Whose dwelling is the light of setting suns,
And the round ocean, and the living air,
And the blue sky, and in the mind of man: . . .’

We may feel that that has a deep significance; and then a doubting voice, calling itself the voice of science, asks: ‘But what can it mean? There is nothing there but atoms and electromagnetic vibrations.’ That is untrue; there is man there. But people forgot that. Our confidence was destroyed, and the clash between science and poetry seemed complete. And the second disturbing influence of science was this. Our old systems of ethics dealt mainly with the relations between man and man as individuals. Modern methods of communication and large-scale action do not lessen the importance of individual behaviour, but they raise new moral issues of the relations between groups—for instance between the whole British people and the starving millions of India, as Haldane reminded us. And the old systems of ideals do not speak quite as clearly as is required about such social responsibilities.

Once people start, because of this split between science and the humanities, to lose confidence in their own and each other’s motives, the process goes on apace. The simplest statements get misinterpreted. For instance, Bernal writes what one would have

thought the innocent and almost platitudinous idea, that we need to develop a social morality appropriate to actions on the social level—like rationing, or public health regulations. But some people, like Koestler, succeed in twisting this into a defence of concentration camps. Now this is logic driven mad by fear—by lack of confidence. It can only tend to produce the very thing it fears. If everybody reacted in this way, there would indeed be some grounds for Dr. Demant's terrible pessimism when he said that all sensitive people feel there is a doom on our civilisation.

But must we accept it as inevitable that science belongs to a different world to morals, and that there is no connection between them? I do not think so. People often say that science cannot have anything to do with morals or ethics, because it cannot be concerned with setting up standards. But that is untrue. Scientists are continually inventing new standards by which to measure the things they are interested in—standards of food values, of electrical capacity, and a whole host of others. We trust these standards enough to base our actions on them. There is no reason why science should not approach the problems of ethics in a similar way.

The method by which science sets about formulating a new standard, such as that of food values, for instance, is quite straightforward and well known. One must first observe what effects are produced by the thing one is trying to judge. Food, for instance, tastes nice, fills our stomachs, and does a whole lot of such things; but observing the world in general, we conclude that its main, most important action, is to enable animals to grow and work. So quite simply we define our standard in terms of this main effect, and we measure the value of food by how well it enables us to grow and work. We can discuss ethical standards in a similar way. First we must find out what are the effects of a man's ethical beliefs. It is perhaps not quite easy to decide. Among the millions of men on the earth, some have very odd moral ideas, which have odd effects—just as some men partake of rather queer substances, like alcohol, not all of whose effects are typical of foods in general. But if we take a broad view, I think the only conclusion we can come to is that the main effect of man's moral ideas is to enable

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him to develop his own life in that peculiar, progressive state of affairs which we know as human society. If that is so, then we might measure the value of an ideal by the degree to which it contributes to the development of the individual and the progress of society.

I do not mean for a moment that science at the present day is actually in a position to answer all such questions about the value of human ideals. Our exact knowledge of human affairs is far too backward. But it is something if we can see at least how science could set about such a task if it knew more, because then we can recognise that such questions are not scientifically meaningless. We can recognise that the humanists are discussing matters of importance—even if our science is not full enough to judge whether they are reaching the right conclusions.

But I think actually science can go a little further than this. We do know something about the most outstanding and extraordinary characteristics of human society, and extraordinary they certainly are—unique in the animal kingdom. At first sight one might be tempted to compare man's society with the ants. But they are quite different. In the ants' nest each ant knows a certain routine of actions which fits in with the rest, like the cogwheels in a machine. Human society is integrated in quite a different way, by each individual learning anew the fundamental moral lesson, to temper his own demands in deference to the rights of others. The ants' methods are stable; as far as we know they have persisted more or less unchanged for about fifty million years. In contrast, it has taken man little more than five thousand years to develop from small roving bands of hunters, armed with stone axes, to a society of large towns in which every man is potentially the heir of Shakespeare. Man has, in fact, invented a mechanism for his mental evolution which is at least a thousand, and perhaps a million times as fast as the normal animal method of evolution.

The enrichment of the human personality, therefore, depends essentially on this particular—on this peculiar human invention—a society based on the moral sense. To the scientist's judgment, this, I think, would appear the main, most important effect of ethical beliefs. And the fundamental scientific thesis about ethics

Professor C. H. Waddington

would therefore be that you have to give up some of your individuality in order to gain more. The basic fact about man is paradoxical; he can be an individualist only because he is also a member of society.

This is, at least, a rough outline of a scientific system of values. How would it work out if we tried to apply it? Well, consider the question raised by Forster, one of those who represented the humanities in this series. He mentioned the value to him of his home country, where he felt he belonged, and was a part of a series of at least five generations which he had known living in that neighbourhood; and he told us that the whole thing might be swept away to make room for a new town. In saying this, Forster was describing just how his personality depended on being a member of a particular community. In fact, he was speaking of exactly that kind of value which the scientific view would regard as fundamental. Of course, now both he and the scientists would have to try to decide whether the destruction of his community would be more than compensated for by the building of a larger one in the new town; I doubt if either side would know enough to be quite certain; but at least they would both be trying to solve the same problem. There is no impassable gulf fixed between them.

Again, when Haldane calls for us to submit to extra rationing so that we can take social action to prevent the Indians from starving, it is obvious that what he is asking for is exactly in line with the whole process on which the nature of man depends.

Again, let us tackle a more difficult case. When Wordsworth spoke of 'a sense sublime of something far more deeply interfused', was he making just a meaningless gabble of words? There seems to me no scientific reason at all for saying so. He was writing of a feeling which many men can share—one which certainly has some consequences on their behaviour. The sciences which deal with man are too backward and immature to have much to contribute about the nature of these consequences or their value; but that is no reason at all for denying that they have value.

We need far more scientists who are professionally concerned with matters of this kind—far more psychologists, far more sociologists, far more anthropologists and others with long names but

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useful functions. Society has been too fond of telling scientists that they have nothing to do with questions of value, starving the human sciences which might have something to say on the subject, and then turning round and saying that human values are being left out of the scientific plan. But there is no real conflict between the humanistic and scientific approach. Once that is realised, both sides should gain enough confidence to tackle the problems more seriously than either is doing at present. We want, scientists and humanists together, to consider in detail what kinds of enrichments of the human personality modern technique could make possible; and then we must decide what kind of social organisation will assist in bringing them about. Once we can get over the mistaken idea that there is an unbridgeable chasm between man's morals and his technique, we can answer the invitation of our time as it should be answered—with minds that are both sensitive and unafraid.

PROFESSOR A. D. RITCHIE

Summing Up: I

THE CONTRIBUTORS TO THIS SERIES belong fairly clearly to two different parties: those who follow Mr. Koestler, in thinking our difficulties are moral, and those who follow Professor Bernal in thinking they are economic. I feel compelled to take sides in this dispute.

One thing specially that almost fills me with despair is to find that out of the four distinguished men of science who took part in this discussion, three—Professor Bernal, Professor Haldane, and Professor Waddington—believe in magic. For about half my life, I have been, in a humble way, engaged in scientific work, and I hope I understand the scientific way of looking at things. I also hope I understand its limitations.

Suppose you were ill, and called in the doctor, and when he arrived he marched into the room carrying a bottle of medicine, and gave one quick glance at your prostrate form, then said cheerfully, 'Here's the stuff for you, a teaspoonful three times a day will soon put you on your feet again', you would not think that very scientific. Nor would I. Science is supposed to insist on examining facts first, and then basing a conclusion on the facts. But the believer in magic does not bother about the facts because he has his cure ready.

Now it seems to me that these three speakers have not stopped to consider either the nature of science, or the nature of the diseases from which civilisation is suffering. Because science can do so much, they assume it can do everything. Waddington, it is true, has a different bottle of medicine of his own, while Haldane's is a deeper pink than Bernal's—clearly labelled 'Doctor Marx's Mixture'.

Let me take Waddington's first and the others later. Waddington says: 'If only we wait till the scientists have examined the moral problems, and made morality scientific, then everything will be all right—we shall all be very, very good.' He ignores the

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fact that for at least two hundred years, many able men like Hume and Bentham have tried in various ways to make morality scientific, and have not had much success. He also forgets that knowing about human behaviour is not the same thing as behaving well. After all, the late Doctor Goebbels knew a great deal about human behaviour—hence, the success of his propaganda. But his own behaviour was not all it should have been.

I am not attacking the social sciences which Waddington wishes to encourage. I think they need a great deal more support than they get. But I do not expect them to work magic. I am not contradicting his statement about moral obligation—that you have to give up some of your individuality in order to gain more. I am saying, that idea does not come from science, but from Christian teaching. It is stated in a much better and clearer way in the New Testament, where Waddington found it.

I now come to Bernal, Haldane and Farrington, who, unlike Waddington, consider the main defect of our age to be an economic one. Farrington's statement of this position seems to me the best. Bernal adds enthusiasm for a planned society that reminds me of Mr. H. G. Wells in his earlier days, before the passage of events disillusioned him. Haldane adds a bunch of 'red herrings' which it would take a long time to dispose of.

The main point Farrington makes is, that mental, moral or spiritual health in men depends upon material conditions and cannot be improved without improving them. He gives a good historical example to show how the benefits of political liberty depend upon sound economic conditions, and sound political institutions. This, I think, is true. But it is half the truth, and if it masquerades as the whole it becomes a fallacy. These economic conditions and political institutions he speaks of are like tools. No tool in use operates itself, not even an automatic tool.

A grave defect in our modern attitude to life is just that we have an unlimited faith in tools, without a thought of what they are to be used for. As a result of this, the craftsman's pride in his job and in his mastery of the technical difficulties has turned from something good into something extremely dangerous. He thinks he can do anything and is pleased with the power he possesses just

as power. The man of science is first, and usually all the time, a craftsman whose interest is in his technique. If we follow him to the extent of thinking always of the means of life, we are in a fair way to destroy life itself. It is as though we told a motorist who had lost his way that all he needed was a more powerful car. I find it in some ways encouraging that many of the men of science who were employed in developing the atomic bomb were shocked by the use made of their work. They have realised that technical perfection is not in itself sufficient; that there is a moral question involved.

Bernal, for instance, realises that there is a moral issue but he supposes that abundance of material goods will solve the problem. Haldane hopes that the prospect of disaster by itself is enough to make us moral, although, in the past, the prospect of disaster has sometimes had exactly the opposite effect.

The speakers whom I have called the moralists were all concerned with different aspects of this very defect of our age; a defect in the quality of living that no quantity of means can make up for. Professor Woodward and Mr. Forster are lamenting this lost quality, but cannot see how to replace it. I must say I find it hard not to sympathise with them. Mr. Koestler emphasises the moral nature of the problem, but does not give much hope for its solution. Professor Polanyi and Doctor Demant are the only moralists who hold out any definite hope. Demant contents himself with saying a right religious attitude is needed, but I would ask you to notice that it is Polanyi, the man of science, who says explicitly that our hope lies in Christianity. I agree with him, because Christianity enables us to pursue good and avoid evil.

Let me mention an old and now unfashionable religious view which nevertheless gives a clearer picture of our predicament than any usually supposed to be scientific. The churchmen of the Middle Ages had a theory that the Devil had been an Angel who rebelled against God through pride and was thrown out of Heaven. You will find the story in Milton's *Paradise Lost*. Now I expect those readers who consider themselves scientific are sneering at this childish piece of superstition. Let me put it to them—it is they who are childish and superstitious, not Milton,

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if they believe that science can work magic. Milton was talking a great deal of very good sense though in a language that few people now take the trouble to understand. You may think the Devil is a fancy-dress figure, with a spike on his tail—Milton did not. There is something happening in the world to-day uncommonly like the rebellion of Satan and his downfall. I mention this story about the fall of Satan just because it is not an original or important part of Christian teaching, but rather what some Christians thought about in their spare time. Even so, it tells us something important about the world—something quite outside the scope of science.

I have been much impressed to find Bertrand Russell, a writer whose bias is scientific rather than religious, saying that one of the great defects of modern thought is Cosmic Impiety or as the old theologians might have said—spiritual pride—a pride so great that people set themselves above the whole universe. If men are to behave well, on a small scale as individuals or on a large scale as nations, they require humility and a respect for other men, just as persons not because something can be got out of them. Material goods are good, but they benefit us only if they are obtained and used under these conditions. Otherwise they turn sour on us.

In earlier times when men lived in small communities—knew all their neighbours and things changed very little so that custom was a useful guide—it was not so difficult for a man to know his duty towards God and his neighbour. Now it is much harder because we belong to vast, highly organised communities whose working we seldom understand and do not seem able to control; everything happens on a vast scale. What is still worse, everything changes very rapidly, so that customary rules are very little help and may even be a hindrance.

The vast scale of events and the rapidity of change seem to me the gravest challenge to our ability to act morally. And this is specially a challenge of our time and not of previous times. The trouble now, with exhortations to be moral, is that most people will reply: 'We cannot do anything. We are quite helpless—we are just dragged along by the vast impersonal machinery of our social organisation.'

Professor A. D. Ritchie

Now if a man despairs, his state is, in fact, desperate. If he feels helpless, he is, in fact, helpless. So far, thinking makes it so, and he is to blame for the thinking. If he retains faith and hope he still has a chance. Circumstances may prove too strong for him so that he fails. He is not then to blame for failure. Koestler began the first of this series with the case of Captain Scott in the Antarctic. Scott refused to abandon the sick man Evans. Circumstances were too strong for them, and they all died, but Scott kept faith, had not despaired—had done what was right because it was right. Had he abandoned Evans and lived, he would have been to blame and what would his life have been worth to him then?

The action of Scott is an example on a small scale where perhaps the difference between good and evil is more easily seen and there is more scope for choice. But I can show you another example on a large scale of collective action. In 1940, we stood up to Hitler, when all calculations of expediency should have led us to surrender, because we knew his power was evil.

That exalted mood of 1940 did not last; the vision faded. It was a true vision for all that, the wonder of our time, shared by millions.

If we are not to despair or to be betrayed by false hopes, we must hold fast to this vision of a value that has nothing to do with expediency.

Those who pin all their hopes on a machine-made paradise, will find it a prison, supposing they get there. If they fail to get there they will have lost everything. If we take the search for material betterment as a useful aid to something else, we may be helped by it, so far as it succeeds; and if it fails, all is not lost.

LORD LINDSAY

Summing Up: II

TO SUM UP or at least to comment on the series means, I suppose, that I should have to translate these interesting personal contributions into my language, which I hope might be yours too, but when I do that, I find they are concerned with issues so vast and questions so profound that to try to deal with them in 1,500 words makes me feel like the Scotch assistant minister who said he would give a short evening address on the Past, Present and Future of God, Man and the World. And it is no use my pretending that I can be an impartial chairman in this discussion, because the series has brought out a controversy not exactly between the non-scientists and the scientists—because Professor Polanyi and Professor Ritchie are on the same side as the non-scientists—but between those I will call the self-confident scientists and the others. And in this controversy I know on which side I am, and I should much like to join in the fray and cross swords with Professor Bernal about his views on political organisation—I think his intentions are very good, but his knowledge quite elementary—with Professor Haldane about, what I think, his inaccurate account of Karl Marx, with Professor Farrington about his ancient history—and with Professor Waddington about his moral theory, which is, after all, my professional business. But I am not here to add to the dust and heat, more than just that little rake, but to try and say what it is all about.

It is easy to see that we all roughly agree in our diagnosis. I should say that the challenge of our time comes from the prodigious development of the applied sciences and the increased power over nature which that has given to man combined with the fact that man's wisdom in the use of such power has not increased correspondingly. Have you read *Back to Methusaleh?*—in that play Bernard Shaw handled the same problem, and you may remember that his scientists come to the conclusion that this complex world in which we are now living cannot be managed by such children

Lord Lindsay

as we all are, and we shall have to learn to live to at least four hundred if we are to be equal to the challenge of these times. But that nice simple remedy was ruled out by the more modest Professor Haldane, and so what are we to do about this state of affairs where there is not enough wisdom to use the enormous new powers which science has given us?

The confident scientists seem to say, leave it all to us. As we have organised things, so we can organise men, and as we have discovered everything necessary about things, so we can discover everything necessary about men. That, at any rate, is how it appears to the non-scientist as he listens to them, and his reaction—at least mine at any rate—is firstly the natural human reaction. And he wants to say to the scientist, yes, everybody knows that planning is frightful fun, and you scientists are pretty sure you are going to do the planning, and so, of course, you are excited about it. So should we be if we were going to do the planning. But we unfortunately should be the planned, and being planned is not the least the same sort of fun. And further, and this is a much more serious objection, so far from your experience in planning *things* being a qualification for planning *men*, we make you treat all men and women other than yourselves like the atoms with which you have been so much occupied.

To all this I think the confident scientists give two answers which they do not always distinguish. The first they might put by saying: 'You non-scientists simply will not face the tremendous change which will be involved when we produce an age of plenty, a world in which no one need be poor', though of course it is a bit hard to believe in an age of plenty at this precise moment—still the scientists may be right. And the second they might put by saying: 'The advance of the physical sciences came about by the discovery and application of scientific method. The lopsidedness between the advance in the physical sciences and our knowledge and understanding of men and hence of morals and politics, is due to the fact that scientific method, for some reason or other, has not yet been properly applied to men and to moral questions. When it is, the lopsidedness which is the challenge of our time will be met, science will tell us exactly what we all want to do, and

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we'll all do what the scientist tells us and all will be well'. I think there is something in the first argument, though not as much as the confident scientists imagine, and I do not think there is anything whatsoever in the second argument. But let us look at this a little more closely.

I want to begin by saying that I entirely agree that the consequences of a world situation in which there were no really poor people, where there was no horrible want, where there was no real misery caused by poverty would be quite tremendous. I remember—it always haunts me—a horrible passage in an early nineteenth-century pamphlet by a clergyman—his name was Twist—where he refers to certain revolutionary maniacs who teach the people that the convenience of men and not the will of God has consigned them to labour and privation. If that were all the quarrel, I should take my stand with Professor Bernal and Professor Haldane sooner than with the Reverend Mr. Twist. So long as man assumed that a great number of people were consigned to labour and privation, that a great portion of mankind have got to live in grinding poverty and there was no way out, the only question was who had to do the living in grinding poverty, and society was bound to be dominated by the struggle between the haves and the have-nots. Make everyone comfortably off and a great cause of social conflict will disappear. And it is true that there are degrees of poverty and misery which make the good life almost impossible—there is a pleasant story that Jowett once asked an undergraduate if he agreed with the remark of Socrates that a good man could be happy on the rack, and the admirable young man replied, yes, if he was a *very* good man and it was a *very* bad rack. And you will remember that Mr. Forster talked of the humane Victorian society of his young days being sustained by the comfort provided by dividends got by exploitation. If the scientists can make us all rich by the exploitation of the atom, will they not thereby do more to make us all humane and civilised than all the moral teaching in the world?

The thought that if we gave our minds to it with energy and wisdom we might get rid of all the dreadful misery and squalor there is in the world, ought to make our hearts leap. And seeing

Lord Lindsay

that we can only do it with the aid of organisation and scientific knowledge we ought all of us to devote far more time than we do to questions of organisation, that is of politics, and to the wise and proper use of scientific knowledge. The scientists and the statesmen are quite right to remind us that goodness in itself is not enough. We have to have the scientific knowledge and wise political organisation to let good intentions be effective outside the narrow range of our personal circle.

But, do we really believe that an indefinite multiplication of riches will of itself make us either good or happy? Jesus made people see that riches were deceitful and that a man could pile up possessions and be a fool, and what applies to persons applies to an age. Sometimes from the exciting hope that we are in sight of getting rid of all the degrading poverty and misery of the world, there comes the dream—a fantastic and perverted dream—that we may so arrange the external conditions of life that there is no need for us to be good at all, no need for patience or unselfishness or courage or humility, in a Brave New World where everyone is doing exactly what he or she happens to want, and where everyone will yet live in complete contentment and harmony with his neighbours. That is the recurring dream of people who disbelieve in freedom and infinity, the dream of scientific morality whether in Bentham or in Karl Marx, and if I understand him rightly, in Professor Waddington, and it comes from thinking that cleverness or technical skill is the same as goodness. And it is because that is such obvious nonsense that I think there is nothing whatever in the scientists' second argument. And surely the dispute between those who say that we should devote all our energies to making conditions more favourable for goodness and those who say that we should think only of being good and let the environment and the social organisation care for itself is a silly dispute. Do not we all know that we have got to do both all the time and that 'Few can be good like the clever, or clever so well as the good'? And do not we all know that goodness is not learned in mass organisations. It is learned in small fellowships which are devoted to the service of something greater than and beyond themselves, and beyond all of us. It needs humility and respect for others and unselfishness. It

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needs reflection on ends—on what things are worth while, on what we really want. It is quite different from cleverness. We all know extremely clever people who are both silly and bad, and we all know, if we are not corrupted by self-conceit, plain, simple unlearned people who have a goodness and a wisdom about life which is hidden from many of the clever and the powerful. Because goodness is the salt of the earth, and without it the most elaborate and well-disciplined and scientifically equipped social organisations will become either sterile or corrupt. And surely the smell of the corruption of Nazi Germany is still strong enough in our nostrils to save us from delivering ourselves over to the clever as such. •

But what we have somehow to do in the present age is to combine goodness and cleverness; to learn somehow to permeate these vast impersonal world organisations which in this modern age we cannot do without, with the love of God and of our neighbour. We have to learn to harness the scientific mind in the service of the merciful heart.

You may ask, how is that to be done? Well, everybody knows how you learn to acquire the scientific spirit. You learn it from scientists by being their scholars. There are outside helps, like text-books and classes and colleges, but those do not count compared with the scientists. And so you learn goodness by associating with good people, sharing their work and catching their spirit.

And so finally we can learn how to answer this new challenge of our time from some of the countless men and women who are meeting it already, who are putting accurate knowledge and administrative skill to the service of goodness, and are learning to use organisations and yet to treat men and women as individuals. Some of them are professed Christians, and some are not. Some work through churches, some do not. Do not let us bother about labels but learn to recognise their spirit—for their spiritual affinity is perfectly recognisable. Let us join their company and increase the ranks of those who are really at this moment meeting the challenge of our time, and let us remember finally—and this is what some of this series makes me very badly want to say—that not only love and faith but that hope is a virtue.

RUPERT CRAWSHAY-WILLIAMS

Epilogue

TO THE LISTENER looking back on this series of talks and trying to guess what sort of effect they had on other listeners, first impressions are probably all-important. For the vast majority of listeners will not have gone over the series a second time; their first impressions—and pretty vague at that—will be all that remain.

What are these first impressions? What sort of beliefs about the challenge of our time are likely to emerge from them? For me, at any rate, the overriding impression is of a conflict between two almost irreconcilably opposed views—between those who regard the challenge as moral and those who regard it as scientific. The conflict of course is stated in different terms by different speakers; sometimes it is seen as essentially the conflict between religion and science, sometimes as between the humanities and planning, or between absolute and relative values, or between morality and progress. Nevertheless, the division is clear: on the one side there seem to be those who ‘believe in’ being moral and on the other side those who ‘believe in’ being scientific.

I should be very surprised if this were not the impression gathered by the majority of listeners. And yet, on a second and more careful reading of the talks, I think it is a thoroughly misleading impression—one which makes the conflict out to be much more serious than it really is and which therefore cannot help having unfortunate results. For one thing, most listeners must have favoured one side or the other before ever they switched on to hear Mr. Koestler. The more irreconcilable the conflict appeared, the more likely were these listeners to feel that the ‘other’ side was hopelessly wrong. And, as a result, they cannot have remembered with any reasonable sympathy the arguments which came from across the dividing line.

What is it, in these talks, that makes morality and science appear so sharply antagonistic? Of course, Mr. Koestler’s opening talk has

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a lot to do with it; so have both the summings-up. Mr. Koestler clearly regards the alternative between expediency and morality as fundamental to the problems of our time; and he claims that the action of the two is always at cross purposes. Professor Ritchie, in what he acknowledges is a summing-up for the moralists, identifies expediency with science and morality with religion; and he also regards them as antagonistic—so much so that he is a little surprised when scientists show that they are capable of moral feelings. 'I find it in some ways encouraging,' he says, 'that many of the men of science who were employed in developing the atomic bomb were shocked by the use of their work.' It is this mild surprise which I think sets the tone of many of these talks. Professor Ritchie says that 'the man of science is first, and usually all the time, a craftsman whose interest is in his technique'; from this he concludes that the man of science thinks always of 'the means of life' and is not interested in the ends. In fact, though he acknowledges that some scientists admit the importance of moral questions, one gets the impression that he—together with most of the other 'moralists'—regards scientists as impelled, both by inclination and by the nature of their craft, to let morality give way to expediency. A careful reading of the scientists' talks shows, I think, that this impression is not altogether fair (though it could perhaps be argued that these scientists are shining exceptions). Professor Haldane says that we have to behave better than our forefathers did. Professor Waddington suggests that those who carry on the newer sciences of human affairs should combine with the humanists to work out our problems of morality. Professor Farrington, in saying that the proper use of science is the challenge of our time, suggests that science can help to bring about the material conditions under which spiritual values can exist. In fact, it is clear that these scientists, at any rate (and they are the ones whose views are relevant), do not feel that we must be less moral for the sake of progress. For them, morality and expediency are not only compatible but mutually necessary. It seems, then, that the real conflict in this series of talks is not between those who 'believe in' science and those who 'believe in' the humanities and morals; it is between those who think we can—and should—combine being

more scientific with being more moral and those who also think we should be more moral but who think we cannot be more moral without being less scientific.

If the conflict is seen in this light, it appears much less acute. There is, of course, still a disagreement. But the argument is not completely at cross purposes. And therefore many people who are worried about the current threat to humane values will have been misled if they have concluded that science is irreconcilably opposed to them in principle. In any case, seen in this light, the conflict is more particularly relevant to our time. The moralists, in suggesting that science is inevitably opposed to morality, seem to be trying to force the issue into the shape of the age-old conflict between science and religion, which is relevant to *any* time. For instance, they tend to misunderstand what the scientists have said. Apart from Professor Ritchie's misunderstandings, there is Lord Lindsay's implication that scientists believe infinite riches by themselves will make us good; there is Professor Polanyi's suggestion that scientists who try to explain love in terms of sex are trying to 'reduce' it to sex, and that those who try and explain certain misuses of the word 'freedom' are trying to explain freedom away (after all, a scientist who explains what the Albert Hall is built of does not reduce it to a pile of bricks); there is Mr. Forster's attribution of an extreme anti-humanist view to 'the voice of planning and progress', as if this were characteristic of all those who believe that progress is impossible without planning. And so on. Of course this trick of extending one's opponent's argument beyond what he actually said is a favourite controversial device, since it makes it easy to show that the opponent is apparently talking nonsense. It is played by the other side also, notably in Professor Bernal's talk and, for instance, in Professor Haldane's suggestion that Mr. Koestler believes in a negative morality. But it is so much more common on the moralists' side that I cannot help feeling there is more behind it than a controversial device; it does seem to betray an urge on the part of the moralists to believe that their opponents must be anti-moralists.

This may be a natural urge in anyone who believes that we cannot be moral without being religious—or that the values estab-

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lished by our religious teachings, being eternal, cannot be modified without being largely destroyed; the scientists' denial of this must inevitably seem to be wrong-headed. The fact remains, however, that the scientists cannot be accused of not 'believing in' morals.

But there remains the further point of conflict. Even allowing that scientists may wish to follow the path of morality, it is suggested that, willy-nilly, they are forced in the wrong direction, because their activities are essentially anti-humanist. Mr. Koestler's alternative between expediency and morality is the foundation for this view; and it is taken up throughout the series by those who think we cannot be more moral without being less scientific. Obviously the point is crucial. Are we, as Mr. Koestler claims, on the horns of a dilemma between science and the humanities—between progress and morality? Are we, in fact, doomed to sacrifice one or the other? Professor Bernal denies it flatly; the dilemma, he says, is unreal and delusive. But he sprinkles his argument with so many emotionally-toned words, like 'pious' and 'cowardly', that it can only have an irritating effect on any but the already converted. Besides his last paragraph attributes immoral motives to his opponents; and this does not help to persuade people that the moral question is illusory. However, the arguments of the other scientists all suggest, in their separate ways, that the dilemma is false. Unless this is so the message to be gathered from the whole series of talks is very depressing.

In posing his alternative Mr. Koestler argues that, in our time, we must put the brake on expediency. But what is it that he really means? Both he and Lord Lindsay appear to feel that the 'engine' is running away because Communists and planners are over-confident in their long-term predictions; in other words, the planners are too certain that their plans will in fact achieve their long-term ends, and in consequence they do not allow sufficiently for the possible short-term disadvantages. But, by laying so much emphasis on his moral dilemma, Mr. Koestler disguises what seems to be the logical conclusion. If the successful solution of some problems is endangered by over-confident planning, what we need is more careful planning in these cases. Mr. Koestler, on the other hand, makes it appear that what we need, in *all* our problems, is

less planning in general—that is to say, less reliance on scientific method and more reliance on traditional values. The same point crops up in his original illustration—the story of Captain Scott's tragic journey. Probably everybody agrees that Scott made the right decision. But, if one calls this a decision in favour of morality rather than expediency, it is misleading then to identify expediency with scientific method in prediction; i.e. with planning in general. For if Scott had made the opposite decision, he would have been wrong, not because he had tried to predict, but because he had insufficient evidence to predict with confidence. Most people, I think, would agree that, if he had been *almost certain* of saving three lives by sacrificing one, moral arguments could have been adduced in favour of either decision. Here again, then, there is some confusion. There is, of course, an antagonism between morality (the attainment of the Good) and the kind of expediency which consists of over-confident prediction—or even of selfishness, as in the case of the Nazi leaders; but this does not mean that there is an antagonism between morality and the kind of expediency which tries to work out what is 'expedient' to the attainment of the Good. I think this confusion is unfortunate; for, in this series at any rate, it has beguiled people into analysing many of the problems of our time in over-simple terms—terms which contrast morality and progress, and suggest that, in trying to achieve good Ends, we are foolish to work out our means as forethoughtfully as possible.

Take, for example, Mr. Forster's beautifully presented story of the new town about to descend upon an unspoilt piece of England's traditional countryside. This raises perhaps the most important issue of to-day—apart, of course, from the prevention of atomic or bacterial warfare (which, though seldom mentioned, overshadows all the talks). For the collision of principles involved is very much the kind which may confront any of us at any moment, and which therefore urgently needs attention. It also emphasises the real paradox of modern civilisation: its productive power is at last *capable* of providing personal liberty for those who previously had too little money (I think the scientists prove their case on this point); but unfortunately the productive process is so very com-

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plex that it cannot be kept going without a measure of centralised control; and this centralised control, unless it is itself democratically controlled, can always be a threat not only to personal liberty at all levels, but also to spiritual values. In fact, the price of spiritual and personal liberty is eternal vigilance to ensure that the methods of attaining it are not misused. It is, therefore, supremely important that people like Mr. Forster should keep us sharply aware of the dangers involved. But how *are* we to prevent misuse? How, in the case of New Towns, for instance, are we to balance a gain in spiritual and material well-being for 60,000 urban people against a proportionately larger loss—at least in spiritual values—for 6,000 rural people? Mr. Forster sees the problem as a collision of loyalties—a collision between the humanities and planning, in which the humanist must fight the scientist. Professor Waddington, on the other hand, sees it as a problem for careful prediction, in which scientist and humanist can work together.

These two views seem to be on the whole representative of the two sides in the controversy—at any rate in dealing with problems of this sort. Certainly the moralists seem to take it for granted that, as the humanist fights the scientist, so the individual fights the planner, though I think they tend to regard 6,000 inhabitants of an old town as individuals and 60,000 inhabitants of a new town as *not* individuals. Whereas scientists would I think argue that we cannot simply abandon planning (since it would merely keep things unpleasant for the 60,000) but must plan carefully, consult with the humanists, take account of individual liberty—above all, encourage the individuals concerned to take an active and critical interest.

Of these two views the scientists', I think, is much the more constructive. For, if it is correct, the forces in the country could be organised together on the side of ensuring that progress is combined with proper consideration for spiritual values. And, if there is even a small chance of this, it seems a pity to spoil it by exhorting these forces to organise in two camps—one pushing and one pulling. What is more, if there really is no irreconcilable conflict between morality and progress, the scientists' view is at least plausible. At any rate its merits may as well be dispassionately appraised. But

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I cannot help feeling that the moralists' approach has made it difficult for people to listen sympathetically to what the scientists are suggesting—especially as the moralists are not only in the majority but also deliver both summings-up. This is my excuse for not making genteel efforts to disguise my own inevitable bias. It is also my reason for suggesting at the outset that the general impression made by the series on the majority of listeners is unlikely to have been usefully constructive. Too many people with sincere moral convictions will have felt, with Canon Demant, that 'even apart from dangers of atomic destruction, there is a doom on our civilisation'.

Of course, there is no denying that, in other issues raised by the series, there are sharply opposed sides. But this particular issue, because it is tied to the enormous increase in scientific knowledge, is the one which is most relevant to our time. Most of the other issues are eternal, especially the conflict between those who believe we should stick to the traditional values of established religion and those who believe we should add new values, or modify old ones, in the light of changing conditions. This is the kind of conflict in which nothing but good can come from the widest possible exchange of views. Professor Woodward's convincing diagnosis of our time, for instance, is accompanied by persuasive suggestions as to what values we should believe in if we are to bear our misfortunes. And there are other talks which, like Mr. Forster's, suggest what we should believe in if we are to *overcome* our misfortunes. Canon Demant, for example, lays needed emphasis on the vital, cultural and religious sources of our civilisation. Professor Farrington and Professor Polanyi suggest diametrically opposed views about the nature of freedom. And so on. Only by being bombarded from all sides by such opinions can we get ourselves straight about what we feel to be the ultimately important values. For this reason alone such a series as 'The Challenge of Our Time', which reaches the ears of millions, is an indispensable prerogative of democratic society.

