

THE HISTORY OF SCIENCE AND THE NEW HUMANISM

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TO MY DEAREST FRIEND
E. M. S.
THE MOTHER OF THOSE STRANGE TWINS
MAY AND ISIS

PREFACE

I BEG to thank the President of Brown University for allowing me to reprint in a new and revised edition my Colver Lectures for the year 1930 (first published by Henry Holt and Company, New York in 1930),¹ and I owe thanks also to the President of the Carnegie Institution of Washington for allowing me to reprint the Elihu Root Lecture delivered on December 10, 1935 and first published by the Institution in the following year. To these four lectures I have added by way of introduction an essay "The Faith of a Humanist" which did duty in 1920 as a preface to volume III of *Isis*, in the second number and first volume of that journal to appear after the War. Since that time twenty-five more volumes of *Isis* have been published, plus two volumes of *Osiris*, but the preface remains pertinent. I am grateful to the editor of *Isis* for having kindly permitted me to reproduce it.

It is thought that these five essays will complete one another and help a new group of readers to understand the meaning and purpose of the History of Science, or to understand them better. These studies should not be conceived, as they too often are, as an amiable recreation for men of science. They may be that, but they should be far more: earnest interpre-

¹ The original Preface of that edition has been omitted.

tations of the history of mankind and anticipations of its highest destiny. Is man turning around in hopeless circles, like the circles of Hell? Is our life nothing but delusion and vanity, *vanitas vanitatum*? Is the light which we see a false light worse than darkness? Or can one discern a road with real lights that do not deceive on both sides of it, and others however dim, in the infinite distance? If our past means something more than aimless struggles what does it mean? Is man bound somewhere, and if so, whither?

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THE FAITH OF A HUMANIST

A FEW weeks ago, I had gone up from Florence to Fiesole. It was not a beautiful day. The weather was cold and dull, and I found myself in a melancholy and hesitating mood. Any man engaged in a long and arduous undertaking can but ask himself now and then: "Is it worthwhile?"

That is what I could not help asking myself on that grey afternoon: Was it really worthwhile? Was I on the right way? Why interrogate the past? Why not let bygones be bygones? There was so much to do to go forward or simply to exist, so many practical problems the solution of which called for immediate action. Instead of taking infinite pains to unravel an irrevocable past, was it not wiser to raise crops and live stock, to bake bread, to build roads, to minister to the poor and suffering? Was I not like an idle man in a very busy world? In each of those homes yonder on the hills and in the valley, there lived people who took up one urgent task after the

other; they had hardly time to think or to dream; they were swept away by the needs of life.

Then I looked around me and for a while I forgot my own perplexity. I had at last reached the top of the sacred hill. Remains of ancient walls reminded one of the old Etruscan culture. Nearby other ruins spoke of Roman power and refinement. Thus had civilization steadily grown for more than a thousand years before being brutally interrupted by the southward migrations of younger peoples. Soon after however, fresh endeavors had been made; a new spiritual life had begun and finally the mediæval ideals had been adequately accomplished in this Franciscan monastery, a magnificent assertion of virtue and charity against triumphant barbarity. And lo, yonder in the valley, — Florence! Millions of little voices reached my ears. Every stone of Florence told a story. The whole Italian Renaissance was parading before me. Here in Fiesole and there in Florence, twenty-five centuries of almost uninterrupted civilization had accumulated reminiscences and glories. During this long period, men had labored, suffered,

tried in many ways to draw a little nearer to the truth, to understand the wonderful world in which they were living, to add here and there a little touch of beauty. . . . They had lived and passed away — one hundred and fifty generations of them or more — and nothing remained of them, not even their homes, nothing but the monuments of beauty and virtue, nothing but the amount of truth, of beauty, of justice which they had conquered, — pure gold, eternal joy extracted from the chaos. The rest was dead forever.

Power and wealth had vanished. There remained only the things immaterial — ideals, or the monuments embodying them. These ideals were still alive to-day. Man was still groping after them, and nothing could be to him more interesting and pathetic than the story of his ancient struggles around them, were they victories or defeats. Was it not worthwhile to study this heroic struggle of man with nature and with himself, to observe the vicissitudes of his progress, to enumerate his conquests, each of which was in fact a new title of nobility?

On this sacred soil of Fiesole, deeply conscious of the smallness of my means and of the difficulties to overcome, I dedicated myself anew to this task. To ease my mind, I tried to express my faith in plain words and I thereupon drafted the following lines. I publish them here, after having made a few corrections, because they may be a help to readers who undergo similar anxieties and because they explain at the threshold of a new volume of *Isis*, the spirit, the ambition, the hope of its editor.

To express my faith I have to say many things which are commonplace. I do not try in the least to be original, but to state as simply as possible things which I deem important. I wish they were even more commonplace than they are.

I believe that the supreme end of life, as far as we can see it, is to produce immaterial things such as truth, beauty, justice. For our practical purposes, it is not necessary to know whether these things exist in the absolute. Whether there be a superior limit or not, and whether that limit can be ultimately reached or not, I believe that

we must fight our way upwards toward these ideals. I can find no other meaning to my life, no other spring to my activity.

It is irritating to meet classical scholars and men of letters who seem to think that they are the guardians of culture, ancient and modern, and yet who do not see, nor try to see, the whole world of beauty which science is steadily unfolding under their very eyes. Gigantic thoughts are developing in their presence, but they calmly ignore them as if they were not men of their own day.

It is none the less irritating to meet scientists and inventors who do not seem to be aware of all the treasures of beauty and knowledge which man has slowly accumulated in the last five or six millenniums, who do not appreciate the charm and the nobility of the past, and who regard artists and historians alike as useless dreamers.

Gilbert Murray recently remarked¹ "that there are in life two elements, one transitory and progressive, the other comparatively if not absolutely non-progressive and eternal, and that the

¹ In his *Religio Grammatici*, London, 1918.

Soul is chiefly concerned with the second." The conceited men of letters, the so-called humanists, would fain claim that their function is a higher and more important one since the object of their studies is properly this eternal element of life, while scientists are only concerned with progressive and evanescent matters. But a further remark of Gilbert Murray's shows that he at least knows better: "One might say roughly that material things are superseded but spiritual things not; or that every thing considered as an achievement can be superseded, but considered as so much life, not."

It is true that most men of letters and I am sorry to add, not a few scientists, know science only by its material achievements, but ignore its spirit and see neither its internal beauty nor the beauty it extracts continually from the bosom of nature. Now I would say that to find in the works of science of the past, that which is not and cannot be superseded, is perhaps the most important part of our own quest. A true humanist must know the life of science as he knows the life of art and the life of religion.

We can but live in the present, and I believe that we must be fully, unreservedly men of our own day. But to understand the present and make it a little our own, we must look both towards the past and towards the future. It is our duty to take advantage of every available source of information, to set in full light every action which was really great and noble, and yet to look towards the future for greater and nobler things. Briefly, a humanist's duty is not simply to study the past in a passive and sheepish way and to lose himself in his admiration, he must needs contemplate it from the summit of modern science, with the whole of human experience at his disposal and with a heart full of hope.

And for my brother scientists I would add, that our life must be useful indeed, but also beautiful, and that we need all the nobility of the past as well as the expert knowledge of to-day, to go forward. Our knowledge itself must be humane and generous, a thing of beauty, or it is not worth having.

Of what use can it be to us men, to build daring bridges, airships, sky-scrappers, if we lose thereby

the art of joy and humble life? What is the use of comfort, of material cleanliness and accuracy, of hygiene, if we are to die of weariness and sheer monotony? — A grain of genuine style is worth ten thousand pounds of comfort.

But there is even more to be said. It is worthwhile to interrogate the past as fully as we can, because the race is more important than the individual.

If the individual were more important, our yesterdays would be like corpses and the past would really be a thing of the past. It would be better then, after having taken out of it every practical thing that it contained, to throw it away on the rubbish heap.

But I believe, — nay, I know — that the individual is only a fragment of the race, that it is the race that counts. The tree is the real thing and not its transitory leaves. Each of us is but a leaf from the human tree. Or better still, the whole of humanity, past, present and future, is but one man. Origen had put it tersely some seventeen hundred years ago: “universus mundus velut animal quoddam immensum.”

I believe that I am only a fragment of humanity, yet that I must try to look at things from the point of view of the whole, and not of the fragment. Hence there is no past, there is no future, simply an everlasting present. We all live in the present, but the present of the uneducated is narrow and mean, while that of a true humanist is catholic and generous. If the past were not part of your present, if it were not a living past, it would be better for you to leave it alone.

What little we know, what little power we possess, we owe to the accumulated endeavors of our ancestors. Mere gratefulness would already oblige us to study the history of these endeavors, our most precious heirlooms. But we are not to remain idle spectators. It is not enough to appreciate and admire what our ancestors did, we must take up their best traditions, and that implies expert knowledge and craftsmanship, science and practice.

Hence, if we are anxious to do our best and to bear our full share of the common burden, we must be historians, scientists, craftsmen; — and we shall be true humanists only to the extent of

our success in combining the historical and the scientific spirit.

This is a considerable task and we may not succeed in accomplishing it, but it certainly is worthwhile trying. Some of us at least must needs do it and they should dedicate themselves to it in the same spirit that mediæval craftsmen dedicated themselves body and soul, to their art.

GEORGE SARTON.

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(N.B. Lectures I, II, III are the Colver Lectures; Lecture IV is the Elihu Root Lecture.)