TEXT OF OPENING ADDRESS BY SIR JOHN COCKCROFT, O.M., F.R.S.,
PRESIDENT OF THE INTERNATIONAL CONFERENCE ON RADIO-ISOTOPES IN SCIENTIFIC
RESEARCH, PARIS, 9th -20th SEPTEMBER, 1957.

We are not here today to open the Conference which is to discuss the use of radio-
isotopes in scientific research. Although these isotopes must have existed in the early
stages of development of the universe, most of them have long since been transformed into
stable elements. It was only with the discovery of artificial radioactivity by Joliot-
Curie, and their production in particle accelerators and nuclear reactors, that they have
become freely available to us.

It is not often that a single tool or technique is the unifying factor to bring
together scientists and specialists in such different fields as are here represented to-
day. Radioisotopes have achieved this because they have unique properties as research
tools and are applicable to every branch of experimental science.

The last ten years have seen a revolution in the biological sciences and in our
knowledge of metabolic processes, brought about very largely by the application of radio-
active tracer techniques. In agriculture and animal husbandry, research has received
a tremendous stimulus, which will inevitably have far reaching results in the farming
of the future. Whilst industrial research and process control benefited greatly by
the use of radioactive techniques, it is as a research tool in the laboratory that
isotopes have shown their greatest strength.

That Unesco should undertake responsibility for organizing and presenting this
Conference is a tribute to the international importance of those new techniques. I am
sure we are all delighted with the venue which Unesco have chosen for our meeting and
I am highly honoured to have been asked to be your President.

Unesco is to be congratulated on marshalling such a fine programme of papers and
discussions from contributors all over the world at such short notice. In particular,
we are all indebted to their Department of Natural Sciences and its leader Professor
Auger, whose great efforts in this respect have been well rewarded by your response.

In many ways this Conference may be regarded as the natural successor of two
Conferences held in 1951 and 1954 in Oxford. As opposed to those earlier meetings,
which were preoccupied with the techniques then being developed, the present Conference
follows the maturity of some of these techniques and discusses their impact on the
physical and biological sciences.

Since the exchange of knowledge of production and applications of radioisotopes in
research has never been restricted by secrecy, it is not surprising to find that pro-
gress through international collaboration has been very fruitful indeed. Looking through
the abstracts I am impressed by the width and scope of research using radioactive mate-
rials, which has been pursued in so many countries, especially in the biological scienc-
es which have so immediately an effect on human health and well-being.

Especially notable are the advances in biochemistry by the introduction of new
compounds labelled with Tritium and Carbon 14. Newly developed techniques will be
discussed which will broaden the front of our attack on chemical and biochemical pro-
blems. More established methods such as radio-chromatography and autoradiography have
been refined and extended in their usefulness. It is hardly surprising to find under the biological sciences, eight sections which deal entirely with metabolism. Isotopes have proved to be a most significant tool in enlightening us in this aspect. I am also impressed with the great advances which have been made through the application of radio-isotope techniques to the study of photo-synthesis and the biosynthesis of components of chlorophyll.

The biological and physical sciences are linked by the newly developed methods and techniques which will be the subject of a full day’s plenary session.

During the last few years, and especially since the 1955 Conference at Geneva, the nations of the world became increasingly conscious of the potentialities of isotope techniques. Many new laboratories have now been established for research of this kind, even by smaller nations, and the larger nations have made training facilities available to all. In this way the new ideas disclosed in this conference may be soon passed on to the engineer or industrialist where they may be applied for the general good.

Conferences such as this one will be needed as long as rapid progress continues to make new materials available and to develop techniques for their use. The building of new reactors with high neutron fluxes and of other high energy machines capable of producing new spallation products would alone have justified the present conference. When these are supported, as they are, by new methods of detection, such as the plastic and liquid phosphores as used in scintillation counters, and new principles of uses such as those to be discussed in the present programme, the calling of regular meetings becomes imperative.

The large radioactive sources which are becoming available, especially from fission products from power reactors, are opening up exciting new fields of application and there is no knowing at present how great may be their impact on scientific methods and materials. What has been established already has shown the importance of radio-isotope techniques in such wide and diverse fields that they rival nuclear power itself for their benefits to humanity.

A truly scientific conference aims not only to present new facts and the results of new experiments, but also to discuss their significance in the light of past experience and future progress. I hope that the original papers we shall hear will stimulate free and lively discussion which will make this conference a fruitful and memorable one. Perhaps the most valuable attribute of an international conference lies in the informal conversations which take place outside the conference room, when there is time and leisure for more thoughtful discussion. Such occasions have often sown the seeds of new ideas and new fields of co-operation. It is to be hoped that our present conference will be no exception in this respect.

It is with great pleasure, and with confidence in the success of our joint endeavour that I now declare this Conference open.