

Nkrumah On Solar Energy, Scientific Research & Science Education

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SPEECH DELIVERED BY OSAGYEFO THE PRESIDENT AT THE LAYING OF THE FOUNDATION STONE OF GHANA'S ATOMIC REACTOR AT KWABENYA ON 25TH NOVEMBER, 1964. We believe this speech is important in the face of Dumsor. It is our submission that readers pay attention to the speech against the backdrop of Prof. Lungu's essays on solar energy. Please read on:

Ladies and Gentlemen:

We are gathered here this afternoon to mark the beginning of Ghana's Atomic Reactor Centre. This Centre, when completed, will enable Ghana to participate in the developments now taking place in Atomic Science. In this way, we shall be equipped

with the greater scientific knowledge and the means to give richer service to our people and to Africa.

Nkrumah On Solar Energy, Scientific Research, & Science Education (1964-10-25)

Nearly three years ago, we decided to build an Atomic Reactor in Ghana. We were fully aware then that our motives might be misconstrued, for the setting up of an atom reactor is the first practical step to the building of an atom bomb. We have always stood for the use of fissionable material exclusively for peaceful ends. We consistently stood against the unnecessary proliferation of weapons of mass destruction, and with equal consistency for the abolition of such weapons.

Our sole motive in reaching the decision to build the Centre which you now see rising before you, is to enable Ghana to take every advantage of the decisive methods of research and development which mark our modern world. It is essential to do this if we are to impart to our development that acceleration which is required to break even with more advanced economies. We have therefore been compelled to enter the field of atomic energy, because this already promises to yield the greatest economic source of power since the beginning of man. Our success in this field will enable us to solve the many-sided problems which face us in all the spheres of our development in Ghana and in Africa.

We know that doubts have been expressed concerning the wisdom and practicability of our decision. Many important but inconclusive reasons have been advanced to persuade us to abandon this project. But we were not persuaded.

Let me say that, in the age of science and technology, in this age of atomic revolution neither Ghana nor Africa can afford to lag behind other nations, or to ignore the scientific developments of our time. Indeed we start with certain definite advantages over many nations which have preceded us in the scientific revolution.

Allow me to remind you of the metaphysical problem about the flea. You know that some people have wondered, with some concern, whether, assuming that there is a flea on our back, there is on the back of that flea a minor flea and upon the back of the minor flea yet another mini-minor flea and so on, ad infinitum. A similar problem was expressed in the history of science about matter.

We, however, have not had to prove for ourselves that the atom can be

split. We have not had to discover that steam can produce energy or that water power can be used for the generation of electricity.

Indeed, we begin where many ended. We make our start from the great body of scientific and technological attainment which is the common heritage of mankind. Beginning so loftily as we do, there is no reason for us to be timid in joining the forward march of knowledge.

We have a second reason. In the field of atomic research, it is known that the development of the peaceful uses of atomic energy can bring about a profound transformation in the life of mankind. A socialist society more than any other needs to bring about such profound changes in order to produce plenty for all.

We in Ghana, are committed to the building of an industrialised socialist society. We cannot afford to sit still and be mere passive onlookers. We must ourselves take part in the pursuit of scientific and technological research as a means of providing the basis for our socialist society, Socialism without science is void.

CORPS OF GHANA SPECIALIST

Already the residential site, where the many Ghanaian scientists and engineers who will be engaged in this project will live, has been completed. These young men and women, who had received their specialised training in the Soviet Union and elsewhere, will provided the basis for our corps of skilled specialists in nuclear science. We are sending more Ghanaians abroad to acquire this specialist knowledge and training.

We have now embarked on the second stage of the project. This will include the construction of the reactor itself and the construction of a monitoring station to ensure that no harmful radioactive substances are released or disseminated. Radio-chemical laboratories are to be built where the elaborate procedures for processing radioactive sustenance will be carried out. There will also be the many other ancillary buildings which such a project calls for.

By 1966 the reactor itself should be in operation, and the Research Centre

will have started on the extensive programme of research for which all these elaborate and intricate preparations are being made.

Every state of this complicated preparatory work has been carried through with the aid of specialist and scientist provided by the Government of the Soviet Union. At all stages there has been the closest and most friendly co-operation between Ghana and the Soviet Union. The friendly relations between our two countries have been strengthened by the success of this common endeavour.

In 1961 I caused the Ghana Atomic Energy Commission to be established to guide and direct this enterprise. Our Atomic Energy Commission now operates in close relationship with the International Atomic Energy Agency. Only recently the Director and the Deputy Director of the Agency visited Ghana, and commented favourably on the breadth of vision of our plans.

We believe that the amount of energy which can be generated in Ghana, can play a decisive role in the development of our industry, agriculture, health and other services. Certainly, the foundations for the effective and rapid industrialisation of our country must rest on the provision of cheap and abundant power.

THE VOLTA RIVER PROJECT

This is why we have placed our faith in the Volta River Project which, perhaps, might never have been started without the personal interest of the late President Kennedy and the assistance of the United States Government. Without the friendly relations between Ghana and the United States of America, this project would not have been possible.

As I speak, the Volta Lake has risen two-hundred-and-sixty feet, and it is confidently expected that power can be generated at Akosombo by the end of 1965. The biggest consumer of this power will be the Aluminium Smelter which is to be established by the Volta Aluminium Company at Tema. I am glad to announce that the ground breaking ceremony to mark the beginning of work on this Smelter, for which we have also received assistance from the United States Government, will take place in ten days' time, on Saturday, 5th December.

I have also recently directed the Ghana Atomic Energy Commission to investigate and expand research on the possibilities of solar energy, which is already going on at the Kwame Nkrumah University of Science and Technology. It is estimated that even one-tenth of the solar energy falling on the earth's surface would be enough to produce an amount of energy several times the amount generated at present. In Africa we have no lack of sunlight, and the development of solar energy should, in fact, be one of our main scientific preoccupations.

THE NUCLEAR THREAT

Ladies and Gentlemen:

Science can be applied for good ends, for the betterment of the human race, or for bad ends, for the making of weapons of destruction. In no field of science is the contrast between these two aspects so great as it is in atomic energy. The hydrogen bomb, that instrument of mass destruction which we all fear and dread so much, is based on the same source of power. Scientists hope that, in the very near future, thermo-nuclear reaction will release unlimited resources of power for industrial use.

If the world can survive the threat of annihilation posed by the hydrogen bomb, and other agents of mass destruction, then the peaceful application of thermo-nuclear energy, which is at present predominantly turned to warlike purposes, will bring about an unprecedented release of the human race from drudgery and fear, starvation and poverty, which is now the lot of so many.

It is in this important field that the peaceful uses of nuclear energy can play such a major role. The greatest happiness of the greatest number is only possible by the purposeful application of science to peaceful ends.

One of the most urgent tasks before us, therefore, is to secure world-wide, total and complete disarmament and the banning of all nuclear devices of mass destruction. This process is rapidly becoming more urgent and more difficult as the number of nations which have access to these weapons increases. That is why we support wholeheartedly the efforts by the Organisation of African Unity and the United Nations to make Africa a

Nuclear Free Zone.

Ladies and Gentlemen:

Scientists the world over have recognised the urgency and danger of our nuclear predicament, and their own special responsibility and involvement in it. The Scientist is a social being and cannot effect an idealistic unconcern for the destiny of mankind. The scientist can, by his specialised knowledge, affect our whole fate. He must, for this reason, accept a proportionate obligation in public affairs. Many issues can be resolved only on the basis of scientific and technical knowledge. For this, the public and the government turn to the scientist for advice. It is the scientist's duty to serve them well conscientiously and scrupulously, without regard for personal ambition, or the natural wish to say what is pleasant to hear.

The scientist must also explain to us the consequences of our acceptance of his advice. He cannot accept credit for the great advances in medicine, agriculture and industry, and at the same time disclaim responsibility for the sequences of weapons of mass destruction. Here the scientists have an obligation to make the governments and people of the world fully aware of the dangers facing them, and to give sober and disinterested advice.

We must unite in our fight for peace and complete disarmament. People of all national must bend every effort towards the development of science and technology which would herald a new and happy future for mankind. We in Ghana propose to set a forceful example by restricting our efforts in the field of atomic research to exclusively peaceful uses. To advance science in the service of man, is to advance socialism; to advance socialism, is to abolish imperialism, in all its forms and manifestations.

The Ghana Atomic Energy Programme is destined for peaceful purposes. Ghana was one of the first countries to sign the Partial Nuclear Test Ban Treaty in Moscow. Incomplete though the provisions of that Treaty are, we intend to abide by its terms. Neither this Reactor, therefore, nor the Laboratories attached to it, nor indeed any other nuclear facilities in Ghana, will be directed to the Development of devices for war.

FOCAL POINT FOR GHANAIAIAN SCIENTISTS

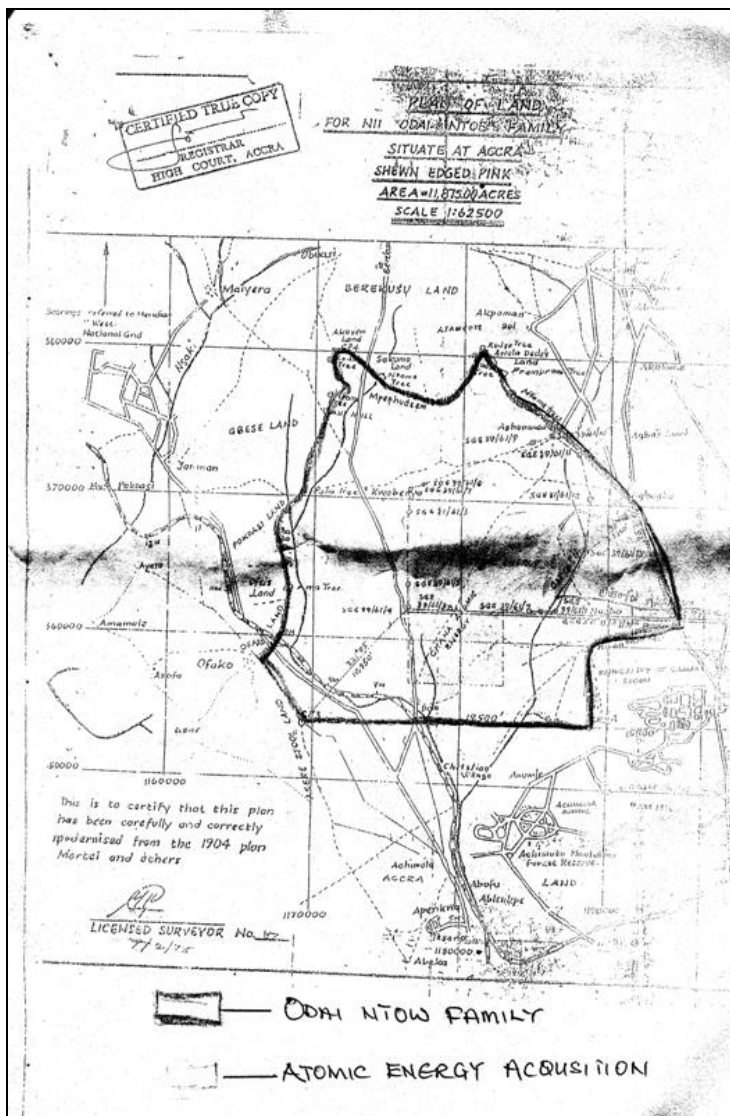
This reactor is designed for experimental work in the field of nuclear and atomic physics, including the study of the properties of materials and how they are affected by radiations and radio-chemistry. "It will serve as a focal point for scientists and research workers from the various institutes of the Ghana Academy of Sciences, from our Universities and from government laboratories all over the country. Here they will be provided with facilities for investigations involving nuclear techniques in biology, agriculture, medicine, physics and chemistry. It will be a centre for the training of Ghanaian scientist in nuclear science and technology".

A heterogeneous nuclear research reactor, as well as an up-to-dated radio-chemical laboratory and the development of the peaceful uses of atomic energy in Ghana will be centred around the Nuclear research Institute to be established here.

A Radio-Isotope Centre is assisting five agricultural centres of the Ghana Academy of Sciences and the University of Ghana in the application of radio-isotope techniques in the study of plant protection from weeds and insect pests, and the uptake of fertilisers by plants under local conditions.

Among other uses of nuclear power, it is hoped to develop peaceful uses of nuclear

explosives for excavation, mining and recovery of gas and oil. The Atomic Reactor Centre will provide experimental channels for the study of radiation genetics. Through these researches it will become possible to find a way of



inducing genetic changes in plants and animals to provide better crops and better meat.

In point of fact, we are not entirely newcomers to this field of endeavour. For some time now the Ghana Academy of Sciences has been pursuing a programme of research work in which radio-active materials have been applied to many problems in agriculture and medicine.

During the coming year, the scope of this work will be greatly increased. It will provide the wide range of facilities needed to train many more research workers and technicians for this programme. The International Atomic Energy Agency is sending a mobile radio-isotope laboratory to Ghana early next year to assist in this training programme.

In planning this Centre, we have been painfully aware of our limitations in men and material, and the variety and complexity of the research problems which face Africa as a whole. Until we in Africa come together, and establish a Union Government for all Africa, we shall be forced to tackle our problems in isolation, hampered by our disunity and many disabilities. Progress will be slow, and we shall deny ourselves and advantages of well-integrated and commonly executed planning.

This is another of the many compelling reasons why we in Ghana have made a persistent appeal for the early establishment of a Continental Government of Africa.

Ladies and Gentlemen, the basis of our whole programme of socialist development must be the application of Science and Technology. For the implementation of our Seven-Year Plan, for the success of our agricultural industry, for ensuring increased output in industrial production demand, we must apply the latest scientific techniques, we, especially our young men and women must acquire and master these new techniques.

SCIENCE EDUCATION

We are already making every effort to raise both the number and the quality of the scientists who come from our Universities and to raise the standards of the science teaching in the schools. We have made great

progress in this field. Much more remains to be done. There are not nearly enough Ghanaian scientists and Ghanaian technicians of all kinds for the work we have on hand. Even the finest laboratory, the best equipment or, indeed, the best reactor, will not produce scientific work of their own accord.

Only men and women can do that, and only after long and highly specialised training in scientific techniques. Hence we need to press on with the greatest urgency the scientific and technological training of young Ghanaians. Every boy or girl who shows talent in this direction must be encouraged and helped, because such talent is especially precious to us and we must foster and guard it. Our Universities, the various Institutes of the Ghana Academy of Sciences, the University College of Science Education in Cape Coast, our newly established Medical School and the proposed University College of Agriculture, will help in providing this training.

We need also to reach out to the mass of the people who have not had the opportunities of formal education. We must use every means of mass communication—the press, the radio, television and films—to carry science to the whole population—to the people.

Last year, as part of the Academy anniversary celebrations, there was a science exhibition in Accra. This year there has been another one in Kumasi. Similar exhibitions have been held in our Universities in Kumasi and Accra. The enthusiastic response to these exhibitions and the eager way in which our young men and women studied the exhibits was most encouraging.

The projected National Science Museum when completed, next year, will provide this kind of exhibition in a permanent form. This is a major project which will play a great part in exciting public interest in science and conveying in a direct and vivid way the impact of science on everyday life.

It is most important that our people should not only be instructed in science but that they should take part in it, apply it themselves in their own ways. For science is not just a subject to be learned out of a book or from a teacher. It is a way of life, a way of tackling any problem which one can

only master by using it for oneself. We must have science clubs in which our people can develop their own talents for discovery and invention.

THE ROLE OF THE GHANA ACADEMY OF SCIENCES

I expect the [Ghana Academy of Sciences](#) to play a leading role in all this. To that end, I have asked the Academy to prepare a first seven-year national programme for the promotion of science in Ghana. This plan, which is ready for implementation, will ensure that within the next seven years, science becomes part and parcel of the life of our people.

In order to provide the necessary physical facilities, and also to make for the maximum co-ordination of effort, I am contemplating the creation of a special scientific community where scientists of the Academy from different fields will live and work.

The scheme will enable the scientists to share common facilities, and also increase personal communications between scientists working on related problems. I have proposed the name. "Science City" for this scientific community. It will have a main central building to be known as "the Palace of Science" containing a whole range of laboratories and other facilities.

The Science City will accommodate a number of special research institutes and will be a centre where the Academy will undertake pilot industries based on its discoveries, so that when the Academy recommends the setting up of any full scale industry it will be in a position not only to give expert advice on the type of industrial plants to be established, but to make the necessary economic appraisal of the proposed industry.

One of the most important projects planned for the Science City is a National Bureau of Standards where the testing of the quality of both imported and locally manufactured products will be undertaken to ensure that they conform to acceptably standards.

The Ghana Academy of Sciences should not be just a body of learned men elected for their distinction and eminence. It should be a part of our national life, serving the people of Ghana, working with them and helping to bring science and scientists into the closest possible relationship with their lives.

It is only through this practical union of theory and action that the life of man can attain the highest material, cultural, moral and spiritual fulfillment in the service of his fellow men. This ultimately is the only justification for the pursuit of knowledge and the discoveries of science.

And now Ladies and Gentlemen, let me turn to the historic business before us today. I dedicate this Reactor to the progress of true science, to the application of science to the well-being of man, to the enlargement of his spirit and to the promotion of peace.

I have great pleasure in laying this Foundation Stone of Ghana's Atomic Reactor Centre.

SOURCE:

“Dr. Kwame Nkrumah’s Ghana Atomic Reactor Foundation Stone Laying Speech.” Ghana Atomic Energy Commission. <http://gaecgh.org/dr-kwame-nkrumah-s-ghana-atomic-reactor-foundation-stone-laying-speech/>

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