

# University Report

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UNIVERSITY REPORT

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COSMO PIETERSE:  
NARRATOR -

This week engineering: chemical engineering and its national value as a new course, as well as practical research in the discipline at a Nigerian University; and engineering, technology and science channelled from the University of Zambia into the country's high schools to serve the practical needs of an industrially developing society.

But first to the University of Ife. In 1968 Ife launched a four year course in Chemical Engineering to train a nucleus of what will be Nigeria's first locally produced chemical engineers. In the first year of the course there were about two hundred and fifty applicants - eighteen were given places. These eighteen had all proceeded to their second year in 1970 when our man at Ife, Akin Euba, spoke to Dr. Bayo Sanni, Senior Lecturer in Chemical Engineering at the university. First Akin asked Dr. Sanni about the role of the chemical engineer in the country's life.

DR. BAYO SANNI:

Chemical engineers by the nature of their work, in fact work as either process engineers or development engineers. In fact, I think that by the state of industries in the country now, it appears that most of our chemical engineers will probably be development engineers. What I mean by this is, that these boys will go out and try to improve the quality, and also

DR. BAYO SANNI: improve the capacity of some of the industries we have in the country. Right now there are so many materials manufactured in the country, the quality of which is very very poor compared to foreign materials, so if we have more capable engineers in the country then we might be able to improve the quality thereby, in fact, saving a lot of money and make these things cheaper. One thing which is an advantage in this country is that labour here is very cheap compared to overseas, so if we can produce a very good quality material it would be cheaper here than overseas.

AKIN EUBA: What are some of the other pressing needs of industry in terms of chemical engineering, and how are you training your students to cope with these needs?

DR. BAYO SANNI: Well the other need in industry for chemical engineers apart from development is, in fact, innovation, which means that students should be able to look at the raw materials in the country and adapt this to whatever process we have in the industry. The way we've been training our students to meet these needs so far is to go to industry right now during their training at the university. They go into industry, and work in industry, see what you have in industry, be able to relate what we're teaching them to what happens in industry and, thereby, we give them a sense of belonging and, in fact, make them feel that they are engineers. We try, in fact, to make them know what type of raw materials we have in the country so that by the time they get out they have started thinking of what they can do with these raw materials to make them useful to the country rather than just copy a programme from overseas, and bring them here, and just use them.

AKIN EUBA: How do you know that what you are doing at Ife is in the best interests of Nigerian Industry. Is there some kind of dialogue between you and Nigerian industrialists?

DR. BAYO SANNI: Yes, there is a dialogue between the department and also the Nigerian industrialists. I'll just give an example of this - it is the first time in the history of Nigerian universities to bring in industrialists into the Faculty Boards of the university, and also we have just set up an Advisory Board to the Faculty of Technology whereby we have industrialists, we have people from the government, and also, other consultants come in to actually be able to evaluate and criticise our curriculum. In addition to this most of the lecturers in the department actually visit industries, they go to industry to show our curriculum, to show them the development of the department. And in this way we are able to find out exactly what they expect from a chemical engineer, so there is some sort of feed-back to the university.

COSMO PIETERSE:  
NARRATOR - Well, of course, apart from teaching, the Department of Chemical Engineering at Ife is doing research - one main project is an investigation into the possibility of extracting sulphur from locally produced coal. So Akin asked Dr. Sanni why sulphur is so important.

DR. BAYO SANNI: Sulphur is one of the fundamental things you need to set up a chemical industry, it is one of the criteria for setting up a chemical industry. There are no known sulphur deposits in the country, but we have coal. Because of the existence of the Kainji Dam,

DR. BAYO SANNI:

coal appears to be useless as far as generating electricity is concerned and, therefore, we just thought that if we could get something else from this coal, it might be very useful. So the first step then was to find out the composition of our coal. We found out that a particular deposit of coal in the country has a high sulphur content, so we thought that we might be able to get at the sulphur, not really in the form of sulphur, but get it as a form of sulphuric acid, which, in fact, will form the basis of most chemical industries, the fertiliser industries and other industries. There has been some work in the United States, fairly recently - within the last twelve months - that the sulphur content of coal is about two per cent that is economical. Now we have a large deposit of coal in the country whose sulphur content is about six per cent. So, therefore, even before we started we knew that this would be very economical.

COSMO PIETERSE:  
NARRATOR -

And of course, the department has other projects on hand which we'll be hearing more about in a couple of weeks. But for now Akin ends his discussion with Dr. Sanni by asking if chemical engineers could have other uses than just following a normal professional career; what other services could they perform outside industry?

DR. BAYO SANNI:

Nigerian chemical engineers should start going to secondary schools as teachers, in fact, not just chemical engineers, but engineers as a whole. The reason for this being most of our young school children, who are coming out now, are not really aware of technology. They don't know the application of science, and a scientist would not be able to tell them this. The present criterion is the engineer or the applied scientist that will tell them this. So I feel that the

DR. BAYO SANNI:

chemical engineer should start going to secondary schools, start teaching these people. I'll give an example where you try to teach somebody science, rather than teach him about saponification and so on in chemistry, why not teach him how to make soap so that he can see immediately how he can make use of some of these things, in everyday life, in what he uses at home. So he can see how they manufacture soap and what steps are involved in manufacturing it, and I think this would make him aware of the application of science. This is, in fact, how you can bring technology to the society so that you will be just part of society right from the High School.

COSMO PIETERSE:  
NARRATOR -

Senior Lecturer in Chemical Engineering at Ife University, Dr. Bayo Sanni. And a healthy recipe for translating science into technology, and injecting technology and science straight into society for service and recreation. Now, it's just such a translation that is aimed for by an association called 'JETS' in Zambia. J.E.T.S. What is 'JETS'? Certainly the name suggest the purpose of the association, but to tell us exactly what 'JETS' is and does, John Barnor assembled four people associated with it at different levels in Lusaka to explain.

Professor Lawson, Dean of the Faculty of Engineering at the University of Zambia; Professor Ward, Head of the Department of Physics at the University of Zambia; Sister Cordelia, Headmistress of 'The Convent', a girls' secondary school in Lusaka; and Caroline Salkema, a secondary school pupil in Lusaka, and a student member of 'JETS'.

First John spoke to Professor Lawson, who started 'JETS' in 1969 and asked him the million dollar question. What is 'JETS'.

PROFESSOR LAWSON: 'JETS' is a nice modern word formed from the initials of Junior Engineers, Technicians and Scientists - 'JETS'. It is our African adaptation of a similar science club organisation begun in the States. The functions of the club are six:- one - to assist schools with a planned programme for extra curricular club activities. Secondly - to improve guidance programmes in the fields of Engineering, Technology and Science. Three - to provide club advisors with additional opportunities to strengthen their club programmes. Four - to arrange student and project competitions on regional and national lines. Fifth - to disseminate technical information to the clubs and lastly to provide technical speakers for the clubs.

JOHN BARNOR: The 'JETS' Organisations started at the University of Zambia in December 1969. Professor Ward as then Dean of Natural Sciences was in at the start of the whole idea. Professor Ward would you tell us about its start and its progress.

PROFESSOR WARD: Well, first it began as an effort mainly to help the over-worked secondary school science teachers who were also willing to act as science club advisors. It's well known that this is a very difficult job because you have to keep up a regular supply of information, and the clubs often fail because there was not enough information on projects, on careers, to keep the clubs going. So Professor Lawson started a magazine, initially quite a simple mimeo form, and this was distributed free of charge to all the secondary schools. We only managed to make enough for two copies per school and the format we established right at the beginning we still use. Four main sections - one - local Zambian news. Secondly - science articles from anywhere in the world that might be interesting to the science clubs.

PROFESSOR WARD: Thirdly - a project, a project that the science club itself can tackle with fairly simple equipment and fourthly - career information or engineering, technical careers and science careers.

Also we support the regional science fairs, and Professor Lawson and his committee run the national science fair once a year which is rapidly gaining in importance and interest. And we are running the workshops instruction for science teachers and their technicians twice a year, at the end of those we offer tools and instructions that the teachers can take back to the secondary schools.

COSMO PIETERSE:  
NARRATOR - Professor Ward. But how about those who are supposed to benefit? Sister Cordelia, headmistress of a girls school in Lusaka is an honorary adviser of 'JETS'. What, from her observation, was the value of 'JETS' to those at school?

SISTER CORDELIA: Well I must say that 'JETS' has stimulated a very great interest in science. We receive copies of the 'JETS' magazine every month, and the magazine forms a base for our club programme. Three times a year Professor Lawson organises a metal workshop or a wood-work shop, to which the science club advisors go. At the end of this they can take the tools back to the school, and with the tools help students to make project items for the science fair. The science club contests give a goal to each school science club, and the financial support and money for the prizes really gets the students excited. Last year was the first time for our school, and the school spirit aroused was really nice for a teacher to see.

COSMO PIETERSE:  
NARRATOR -

And our student panellist, Caroline Salkema, what is her experience and her feeling about 'JETS'.

CAROLINE SALKEMA:

Well without the 'JETS' we would have no magazine, and all the fun of working up to the National Science Fair competition just wouldn't be part of our school life. Students are now writing articles for 'JETS' magazine, which is also a great stimulus to our interest in science. My own experience in entering our school's science fair and going on to the regional fair was a great new addition to my life. It is quite a thing to have to meet the judges at the Fairs, and explain and defend your project to them and to the visitors at the fair. I hope that 'JETS' gets bigger and better.

COSMO PIETERSE:

Which is what 'JETS' seems to be, a going concern and getting bigger. But finally, why was 'JETS' projected and launched from the university. Could Professor Ward explain the university's interest in the matter?

PROFESSOR WARD:

Our university here has a very keen interest for all secondary school problems, activities and developments. We're very aware of their problems and we're very aware of our privileged position - we have secretaries, typewriters and duplicating machines, and so on, and we feel that anything we can do to help the secondary schools, Zambian Association for Science Education and 'JETS' in particular, is going to be a great help to the nation at large, to the students coming to our university for this whole range of these vitally important careers in engineering and technical work and science. So we feel that its only right for us at the university to try and join in, in the background, with all these various excellent development from the secondary schools. We do really believe that this is one of our main jobs.

COSMO PIETERSE:  
NARRATOR -

Zambian 'JETS' -- a handy and neat, a really nice acronym for Junior Engineers, Technicians and Scientists.

Science as a hobby, and from hobby to a service in and for society. Engineering as a discipline and almost a pass-time, which is also my cue for saying, till next time, goodbye from me, Cosmo Pieterse.

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