THE ROLE AND PLACE OF NIGERIAN ENGINEER IN OUR NATIONAL DEVELOPMENT

B. O. NWAOSHAI, BYAMIEE AMNSE.

1. Development in simple terms means growth, and National Development implies that a nation is capable of growth in the various aspects of the nation's life. A nation's life and development can be likened to the life and growth of a man. In fact, the national symbol of France is a beautiful woman. A man cannot develop unless he is healthy. The health of a nation nowadays, is its Industrial Development and that is where the Engineers and all those responsible for industrial expansion come in.

2. In the modern concept a nation is born on the date of its political independence. The mothers of the nation from that date onwards are the citizens and inhabitants of that nation. The nation's image has got to be nourished and properly cared for if she is to flourish and take a proud position in the comity of nations. This national nourishment is derived from the nation's industries, agriculture, medical services, commerce, education, orderly and progressive government, information services, the press, etc.

3. The object of this article is to show that without the engineers and engineering workers and the products, or commodities they produce and/or maintain, fulfilment of our national development will be very high impossible. I quote what a Nigerian Federal Minister very recently said about engineers — "The importance of engineering to the development of our country is too self-evident to need emphasis, the engineer being essentially a creator of material comforts whose skill, ingenuity and creative ability had given a new look to our towns and cities."

4. Engineers and Engineering workers fall under three main groups — Civil Engineering, Mechanical Engineering and Electrical Engineering. Each group comprises infinite number of specialisations. For example — (*a*) under civil group are — water engineers, bridge engineers, structural engineers, road designers, builders, surveyors, architects, etc; (*b*) under the mechanical group are — the automobile engineers, locomotive engineers, machine designers, production engineers, etc; and (*c*) under the electrical group are — the power engineers, radio engineers, electronic engineers, telecommunication engineers, signal engineers, electric traction engineers, television engineers, etc. There are other groups which derive from combinations of parts of the above three main groups — these are:- marine engineers, aeronautical engineers, chemical engineers, work-study engineers, commercial engineers, maintenance engineers, etc.

5. It is necessary at this stage to classify the various grades employed in engineering organisations for purely technical functions. There are four main grades, viz:- (*a*) the engineer, (*b*) the technician, (*c*) the skilled tradesman, craftsman or artisan and (*d*) the semi-skilled and unskilled worker. The type and scope of training of an engineering staff will determine his placing in the above categories. The engineer is trained to know *why* and *how* a physical thing happens and to be able to manipulate the processes involved to evolve a desired object or product. He is, however, specially trained to concentrate on the WHY's of these things and to pass instructions to the technicians to process the HOW's. The skilled tradesman is trained to produce things as set out in engineering drawings, data sheets, samples, etc. as approved by his engineer or someone else competent to pass and

approve such production.

6. In the group of engineers are professional engineers in industry, university lecturers and professors, in the group of technicians are technical instructors, technical officers, foremen of works, inspectors of works, technical assistants, etc., skilled tradesmen include electricians, mechanics, fitters, turners, machinists, carpenters, etc. and the unskilled men are the labourers, messengers, helpers, etc.

7. What then is the role and place of these groups of workers in our national development? The answer is that their role is very very important, in fact, their role is indispensable — and their place should be in the forefront. Why then are they indispensable and why should they be placed in the forefront in preference to other professions? This question can be answered by taking specific professions and then proving that progress in that profession is impossible without the application of engineering creations.

(*a*) Take the press for instance — you cannot print your newspapers if your printing machines are not there, or if they are there, but inoperative due to some technical faults. If the newspapers and other advertisements cannot be printed within a short time the whole establishment of the particular press will close down and staff be retrenched.

(*b*) Take information services as another example — what information can you transmit with satisfactory efficiency in this 20th century without radio transmitters and receivers, without telecommunication installations, or television. In a state of war the life of a nation can be saved by efficient transmission of information by radio contacts and signals to strategic personnel.

(*c*) Then take medical services — the hospital where the doctor works is built by the engineer and his men, the medical instruments and apparatus used by the doctor are all products of engineering ingenuity. Without these instruments and apparatus the doctor cannot hope to advance his medical science much further. Medical vans are engineering products and the manufacture of microscopes, telescopes, etc., involve engineering processes.

(*d*) Take the giant Niger Dam Project as another example. This major project in our six-year national development plan covers the construction of irrigation facilities, hydro-electric generation, water reservoirs, etc. All these projects could not materialise without the contribution of engineers. At all stages of the construction, engineering machinery and skill are required and will continue to be required for the maintenance of the various installations and services on completion of construction.

8. But surely other professions are equally important in their role towards our national development. It is not argued that other professions are not important. The argument is on the emphasis of priority and degree of importance. The greatest nations of the world today are those that are highest in their industrial development and technical know-how. These nations include — America (USA), Russia, Britain, France, Japan and Germany.

9. If it is agreed that the engineering profession is now a first "MUST" in

he life of our nation, then every encouragement should be given to the citizens of the nation to develop great interest in the profession and to participate in it. I am sure that the story of the destinies of Nigeria today in terms of industrial development would have been quite different if there are as many Nigerian engineers as there are Nigerian lawyers!! The costs of motor cars, aeroplanes, etc. will continue to be controlled by the cost of production in the manufacturing countries. If sufficient numbers of engineers are available, then some will be engaged on actual maintenance of existing equipment, others will engage on research and some others will engage on manufacturing practice. If Nigerian Engineers are placed in their proper positions to take final decisions and to give advice which is respected and necessarily accepted on technical issues, there is no reason why this nation will not raise the standard of living of its citizens much quicker, because the creation of more industries on the advice of the engineers will lead to greater employment.

10. On the other hand if Nigerian engineers are not encouraged and the plight of indigenous engineering workers not made attractive, this nation will do no more than to depend on foreign technical know-how and this will in no time hurt our national pride in one way or the other. There should be international co-operation, no doubt in technical matters, but people will not bother to co-operate with you for something in which you are worth virtually nothing and in which you cannot offer tangible contribution for advancement. How would you like Nigeria to be represented in international technical conferences by non-Nigerian engineers or by Nigerian lawyers and doctors to the complete exclusion of indigenous engineers due to non-availability or neglect?

11. In conclusion I should like to point out that professional engineering training contains elements of economics, commerce, law and management which are so necessary to him in the performance of his executive duties. No engineer wants to make a product at such a high cost that nobody can afford to buy the product, nor does an engineer want to build a bridge or construct a road contrary to the laws of the nation governing such constructions. A very senior staff of the Federal Ministry of Information says this of Engineers: "I am very impressed by the modesty of Engineers. Without Engineers this world will not be a comforttable place to live in, they build our motor cars, radios, roads, houses, they build everything and yet they are so modest. Honestly I am impressed."