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ECONOMIC COMMISSION FOR AFRICA
Seminar on New Metals and Minerals
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Opening Speech by Mr. G.E.A. Lardner, Director
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I am glad to welcome you in the name of the Executive Secretary to the Headquarters of the Economic Commission for Africa, and to wish you an interesting and fruitful series of discussions on the problems and questions related to the growing importance of the minor or new metals and minerals in modern technology.

The present Seminar formed a part of the prog.amme of work of the Commission for the biennium 1967 - 1968 approved by the VIIIth Session of the Commission in Lagos a year ago. Its object is to interest senior personnel engaged in mineral resources development in Africa in the impact of changes in technology in advanced countries on the demand for new or rare metals and minerals. We would have liked to invite a larger number of African countries to this Seminar, but, unfortunately, we have been restricted by financial limitations.

Some of the ores of these metals, as you know, have been known since early historic or even prehistoric times. Beryl, for instance, an ore of beryllium metal, was mined as far back as pharaonic times, some 5,000 years ago for its gem qualities (emerald).

However, beryllium metal itself was not discovered until 1797 and it was only in the early thirties that the new family of hard alloys, the beryllium - nickel - copper group, was developed. In more recent

years, beryllium was used in a multitude of other uses. This is due to its light weight, its great hardness, its high melting point and its ability to reflect neutrons (beryllium is slightly more than half the weight of aluminium, about four times harder than it and melts at about double its melting point).

Until fairly recently, few were aware of the economics of these minerals and they were only casually mentioned in text-books on mineral economics.

Indeed, real interest in these metals started in the twenties. Until the Second World War they nevertheless, remained well out of the current of economic and industrial use.

During that war, the highly specialized requirements of modern weaponry, aircraft and communication necessitated a change of attitude towards this group of metals. Germanium and hafnium, for instance, that were ignored or discarded in industrial wastes, began to be used with advantage in new applications, due to unique properties they possessed.

Since then, some metals, notably aluminium, moved up into the major metals group (the light metals: aluminium - magnesium - titanium) and are gaining new ground every year. Likewise, uranium established itself as an important nuclear mineral.

Other metals, however, such as columbium and tantalum, are still in the minor group, but have been increasingly used in recent times in specialized industries, notably the stainless and high temperature steels, and superconducting materials. The high reliability, excellent rectification properties and high capacitance with respect to electrical currents of tantalum, enabled man to produce capacitors with all these properties present in a small package. These capacitors are, as you know, in growing use all over the world.

Similarly production of the rare earths is increasing, stimulated by their use in the manufacture of phosphors for colour television tubes, and are increasingly used in other fields such as special high temperature glasses and ceramics.

Other minerals such as beryllium are still trying to avoid the alternation of fat and lean years. It is now showing positive signs of greater expansion and downward price adjustments.

Others (e.g. caesium and its salts) are still virtually confined in their uses to small scale research and as laboratory reagents with no reported commercial use requiring any significant tonnages.

Lack of known ore reserves, high cost of production and utilization, special physical properties not required for commercial uses, and limited market demand are inhibiting the increased use of these metals. Research to overcome these problems and to accomplish both a metallurgical and a a mining break-through is being carried out at present with vigour. The problem of availability of beryllium raw materials and its toxicity, for instance, have been overcome. Again, it is probably only a question of time,before big enough caesium ion engines for deep space probing will be feasible. Other challenges are faced with confidence.

New uses of these new metals, in industry and in basic and applied scientific research are being developed and as these uses become significant, there should be an increase in their consumption. The growth prospects for the use of zirconium in nuclear powered generators, both as fuel cladding material and for associated reactor construction have been lately confirmed.

The present Seminar will give you the opportunity to review the latest developments in the technologies and uses of these metals and minerals, as well as to survey the present situation with respect to their occurrence, processing, extraction, production, marketing and economics. Thus you will be engaged essentially in an endeavour to expand and diffuse knowledge of these metals and minerals among potential producing countries in Africa and other developing regions.

A better understanding of the relationship of these metals and minerals to the world of new technologies should assist African Governments in their consideration of new explorations to find and evaluate as yet undiscovered deposits and to develop already known deposits. Likewise, a better understanding of their trade prospects should help them in

developing larger markets. I hope that your attendance will be worthwhile and that your final report will be a useful document for Africa.

The distinguished consultants from the four developed countries, who are here to help in your discussions will, I am sure, be happy to share their experience and professional knowledge with you. Our thanks are due to them and to their respective Governments for making their services available to the Commission.

I hope the Seminar will not conclude without discussing positive measures by which the resources of African countries could be speedily brought into production to the advantage of all. I wish you a pleasant stay and a rewarding series of discussions.