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THE PROSPECTS OF THE MINING INDUSTRY

ADDRESS BY MR. R.S. COOKE,

PRESIDENT,

CHAMBER OF MINES OF SOUTH AFRICA

14TH OCTOBER, 1969

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ADDRESS BY MR. R.S. COOKE ON THE OCCASION OF THE EIGHTH BUSINESS OUTLOOK CONFERENCE OF THE NATIONAL DEVELOPMENT AND MANAGEMENT FOUNDATION OF SOUTH AFRICA

INTRODUCTION

My brief on this occasion calls for an appraisal of the prospects of the mining industry. I have decided that it will be useful and more meaningful if I were to do so for the decade ahead. My appraisal falls naturally into two sections, the prospects for gold and gold mining, and the prospects for the other sectors of the mining industry which are steadily growing in economic importance.

Those who seek to find the future shape of our mining industry in a crystal ball must indeed tread warily. Even a relatively short term view is clouded by imponderables. What is the future of the gold price? And of metal prices generally? Will world appetite for metals sharpen as fast as the known facts suggest it will? For how long can gold production be maintained at around its present peak? Will the earnings from other mineral production grow fast enough to balance any decline in gold output? These questions cannot be precisely answered but a look at the possibilities may indicate at least a national objective towards which South Africa may usefully strive.

HISTORICAL

For many years mining activity in South Africa was overshadowed by the scale of the country's exploitation of gold and diamonds. In the 1930's gold constituted 90 per cent

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of mineral output. Diamonds and coal virtually accounted for the balance of mineral production during the 30 odd years prior to 1940. Other minerals in wide variety have been produced for many years but it is only since World War II that we have witnessed a remarkable upsurge in production of these minerals. This has established South Africa in a leading position in the world as a supplier of minerals, quite apart from gold. Whilst the value of gold production since 1940 has increased nearly 3½ times, the value of the production of other minerals has increased 25 times. In 1968 the value of the production of minerals other than gold constituted 42 per cent of South Africa's total mineral production.

I propose, for the purposes of this paper, only to consider values of minerals produced and exported, since it is the value of production which influences the economy of the country.

It must of course be appreciated that were these comparisons in this paper to be based on units of weight, the growth in production of minerals other than gold would have been much less spectacular in relation to gold production. They benefit, in the race, from rapid price increase whereas gold has suffered, year after year, from a stationary price. It is extremely difficult to ascertain the average increase in prices of minerals other than gold since 1940 but it would appear to lie between five and seven times.

Diagram 1 gives a graphical representation of the annual production over the last 20 years of minerals other than gold, while diagram 2 has been drawn to illustrate the increasing growth rate of export of minerals other than gold as against the decreasing growth rate of gold export. In order to provide a general picture to illustrate the situation, eliminating year to year fluctuations, it has been drawn on the basis of a five-year moving average; in actual fact there has been no growth in gold export since 1965. The estimated future trend shown on this graph has, in the case of other minerals, been based on an investigation carried out by one particular mining house.

From time to time over the last 80 years South Africa has survived, rather like the proverbial cat with nine lives, economic crises which threatened as a result of an expected decline of the gold mining industry on which the whole economic structure of the country was dependent.

Thus, an increase in the gold price resolved the crisis of the 1930's when the outlook was blackest and the end of the industry seemed to be in sight. (Gold production, instead of declining abruptly, rose from 10.7 million ounces in 1930 to 14 million ounces in 1940). Then followed in the 1940's the opening up of three new major South African gold-fields, those of the Far West Rand, of Klerksdorp and the Orange Free State. In 1949, the devaluation of sterling relieved the immediate pressure of the inflation arising from World War II. Then in the early 1950's, the demand for uranium followed by the opening up of the Evander gold-field relieved the situation once more. (Gold output which had declined again to 11.6 million ounces in 1950, was 21.3 million ounces in 1960).

In 1965, although production reached 30 million ounces for the first time, the future again looked black. We were

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faced with the cold reality that, without a substantial increase in the price of gold, the curve of gold production which had risen steeply between 1957 and 1965 must soon flatten and it appeared that this could be followed by a rapidly accelerating decline. Moreover, at that time minerals other than gold had for six to eight years been showing an annual growth of little more than 3 per cent in production and no growth at all in exports.

Since then there has fortunately been the unprecedented expansion of production of other minerals.

Over the last three years and assisted by substantial price increases, the growth of mineral production other than gold has averaged 16.3 per cent per annum. We can begin to consider seriously whether the earnings of other minerals will not maintain the relevant importance of mining if the gold output declines.

THE CURRENT SITUATION

It was in 1966 when, as already mentioned, the future was again causing serious concern, that the Chamber of Mines submitted to the Prime Minister's Economic Advisory Council a memorandum, the major part of which was subsequently published under the title "The Outlook for Gold Mining". The memorandum set out the past record of the industry, estimated its value to the national economy, described current problems arising from inflation and essayed a look into the future based on the position and trends existing in 1965. This publication, which was fully documented, indicated, for the first time, the quantity of gold which still remained to be mined from existing or developing mines at about 528 million ounces on the assumption that there would be no substantial increase in the price of gold. It thus revealed the cold fact that the end could be in sight.

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Originally produced at the request of the Prime Minister's Economic Advisory Council, the document brought home to the Council and the Government the damage that inflation was doing to the future prospects of the industry. It was stressed that if South Africa's economic growth rate was to be maintained it was essential to do everything possible to stretch out the life of the industry and enable it to mine the optimum amount of gold in the long term.

The Government took speedy action. The high inflation rate has been reduced and thus the rate of diminution of the quantity of gold that can be economically mined. Secondly, the Government introduced in 1968 a comprehensive scheme for assistance to gold mines under the name of the Gold Mines Assistance Act. This has already had a beneficial effect in maintaining the operation of gold mines which would otherwise have faced closure. At present some 19 mines are receiving assistance under the scheme. As a consequence they are enabled to lower the grade of ore they mine, thus extending their lives and the gross amount of gold they will produce before final closure. We were thus successful in drawing attention to the serious situation that threatened and in securing timely action.

This is a useful moment in time to review the significant events since publication of the comprehensive study made in 1966. Gold production over the last four years, including the estimate for the present year, has remained steady at about the 31 million ounces per annum mark. Variation from this average has not in any one year been as high as 1 per cent. Present estimates show that this average is likely to be maintained until about 1975, an improvement on the previous estimate flowing from the benefits of the State assistance scheme, from control of inflation, and from the coming into production of two new mines.

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The industry is benefitting also from the premiums presently being received on sales of gold on the unofficial market. These sales are conducted by the South African Reserve Bank, as agents for the Chamber, and little can be made known about them. Nor can any useful forecasts be made at this stage of their implications for the future planning of mining operations. We must await clarification of the position regarding sales of monetary gold. It is sincerely hoped that this clarification will be coming in the not too distant future. In the meantime this delicate problem is being handled by the Minister of Finance with admirable competence.

OUTLOOK FOR GOLD

It is reasonable to hope that in the not too distant future, arrangements will be made whereby South Africa will be enabled once again to dispose of gold to the central banks for monetary purposes should it so wish, and at the same time at its discretion to dispose of gold on the unofficial market.

With the recent acceptance by the International Monetary Fund of the introduction of S.D.R.'s and the intended issue in January, 1970, of the first $3,500 million, it is apparent that member nations have shelved for the time being the revaluation of monetary gold.

However, it has been frequently stated by the protagonists of S.D.R.'s that a gold backing is quite essential for their successful operation.

Dr. Diederichs, in his speech to the I.M.F. in Washington on 2nd October, put the situation in its correct perspective, and I quote:

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"The founding fathers at Bretton Woods recognized realistically the fundamental role of gold in the world monetary system, and they wrote that principle into the Articles of Agreement. I believe that that principle is even more important today. The coming of S.D.R.'s does not mean that gold is being 'phased out'. On the contrary, as the largest single element and strongest component of world liquidity, gold's importance becomes even greater. S.D.R.'s need gold to endow the system of which they will form a part with the confidence essential to their success".

The present plan is to issue, over three years, $9,500 million worth of S.D.R.'s which would then be equivalent to nearly 25 per cent of the world monetary stocks of gold currently standing at about $40,000. Whether the monetary authorities, the overwhelming majority of which constantly show eagerness to augment their gold holdings, will be willing to risk a higher ratio of S.D.R.'s to real gold rather than to adopt the much simpler and safer method of a world-wide upward revaluation of gold, remains to be seen. There is one thing certain - the odds are much shorter on an official increase in the gold price than on gold being "phased out" of the monetary system.

Quite apart from the prospects of a planned increase in the price of monetary gold, there is always before us the possibility in a world experiencing obvious strains and imbalances in the international monetary system, of a sudden world monetary crisis of a magnitude which might force such a change to come about. It is not of course the wish of South Africa that such an event might occur, but nevertheless it could happen at any time.

Of considerable significance in relation to the future unofficial market price of gold is the fact that the consumption of gold for the purposes of industry and the arts is rising the world over at an increasing tempo. In a recent survey D.O. Lloyd-Jacob and P.D. Fells concluded that gold purchased for these purposes had in 1968 already reached the level of total world output of newly mined gold. The bulk of the gold consumed was made into jewellery, the remainder being consumed by the electronics industry, in dentistry, in coinage and for miscellaneous industrial and decorative purposes. The survey estimated that gold demand for these purposes would go on rising, and that with gold production falling gently over the next five years a significant shortfall of gold would arise to meet which gold would have to be tempted out of hoards, thus requiring an ever increasing price.

If these estimates are confirmed by events South Africa will be on a good wicket. Free world production of gold is not likely to increase beyond the present figure of about 40 million ounces a year and if industrial demand goes on rising as predicted, the demand will force up the unofficial market price, if not in the immediate future, then certainly as soon as any gold overhanging the market has been dissipated.

If we made the further assumption that the premiums received over the last 12 months will continue into the future, in other words will be constant, then we could consider these premiums spread over the total ounces of gold produced as representing an increase in the price of gold. An increase in the price of gold immediately permits of the lowering of pay limits and thus the bringing in of additional tonnages of ore formerly considered as below the pay limit. The potential for the extension of the industry's life will be apparent.

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In past years with constantly rising working costs and thus constantly rising pay limits vast tonnages of gold-bearing ore have been written off or abandoned as unpayable. A rise in the price of gold has the opposite effect as explained above, in recovering discarded tonnages. To attempt to be more explicit, it can be taken as a rough guide that each R1 per ounce increase in the price of gold could save from the discard 11 million ounces of gold which would otherwise have become unpayable.

To sum up, the future prospects of gold mining in the light of changes over the last three years, it can be said that the future outlook has been enhanced somewhat as the result of production from two new mines, of the introduction of the Gold Mines Assistance Act and in anticipation of a possible continuation of the current higher gold prices in respect of free market sales. Annual production is not, however, likely to increase to any extent. The peak of production has probably almost been reached. Nevertheless, the life of the industry has been lengthened a few years and its decline delayed.

I would stress, however, that the position could be completely altered by any substantial increase in the official price of gold. There still remain unmined, within and in the vicinity of the Witwatersrand, vast quantities of gold. The question is simply what price the world is willing to pay. At $70 an ounce, the total gold which could be recovered in the long term might be two or three times the present forecasts accompanied by a commensurate increase in the potential foreign exchange earnings. The estimates indicated above must therefore be treated with due reserve.

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OTHER MINERALS

After the relatively slow growth in the production of minerals other than gold in the period 1957 to 1965, production accelerated and average growth over the past four years was at a rate of 16.3 per cent.

Annexure 1 gives the value of production and export of all minerals during 1968 and Annexure 2 gives an idea of the relationship between annual production rates in South Africa and the world as a whole in respect of the 11 major metals or minerals. Some idea of the known South African reserves remaining to be mined is also given. It may be of interest to comment on the most important of these minerals.

Chromium

Chromium is almost entirely contained in the Bushveld Igneous Complex, a roughly circular geological formation of a diameter on the surface of some 250 miles which lies to the north of Pretoria.

Until recently most of the chromium used in the world came from other countries. South African chromite was not popular, as it was considered unsuitable for metallurgical purposes because of its high iron-chrome ratio. However, steelmakers and metallurgical works are now adapting their furnaces to be able to use Bushveld chrome and it is expected that for many years in the future the world's chromium will come from this country. Deposits elsewhere are being worked out and South Africa now possesses the world's largest reserves, estimated at in excess of 2,000 million tons measured to a depth of only 1,000 feet. In the light of the above the

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relatively small export tonnage is like to increase substantially in the long term future.

Platinum

The recent estimate of platinum reserves in South Africa of 200 million ounces are of considerable interest, bearing in mind that the western world production is still only about 1.3 million ounces per annum. Total platinum recovered to date in South Africa is about 5 million ounces or $2\frac{1}{2}$ per cent of known reserves.

At present day prices the value of potential foreign exchange earnings in unmined reserves of platinum including by-products approaches R20,000 million which is substantially higher than the value of our gold reserves at the present price of gold. Plans are in hand for increasing South African production up to a figure of the order of $1\frac{1}{2}$ million ounces within two to three years. This, together with by-products, will be equivalent to foreign exchange earnings based on present day prices of about R130 million to R150 million per annum.

Coal

The value of total sales of coal shows a strikingly regular growth rate since 1951 of about 7 per cent. Exports have been very low due to the relatively poor quality of much of South Africa's coal, to the inadequate railage and port facilities and the present day sufficiency of world coal supplies. Whether or not this position is capable of improvement in the future, there is clearly big business ahead for the industry in South Africa in power generation, in production for coking and blend coking, for industrial and

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domestic purposes and for oil and its by-products. Consumption of 55,522,000 short tons last year is expected to reach an overall 170,000,000 short tons in 30 years.

Uranium

In its comparatively short life the uranium market has brought South Africa more than R1,000 million in foreign exchange. Uranium production began in 1952 and the peak was reached in 1959 with an output of 6,444 tons. Since that time with the termination of most of the original high priced contracts and the building up in several countries in the world of large stockpiles originally required for military purposes South African production has been considerably reduced.

Current world production is in excess of demand and this together with the existence of stockpiles has seriously depressed current prices. On the basis of the forward planning for nuclear power stations demand is expected to match supply in the mid-1970's and thereafter with an estimated growth rate in requirements of about 10 per cent, it is expected that a world shortage may develop.

South Africa's known resources of uranium represent almost one-third of known world reserves at $8 per lb with vast additional quantities becoming available at higher prices. Hence a bright future is held out for production and export in the years which lie ahead, although it should be appreciated that foreign exchange earnings from this export are unlikely to exceed R100 million per annum.

/ Copper ....

Copper

Copper is second only to gold in the present value of its production. The phenomenal increase in recent years has, of course, been the result of the starting up of the Phalaborwa mine, together with a doubling in the copper price since 1963. Value of exports in 1968 was R83 million. It is expected that this figure could remain fairly static for a few years.

Diamonds

Of the world's total mine production of diamonds in 1968 estimated at 36 million carats, South African production at 7.4 million (20 per cent)was second only to the Congo which country produced 18 million carats. Of the latter production only 3 per cent comprised gemstones, whereas 40 per cent of South African production was of gem quality. South Africa when combined with South-West Africa together produce some two-thirds of the world production of gemstones.

With the scarcity of good gem quality diamonds and hence the yearly appreciation anticipated in value, it can be said that the short and medium term prospects of growth are very favourable whilst the long term prospects depend on the discovery of further economic deposits.

Iron Ore

South Africa's iron ore production value has shown a generally rising growth rate over the last 20 years. In 1968 value of production was over R29 million.

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On the domestic market South Africa can look to steadily rising requirements for many years, coupled with the sure knowledge that presently known reserves are more than adequate to meet needs well into the next century.

On the export side South Africa has the potential to make large inroads into the rapidly expanding world trade in iron ore, but once again the present inability of South Africa to provide bulk transportation of ore on a sufficiently large scale and at a competitive cost may prove to be the stumbling block to the breakthrough into the export market.

Antimony, asbestos, manganese and vanadium all hold prospects for future development and expanding markets.

Active exploration continues for new mineral deposits and, of course, for oil. This latter is of especial importance in view of the very high cost of crude oil imports, and there is increasing confidence that oil strikes will be made in the future.

Fortunately, unlike gold, metal prices can be expected to move freely. Over the last 80 years, metal prices generally moved upward about 4½ per cent a year and since the immediate pre-war period metal prices have improved much faster than other prices. As the world population expands and development proceeds, the demand for the metals on which civilization depends will accelerate. At the same time existing known deposits in the world will steadily be exhausted thus increasing demand and prices. In the long term therefore South Africa, with its wealth of mineral deposits, can look forward for many years to come to an ever increasing annual total of foreign exchange earnings from this source.

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BALANCE OF PAYMENTS

Manufacturing industry has grown spectacularly over the past 30 years; so much so that there is a tendency to believe that this sector can increase exports to levels that will offset the current and future change in the pattern of gold export thus enabling South Africa to maintain a sound balance of payments position while maintaining its high rate of economic growth. A year or two ago it was calculated authoritatively that to achieve this objective it would be necessary for secondary exports to have an average growth rate of 7 - 8 per cent per annum for the next decade against a growth rate over the last decade of 3 - 4 per cent per annum.

It will be appreciated that growth in the output and exports of secondary industry creates an increasing demand for imports of capital goods and raw materials, in other words an increased demand for foreign exchange. There is no sign of a reduction in the considerable shortfall between the needs of manufacturing industry and its foreign exchange earnings. This is a phenomenon that occurs in all countries which are industrially in a relatively immature state in relation to many of the older countries in the Western world. Nevertheless, secondary industry in South Africa has made enormous advances in recent years and is no doubt getting constantly closer to the position whereby manufacturing exports can pull their full weight in the balance of payments position.

Assuming that the value of gold production can now be maintained at its present annual level for most of the next decade, but assuming also that the economy achieves target growth rates, then obviously there will be a substantial fall

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in the proportion of the country's foreign exchange requirements met by gold exports. To what extent will the production and export of metals other than gold expand to take up the slack? It is impossible to answer this question precisely but the prospects for expansion are clear enough to be exciting.

I referred earlier to an estimate recently made by one of the mining houses of the future potential growth of production and export of minerals other than gold. Despite the imponderables, it can be said in the light of this estimate that there is a reasonable prospect that a large or even the major portion of any decline in earnings from gold will be offset by the growth of other mineral exports. Diagram 3 gives a graphical representation of this mining house's relatively conservative estimate of the future trends in relation to production figures for the past decade. The indication from this plotting is a continuance over the next decade of the growth rate of gold combined with other mineral exports although at a slightly flatter rate; thereafter, with a definite decline in gold, the value of that decline will at least be fully countered by other mineral production. However, since the economy as a whole will continue to grow this does not mean that the proportionate contribution of the mining sector will be maintained, although this cannot be completely ruled out.

Only time can tell whether these plotted extensions of mineral production will be confirmed by events, but the prospects are at least good enough to justify acceptance by the State of encouragement of all mineral production as a national objective of high priority.

THE ROLE OF THE STATE

An important part of the attainment of this national objective is the maintenance of a high rate of gold production by encouragement of the opening up of new gold mines and the extension of the lives of existing mines by fiscal and other means.

Over the last several years the Government has taken various steps towards this objective, culminating last year in the steps taken to curb inflation and in the introduction of the Gold Mines Assistance Act. These have already earned rich rewards far in excess of the cost to the State. It is strongly urged that such further steps as appear beneficial to the extension of gold production should be favourably considered.

There are also signs that the Government is well aware of the importance of taking such steps as are open to it to help to make other minerals competitive in world markets. Of importance here is the provision of reasonable facilities for the transportation of minerals from the interior and for their handling at the ports.

The business outlook for South Africa, so far as mining is concerned, in the short term will be influenced mainly therefore by the maintenance of gold production at around present levels, by continued growth in the exploitation of this country's diverse mineral industries and increased earnings from the export of a variety of metals. The long term outlook is that South Africa will continue to be a country dependent on a mining industry that will become increasingly sophisticated with emphasis on the beneficiation of ores in this country. We will remain a country with a

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mining backbone and mining will continue to absorb a large part of our national resources and to yield rich rewards to the enterprising.

In the past the results have often dazzled even the optimists. Who knows what developments or discoveries lie in the future?

13th October, 1969.

JAL/MC

ANNEXURE 1

SOUTH AFRICAN MINERAL PRODUCTION AND EXPORT 1968

Mineral	Production	Export
	R000,000	R000,000
Gold	787	787
Copper	101	83
Coal	97	7
Platinum and by-products	78*	78*
Diamonds	76	70*
Chemical group	35	5
Asbestos	31	29
Iron Ore	29	17
Manganese	24	20
Chrome	9	7
Others	102	64
Totals	R1,369	R1,167

*Estimate only. No official figure available.

Notes:
1. Figures based on reported F.O.R. sales values.
2. Major components of Chemical group: Limestone, phosphates, iron pyrites, salt, fluorspar, gypsum.
3. Major components of others: Uranium, granite, antimony, vanadium, tin, sandstone, vermiculite, sillimanite, silica.
4. Information from Mines Department Publication.

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REPORTED MINERAL PRODUCTION AND INDICATION OF KNOWN RESERVES
(Information extracted from best available sources)

Mineral	Unit of Measurement	Production (1967)			Reserves	
		World	South Africa	South African Position in World	Known South African Reserves	Approx. Percentage of World Reserves
Gold	Ozs.	45.6	30.5M	1st	500M	70%
*Antimony	Tons Metal	64,000	14,000	1st	?	?
Platinum and P.G. metals	Ozs.	3.2M	800,000	2nd	200M	60%
Diamonds	Carats	42M	6.7M	2nd	185M	60%
Manganese Ore	Tons	18.5M	2.0M	2nd	400M	15%
Chrome	Tons	5.1M	1.3M	2nd	2,000M	75%
Uranium	Tons	17,000	3,300	3rd	205,000	30%
Asbestos	Tons	3.4M	270,000	3rd	15M	-
Copper	Tons	5.5M	140,500	8th	4.5M	1½%
Coal	Tons	3,002M	54M	10th	12,000M	-
Iron Ore	Tons	618M	8.5M	16th	8,600M	1%

References:
1. 1967 Minerals Year Book. U.S. Department of the Interior.
2. "Minerals". A report for the Republic of South Africa Oct. - Dec. 1968.
3. "Chromium in South Africa" by F.P. Bath. Journal of S.A. Institute of Mining & Metallurgy. March 1968.
4. "Asbestos in South Africa" by G.J.J. Haumann. S.A. Mining & Engineering Journal, Commemorative Volume.
5. Africa Institute Bulletin, March 1969.
6. Other sources of information.

*Ore and concentrates

SOUTH AFRICAN MINERAL PRODUCTION - EXCLUDING GOLD.

(BASED ON SALES VALUE.)

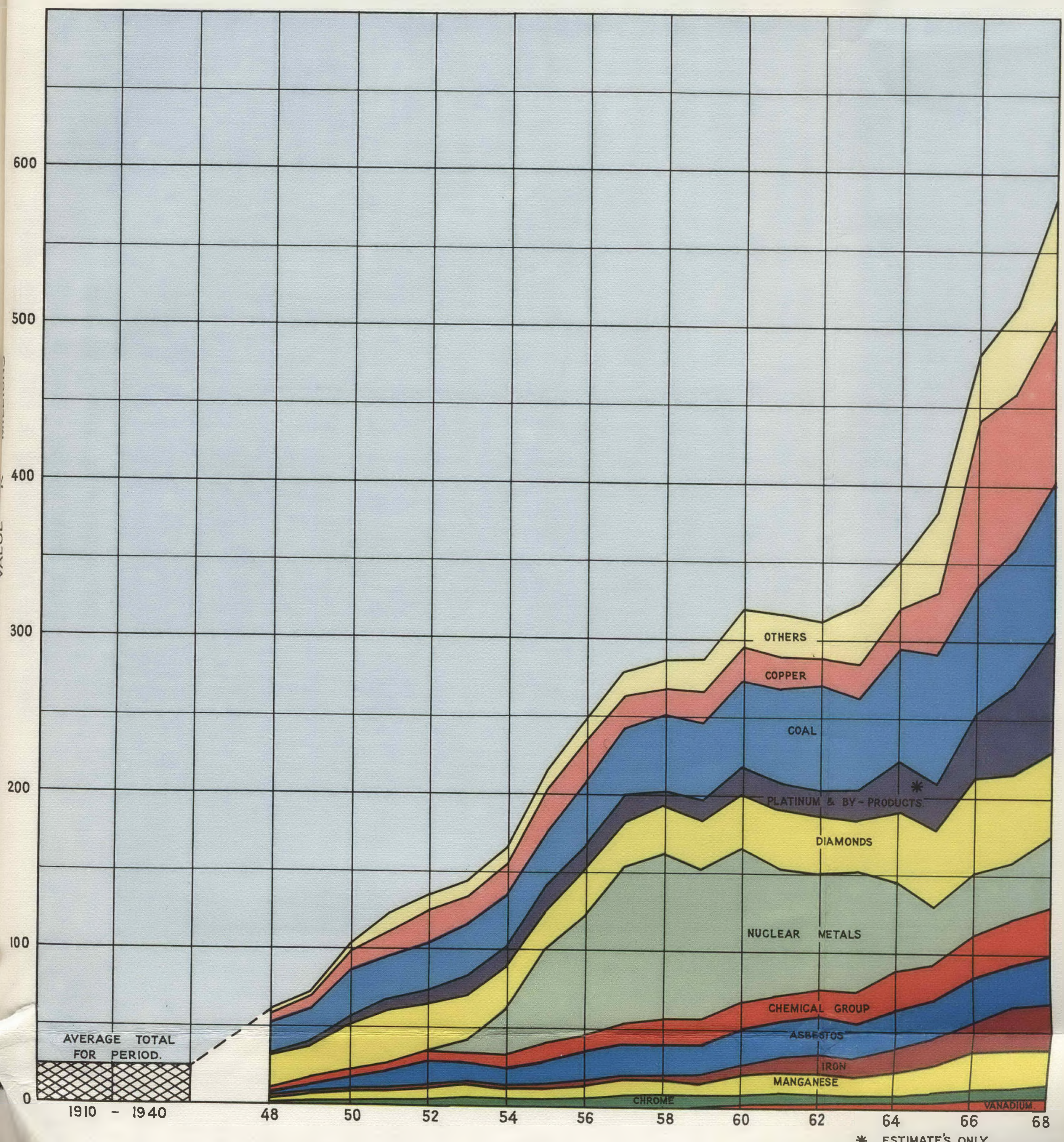
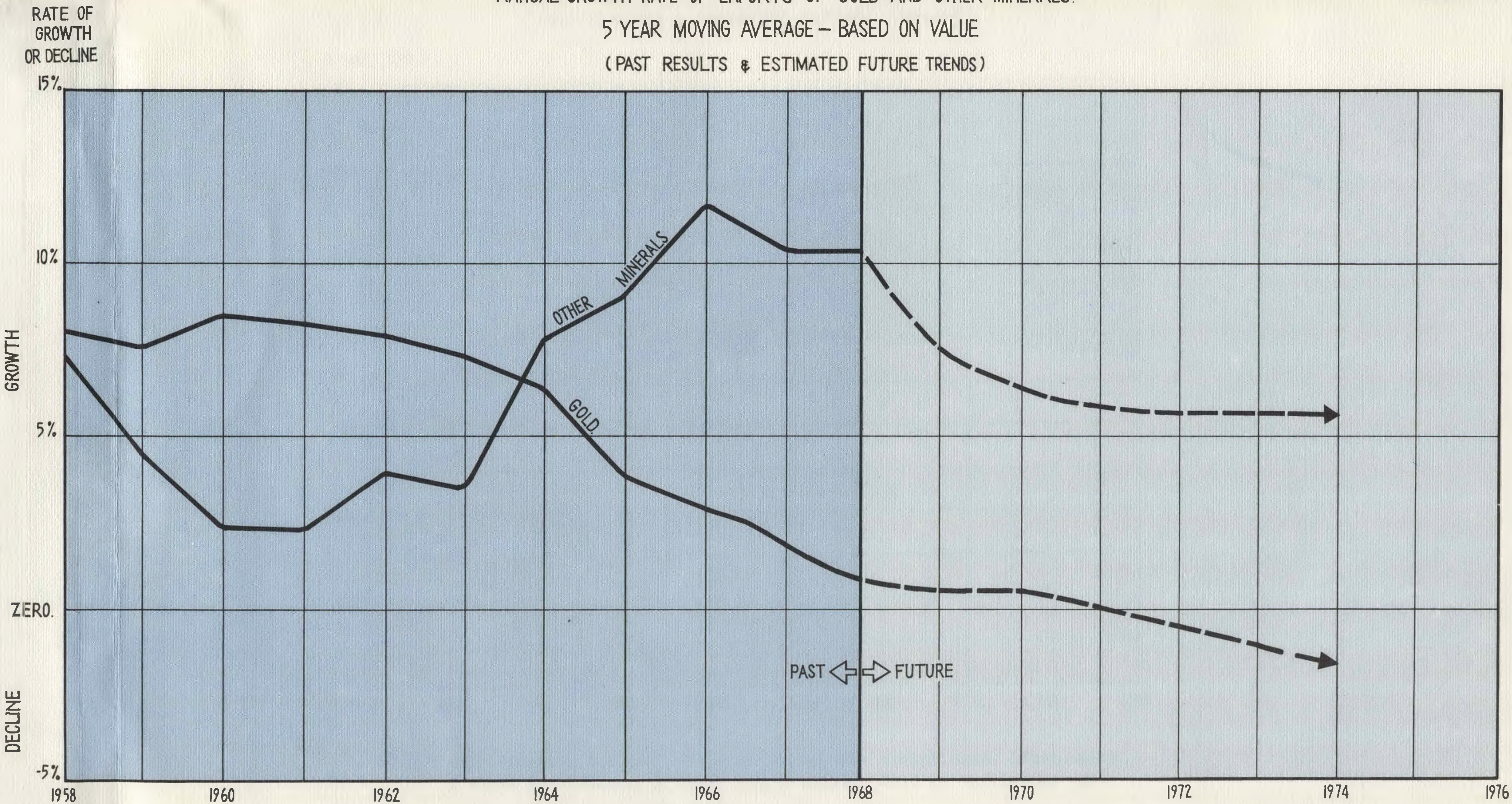


DIAGRAM 2.

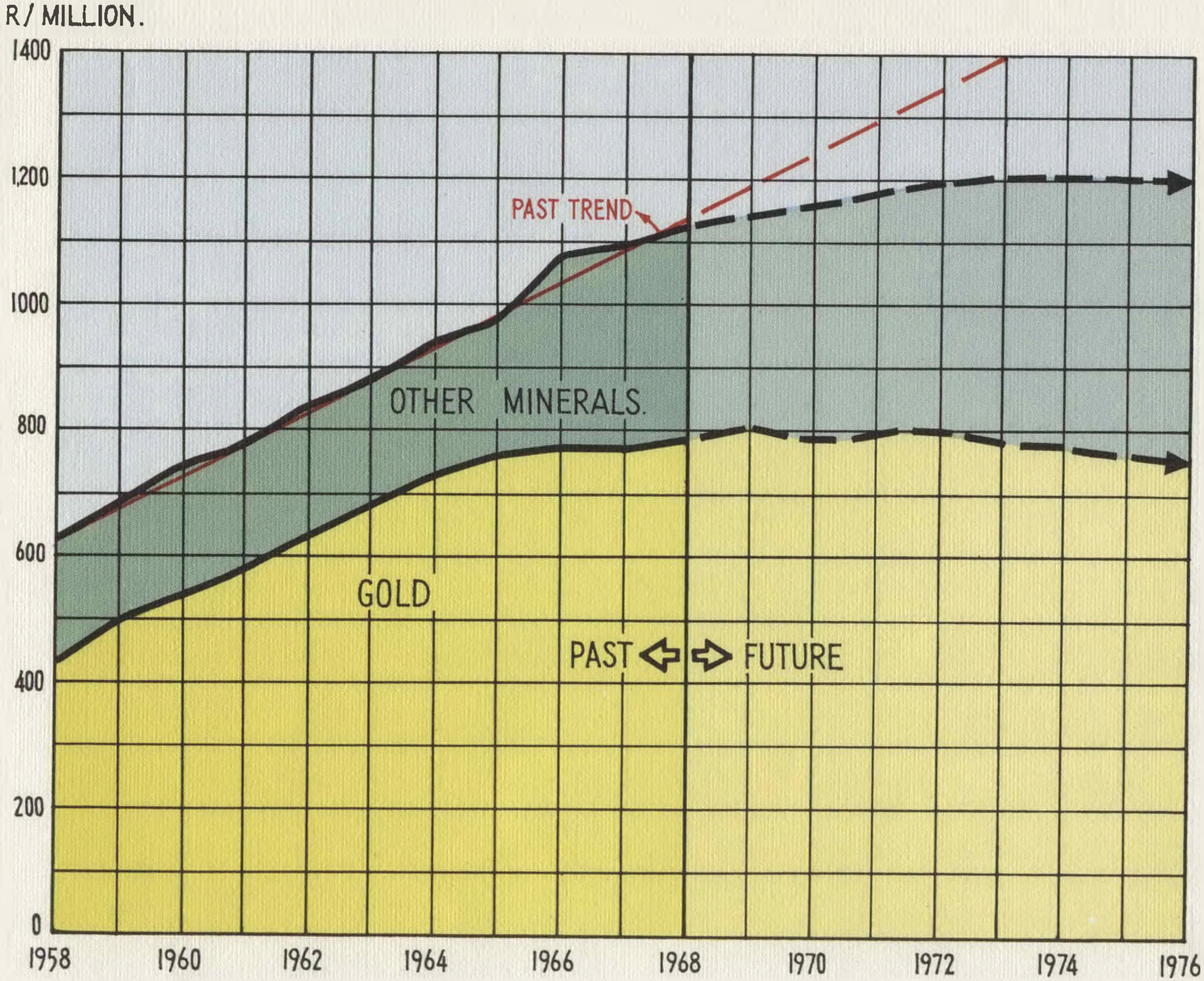
ANNUAL GROWTH RATE OF EXPORTS OF GOLD AND OTHER MINERALS.
5 YEAR MOVING AVERAGE – BASED ON VALUE
(PAST RESULTS & ESTIMATED FUTURE TRENDS)



NOTE :- 1. No allowance made for gold premiums on free market sales (except 1969)
2. Future Trend Estimates of "other mineral exports" from an investigation carried out by one Mining House.

DIAGRAM. 3.

VALUE OF TOTAL MINERAL EXPORTS
(PAST 10 YEARS & ESTIMATED FUTURE TRENDS.)



NOTE :- 1. No allowance made for gold premiums on free market sales (except 1969)
2. Future-Trend Estimates of "other mineral exports" from an investigation carried out by one Mining House.