REPUBLIC OF SOUTH AFRICA.

S.A. MINT.

Reference: 16/3/3 (18)

103, Visagie Street,
P.O. Box 464,
PRETORIA.
30th January, 1964.

The Secretary for Finance,
Union Buildings,
PRETORIA.

ANNUAL REPORT OF THE DIRECTOR
OF THE SOUTH AFRICAN MINT FOR 1962/1963.

I wish to submit herewith the following report on the activities of the South African Mint during the financial year 1st April, 1962, to 31st March, 1963.

CHAPTER 1 : FINANCIAL.

(Coinage and Ammunition Branch).

Expenditure: : Revenue Vote 15.

There was a decrease of 7.4% compared with the previous year's expenses.

The decrease is due mainly to reduction of expenditure on the purchase of plant and equipment for the Ammunition Branch.

The comparative figures of expenditure for the past two years are as follows:-

Financial year	Amount	Percentage increase or decrease on previous year
1961/62	R1,238,650	23% increase.
1962/63	R1,147,660	7.35% decrease.

Turnover.

There was an increase of approximately 28½% in the turnover as compared with the previous year. The following statement shows the increases and decreases under the different products:-

Comparison of Annual Turnovers.

Financial year.	Coinage Branch			Ammunition Branch	Total
	Coin		Sundry Products	All Products.	
	S.A. Currency (a)	Proof (b)			
1961/62	R420,605	R152,505	R1,148,719	R580,969	R2,302,798
1962/63	R985,569	R143,353	R1,127,506	R699,538	R2,955,966

2/.....

(a) In addition to the coin sold for circulation purposes in the Republic, the following new coin was issued in replacement of worn S.A. coin withdrawn from circulation:-

800 Standard silver coin.

1961/62 ..... R294,237. 1962/63 ..... R276,902.

Bronze coin (£.s.d.)

1961/62 ..... R418,964. 1962/63 ..... R364,817.

(b) Gold coin was minted for the Chamber of Mines from gold supplied by the Chamber and realised R24,002.

Profit.

In comparison with the year 1961/62 the profit rose from [redacted]

The increase is due mainly to:-

1. The turnover of silver coin, which is being minted at a profit, rose considerably, whilst the turnover of bronze coin, which is being minted at a loss, decreased by approximately R217,000.

2. More cartridges were manufactured and sold.

CHAPTER 2 : STAFF.

During the year the total number of staff increased from 610 to 735 and in the subjoined comparative table details of the variations in respect of the different categories of personnel are given:-

Categories:

Classes (a) to (e) are fixed posts filled by permanent officers; (f) to (o) include both permanent and temporary employees.

Categories.	Number of persons as at: 31.3.63	31.3.62
(a) Administrative	8	8
(b) Professional	6	5
(c) Technical	13	13
(d) Clerical	18	17
(e) General Division (A & B) (excluding those under items (g) - (i).	13	12
(f) Temporary employees against posts in categories (a) - (e).	16	10
(g) Sub-Foremen and Special Craftsmen	19	13
(h) Artisans and Toolmakers	47	34
(i) Male Operators	46	43
(j) Apprentices	10	8
(k) Women Operators and Supervisors	163	132
(l) Guards, Protection Officers, Nurse and Drivers.	18	17
(m) Bantu Guards and Boss Boys	34	34
(n) Bantu Messengers and Bantu Female Cleaners.	12	12
(o) Bantu Labourers	312	252
	735	610

Recruitment:

A total of 312 appointments were made whereas the services of 187 employees were terminated during the year.

Visitors:

A total of 4046 visitors (1347 adults and 2699 scholars - Whites and Non-Whites), visited the Coinage Branch during the year; this was 831 more than in the previous year. Among the adults were several visitors from abroad.

CHAPTER 3 : GOLD.

Mint's Basic Selling Price of Gold.

The basic price of gold remained constant during the year at R25.10 per oz. fine plus 1% (the basic price plus ½% being paid over to the S.A. Reserve Bank).

The preparation charge of granules and dental gold remained unchanged.

Gold Coins.

A total of 4,688 gold proof coins (2,344 pieces of R2 and 2,344 pieces of R1) were struck for sale in 1,544 proofsets of 9 coins (R2 - ½c) and 800 proofsets of 2 coins (R2 and R1).

In addition to the above 10,000 non-proof R2 coins and 3,955 non-proof R1 coins were struck for sale to collectors and 900,000 R2 coins were struck on behalf of the Transvaal and Orange Free State Chamber of Mines.

CHAPTER 4 : MINT MUSEUM AND LIBRARY.

The activities of the museum during the year were again very limited and no purchases of foreign coins or medals were made. Coin and medal sets of the Republic of South Africa to the value of R64.00 were transferred to the museum for display purposes.

The following gifts were received:-

1. Le Directeur des Monnaies, Paris - one set of 6 new French coins.
2. The Ambassador of France - one set of 6 new French coins.

CHAPTER 5 : MINT BULLION OFFICE.

Gold Transactions.

There was an overall decrease of approximately 26% in the total weight of gold transactions as compared with that of the previous year.

Weight of Gold Transactions in 1962/63 compared with 1961/62.

Different caratages all converted to fine oz. troy.

	1962/63.	1961/62.
Received from S.A. Reserve Bank	28,582.56	42,761.12
Granulated and dental gold sold.....	33,213.66	29,496.12
Medals, wire and sheet gold sold	187.81	255.19
Weights of 2 Rand and 1 Rand coin	3,648.69	2,259.11
Transferred to Die and Medal Section.....	451.50	1,596.13
Received from Die and Medal Section	198.39	-
Transferred to Coinage Section	3,233.96	11,357.12
Received from Coinage Section	1,076.17	7,304.43
	70,592.74	95,029.22

	1962/63	1961/62.
Approximate value @ basic price of R25.00 per fine oz.	R1,764,818	R2,375,730

In addition to the above gold transactions, the Transvaal and Orange Free State Chamber of Mines deposited with the Mint 26,606.35 oz. 22 carat gold and 201,484.75 oz. fine gold for the production of two rand pieces for sale overseas.

Silver Transactions.

The weight of silver transactions during the year was considerably more than during the previous year. The transactions for the two years are as follows:-

Weights of Silver Transactions:- All converted to fine oz. troy.

	1962/63.	1961/62.
Bought from Rand Refinery and Sundry persons	406,830.33	303,142.44
Coin withdrawn from circulation (800 Std.)	505,994.43	364,024.43
Granules and strip sold	282,913.99	273,321.94
Medals and other items sold	8,296.24	12,432.53
Issues to Die and Medal Section ...	6,512.99	35,387.22
Received from Die and Medal Section	2,656.15	6,117.74
Issued to Coinage Section	1,283,446.46	361,468.12
Received from Coinage Section (not coin)	4,247.02	-
Coin received from Coinage Section	1,172,186.51	506,017.07
Issued for various alloys	2,797.35	2,821.44
	3,675,881.47	1,864,732.93

Purchase of Silver.

Approximately 404,000 oz. fine were purchased from the Rand Refinery during the year mainly for the manufacture of granules.

Mint's Basic Selling Price of Silver.

It was necessary for the Mint, with Treasury Approval, to vary its basic selling price of silver in conformity with the rise and fall in the overseas market price. This ranged from 71 cents to 92 cents per oz. fine.

Coin received and issued.

The following is a comparative table in respect of new coin received from the Coinage Section and issued by the Bullion Office.

Value of Gold, Silver and Bronze Coin.
Received from Coinage Section and Issued to Banks etc.

Denomination.	Receipts from Coinage Section during		Issues to Banks etc. during	
	1962/63	1961/62	1962/63	1961/62
	R c	R c	R c	R c
Gold:				
2 Rand	24,688.00	12,356.00	15,518.00	10,952.00
1 Rand	6,299.00	6,812.00	5,782.00	6,213.00
Silver:				
50 Cent	12,189.00	4,007.00	5,188.00	6,437.50
20 Cent	690,249.20	410,183.60	706,001.60	315,727.00
10 Cent	311,869.00	64,329.50	287,536.70	46,386.70
5 Cent	276,782.15	77,902.35	255,670.55	75,390.45
2½ Cent	314.72½	246.02½	555.40	669.55
Bronze:				
1 Cent	198,397.00	410,308.59	189,212.06	406,628.14
½ Cent	89,075.38	150,991.49	83,851.78	148,387.38
TOTALS	1,609,863.45½	1,137,136.55½	1,549,316.09	1,016,791.72

The issues of £.s.d. system coinage during the year were as follows:-

£ s.d.		£ s.d.		£.s.d.	
£1	353. 0. 0	5/-	24,927. 5. 0	1d.	488. 17. 1
£½	150. 10. 0	2/6	145. 7. 6	½d.	392. 16. 3½
		2/-	104. 12. 0	¼d.	67. 12. 3¼
		1/-	57. 6. 0		
		6d.	28. 13. 0		
		3d.	25. 13. 0		
	£503. 10. 0		£25,288. 16. 6		£949. 5. 7¾

Proof Coin and Selected 50c Pieces.

The Mint made 1,544 nine coin proof sets (R2 - ½c); 800 two gold coin proof sets (R2 and R1); 2,300 seven coin proof sets (50c - ½c); and 6,024 selected 50 cent pieces.

Withdrawal of 800 Standard Coin for Reminting.

Since the introduction of the lower 500 standard in 1951, 800 Standard coin has been withdrawn for reminting into 500 Standard coin as follows:-

	R c.
1951 - 1960	7,609,177.85
1960 - 1961	246,833.07
1961 - 1962	259,336.67
1962 - 1963	361,840.82
	R8,477,188.41

Included in the above figures is a very small quantity of 500 standard coin which was mutilated whilst in circulation or which was damaged by fire.

Withdrawal of £ s.d. system Bronze Coin.

During the year R354,767.00 of £ s.d. system bronze coin was withdrawn from circulation for re-melting.

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Non-Ferrous Bullion Transactions in the Bullion Office.

The following are (1) the receipts of, and (2) the transactions in non-ferrous metals during 1962/63. Most of this was issued to the Coinage Section for the production of silver coin, but a small amount of copper was issued for the alloying of gold.

(1) Receipt of Non-Ferrous Metals. (All in lb. Avoirdupois).

Copper.	Brass.	Bronze.	Cadmium.	Total.
71,142.00	98.00	129.25	8.00	71,377.25

(2) Non-Ferrous Metals Transactions.

Issued to Coinage Section for silver coin .	66,144.74
Weight of bronze coin received from Coinage Section	639,228.64
Weight of metals issued for alloying	1,567.35
	706,940.73

For economic reasons, all blanks for bronze coinage were supplied by the Ammunition Branch.

Packing and Despatch Section.

The number of parcels despatched by post and rail compared with the despatches during the previous year were:-

	1962/63.	1961/62.
Parcels despatched by post	4,888	6,064
Parcels, other than coin despatched by rail	530 (11619 lbs.)	536 (9000 lbs.)
Boxes of coin despatched by rail	6,215 (695394 lbs.)	9,247 (996917 lbs.)

CHAPTER 6 : COINAGE SECTION.

Melting Section:

The following schedule of Melting Production shows an increase to that of the previous year.

Metals and alloys melted (output):

Bronze:	Coinage bronze melted	13,541.45 lbs.
Gold:	Std. Gold (22ct.)	469,461.72 ozs.
Silver:	500 Std. Silver for Coinage	4,348,980.69 ozs.
	925 Std. Silver for D. & M.	31,964.50 ozs.
	Fine Silver for D. & M.	228,676.37 ozs.
	Fine Silver granules	247,512.62 ozs.
		5,326,595.90 ozs.

As compared with 1,765,899.19 ozs. in 1961/1962.

The 469,461.72 ozs. of gold was supplied by the Chamber of Mines to be coined into R2 pieces for overseas export.

Rolling Section:

The total production in this section was 4,664,831.17 ozs. of bars rolled and 51,764,800 gold, silver and bronze blanks annealed and cleaned.

Coinage Section:

The number of coin struck in the coining room during the year totalled 50,715,964 pieces.

Of this total 900,000 were R2 gold pieces and was an order executed for the Chamber of Mines and despatched overseas by that body. These gold coins were all automatically weighed at the blank stage.

Coin Production From 1st April, 1962 to 31st March, 1963.

Denomination.	Bars Cast Ozs.	Bars Rolled Ozs.	Blanks Coined Ozs.	Good Coin Produced 1962-1963 No. of pieces	Good Coin Produced 1961-1962 No. of pieces
Std. Gold					
R2 Pieces for Chamber of Mines.	469,461.72	469,461.72	231,190.88	900,000	100,000
Std. Gold					
R2		3,527.94	3,171.43	12,344	6,178
R1			808.96	6,299	6,812
			3,980.39	18,643	12,990
500 Std. Silver.					
50c	Nil	Nil	22,131.63	24,378	8,014
20c	2,412,341.21	2,016,887.42	1,252,541.64	3,451,246	2,050,918
10c	1,084,887.15	1,237,712.17	546,277.79	3,118,690	643,295
5c	851,752.33	937,241.92	533,004.36	5,535,642	1,558,047
2½c	Nil	Nil	571.35	12,589	9,841
	4,348,980.69	4,191,841.51	2,354,526.77	12,142,545	4,270,115
Bronze		Blanks Annealed and Cleaned. Lbs.	Lbs.		
1c		425,129.62	416,723.05	19,839,700	41,030,859
½c		228,177.12	223,703.59	17,815,076	30,198,298
		653,306.74	640,426.64	37,654,776	71,229,157
Total No. of Gold, Silver and Bronze Coins				50,715,964	75,612,262

Proof Coin struck and delivered to Mint Bullion Office as follows:-

R2 - ½c	1,844 Sets.
50c - ½c	2,000 "
R2 and R1 only	500 "
Selected 50c	6,024 Pieces.

CHAPTER 7 : DIE AND MEDAL AND GENERAL PRESS SECTIONS.

A steady production of the various articles produced in this section was maintained throughout the year.

The various silver articles offered for sale to the general public visiting the Mint are becoming increasingly popular. Of these the three bowls viz. the sweet, nut and butter bowls are most in demand as is shown by the ever increasing sales.

These three articles are also very popular with the various embassies and high ranking officials of the Public Service.

CHAPTER 8 : ENGINEERING AND MAINTENANCE SECTION.

During the year the Maintenance Section was again fully occupied in maintaining the production plant and ancillary factory services.

The balances and scales at the Coinage Branch and the scales at the Ammunition Branch were maintained, the Mint Bullion Office balance and the Ammunition Branch weighbridge were prepared for assizing and both steam boilers were prepared for the annual inspection.

Liquid petroleum gas was installed in the Die and Medal, Jewellers, Assay and Melting House Sections in place of the former Mansfield gas. The generating plant for the Mansfield gas was closed down and the supply of gas to the C.S.I.R. and the S.A.B.S. was discontinued.

A second filing machine for gold coins for the Coining Section and a bench for balances for the Assay Section were constructed and installed. A new lathe in the Maintenance Workshop and a new boiler chimney were also installed.

CHAPTER 9 : AMMUNITION BRANCH - GENERAL.

Output For The Last Two Years.

Financial Year	Tons Melted	Tons Rolled	Tons Extruded (Lead)	Rounds of .303" Ammunition	Rounds of .380" Ammunition
1961/62	2,081	1,409	104	8,678,526	1,195,716
1962/63	1,768	1,090	171	1,635,398	430,770

Financial Year.	Rounds of 7.62 mm. Ammunition.
1961/62	919,000
1962/63	10,797,700

CHAPTER 10: : AMMUNITION.

The total output of 12,863,868 rounds of 7.62 mm., 303" and .380" calibre ammunition during the year reflected an increase of 19% as compared with that of the previous financial year.

The major portion of the small arms production consisted mainly of 7.62 mm. cartridges, principally for the Department of Defence, of which 10,797,700 rounds were produced, reflecting an increase of 61,175% over that of the previous year's production.

Serious setbacks in production were encountered during the year which prevented the attainment of the anticipated output of 17 million rounds of this type of ammunition.

The one difficulty experienced, viz. the stretching of the cartridge cases under operational conditions, was only overcome towards the latter part of the year when information regarding the correction of this defect, which had been experienced by many of the leading Continental ammunition manufacturers, came to hand, viz. the normalising or stress relieving of the cartridge cases during production.

Another difficulty, which continues to hamper production, is the use of old .303" cartridge production machines which have been converted for 7.62 mm. cartridge production.

These machines, many of which are more than 20 years old, are wartime plant. They are in a poor state of repair and require constant maintenance, adversely effecting production.

Considerable delay was caused to production in the Loading Section during the lengthy experimentation period taken to find a suitable 7.62 mm. cartridge mouth varnish which would comply with the requisite waterproof tests. The varnish that proved most satisfactory for this purpose had the serious drawback that the cartridges had to be stored for drying, for approximately 8 hours, before they could be further processed. Several hundred drying trays had to be made to stack the cartridges in during this period and involved this Section in a great deal of additional handling.

On receipt of the new mouth varnishing machines, presently on order, much of this additional handling and storing will be eliminated.

Owing to the introduction of the 7.62 mm. F.N. rifle in place of the .303" rifle, by the Department of Defence, and in view of their large stocks of ammunition for the latter weapon, no orders were placed on the S.A. Mint by the Defence Department for .303" cartridges. This resulted in only 1,635,396 rounds being produced during the year, mainly for the commandos and the trade, and was the lowest production recorded of this type of ammunition since the establishment of this Branch of the S.A. Mint in 1946.

The plant for the production of 9 mm. parabellum cartridges, ordered from overseas the previous year, was received, installed, and put into commission towards the end of the year.

Owing to the training of staff in the operation of these new machines and certain teething troubles encountered only cartridges for proofing purposes were produced before the close of the year.

The 9 mm. ammunition plant will be capable of conversion to .380" cartridge production on receipt of certain parts presently on order from overseas.

In the meantime the demand for .380" ammunition, which fell considerably below that of the previous year, was met from .303" cartridge production machines which have been modified for .380" cartridge production.

During the year the production of 2,465,600 Browning machine gun links reflected an increase of 339% over that of the previous year.

A phosphating plant for the rustproofing of the links, which was previously undertaken by the Defence Ordnance Workshops, was built, installed and put into operation early in the year, making this Institution selfcontained in so far as the production of this item is concerned.

During September - October, 1962, the Assistant Director (Technical) Mr. D.H. Shaw, paid a short visit to the United Kingdom and Europe to study the production of 7.62 mm. flame tracer and .50" Browning flame tracer and armour piercing - incendiary cartridges, with the view to recommending plant for the manufacture of these types of ammunition in the Republic.

As a result of Mr. Shaw's investigations and recommendations orders were placed on Continental manufacturers for the supply of the necessary machines for delivery towards the end of 1963.

Orders were placed on the S.A. Mint by the Defence Production Office for the supply of a wide variety of munitions components viz. detonator cups, closure discs and washers, setting washers, percussion caps and aircraft bomb detonator tubes.

Comparatively few of these items were produced during the year on account of the preparatory work to be undertaken in the design and manufacture of the various tools and the improvisation of machines for this production, the benefit of which will only become apparent this year.

The following is the total production (passed inspection) of ammunition during the financial year.

.303" Cartridges.

Ball Mk.7.

Cartridges for Rhodesian Police	149,760
Cartridges for Rifle Commandos	483,650
Cartridges for Portuguese East African Police	6,240
Cartridges for S.A. Police, Prisons and other Government Departments	238,368
Cartridges for the trade	525,000

Miscellaneous.

Blank cartridges for Rhodesian Police	131,040
Blank cartridges for S.A. Police & Prisons ..	22,340
Blank cartridges for trade	4,120
Wooden Bulleted Blanks for Rhodesian Police .	74,880

7.62 mm. Cartridges.

Ball.

Cartridges for Defence Department	10,056,260
Cartridges for Rhodesian Police	6,000
Cartridges for S.A. Police and Prisons	714,000

Miscellaneous.

High Pressure Proof cartridges for Defence Department	21,440

.380" Revolver Cartridges.

Ball - Mk.2Z.

Cartridges for Defence Department	56,160
Cartridges for Rhodesian Police	102,240
Cartridges for S.A. Police	211,680
Cartridges for Trade	52,050

Blank.

Cartridges for the Trade	8,640
	12,863,868 rounds

As compared with 10,793,242 in 1961/62.

Other Items.

.303"	Mk.1 Browning machine gun links for Department of Defence	2,465,600
6.7	Detonator cups	300
1.2	Grain detonator cups for No.11 primers	107,256
.022	Brass washers for 5.7 gr. detonator ..	100,104
.004	Brass washers for No.11 primers	50,407
	Glazed board washers for 5.7 gr. det.	100,122

The above items were all for the Defence Department.

The following special orders were executed by the Cutting & Cupping and Bullet Sections:-

Bronze cent blanks for Coinage Branch	21,262,080
Bronze half-cent blanks for Coinage Branch	23,839,872
70/30 Brass detonator tubes	282,218
90/10 Gilding metal detonator tubes	448,180

The following work was completed by the Box Assembly and Reconditioning Sections during the year:-

H.13	Wooden ammunition boxes reconditioned	12,369

CHAPTER 11 : MELTING SECTION.

The 1,768 tons of metal melted in this Section during the year reflected a decrease of 15% as compared with that of the previous year.

The major portion of the production consisted of coinage bronze for cents and half-cents and brass for ammunition production purposes.

Approximately 450 tons of £ s.d. bronze, withdrawn from circulation as the result of the change-over to the decimal coinage system, were melted for re-use in the manufacture of cents and half-cents. An additional gantry and an improved pouring stand were constructed by the Maintenance Section to facilitate this work.

A specially designed roof cap was erected on the Melting House roof and helped considerably with the expulsion of the smoke and fumes which had been of some concern for the health and well-being of the staff employed in this Section.

The following metals were melted during the year:-

	Lbs.
Coinage bronze (cents and half-cents)	1,226,729
70/30 Brass	1,007,932
97/3 Copper	15,187
90/10 Gilding metal	250,134
Other metals melted	1,035,949
	3,535,931

1,768 tons as compared with 2,081 in 1961/62.

Lead Extrusion Section.

341,487 lbs. of antimonial lead were melted, cast into billets and extruded into wire for the production of bullet cores as compared with 207,356 lbs. processed the preceding year.

CHAPTER 12 : ROLLING SECTION.

The production of 1,090 tons of rolled strip during the year reflected a decrease in production of approximately 23% as compared with the production of the previous year.

The major portion of the work produced by this Section consisted of metal for coinage bronze and ammunition production.

As reported previously, annealing remains a "bottle-neck" in this Section but the electrical equipment necessary to put the spare furnace into commission is on order and no time will be lost in installing this furnace when the necessary equipment is received.

The following metals were rolled during the year:-

	Lbs.
70/30 Brass	880,427
Pure copper	96
97/3 Copper	10,745
90/10 Gilding metal	279,829
Aluminium	2
Coinage bronze for half-cents	339,372
Coinage bronze for cents	667,402
Nickel silver	2,425
	2,180,298

1,090 tons as compared with 1,409 tons in 1961/62.

CHAPTER 13 : ENGINEERING, MAINTENANCE AND TOOL SECTIONS.

General.

These sections were responsible for the safe operation of all mechanical and electrical plant, the installation and commissioning of plant and the development and manufacture of new tools and smaller units of plant. All essential services were provided by these sections. In carrying out their duties the sections had to co-ordinate their activities closely with the production sections.

Maintenance Section.

A completely new section for 9 mm. case & bullet production was commissioned in 1962. The installation of plant, lighting and the overhead busbar distribution of power as well as the laying of cables and erection of switchgear were carried out by the Maintenance Section.

In addition to general maintenance of plant and equipment, the following jobs were carried out:-

The Melting House furnaces were re-bricked, moulds were machined and a slipper pouring stand and gantry was installed. The 3,000 lb. platform scale was replaced by a 6,000 lb. scale.

The acid pickling vats in the Brass Extrusion Section were repaired and the ends re-built.

The No.1 Batch furnace floor in the Rolling Room was re-lined.

Infra-red radiating heaters were installed in the Rolling, Case, Bullet, Inspection and Annealing Sections.

A rather abnormal increase in water consumption with attending seepage in some substations and ducts led to a large scale investigation. Various portions of the ring feeds were closed down in order to pinpoint suspected leakage which was eventually traced to a 4" main passing through the floor of the Case and Bullet Section. As a result about 300 feet of piping was replaced.

A new ammonia printing and developing machine was received and installed in the Drawing Office.

To facilitate drying of varnished cartridges, several hundred drying boards were manufactured.

The rivetting of 7.62 caps were changed over to the Bliss piercing machines which were re-designed to carry out this operation.

The new 9 mm. loading and assembling plant, and the gauging plant were installed in the Loading Section.

The Box Factory was removed from the 9 mm. Section to facilitate installation of cap and detonator plant and the new annealing plant.

An additional office in the Tool Room was built for production planning purposes.

One .303" sizing machine was converted to 9 mm. tapering and one .303" case gauging machine to 9 mm. gauging.

For the manufacture of burster tubes and some detonator cups, an inclinable press, bench drilling machine, drawing press and bench lathe were installed in the 9 mm. hangar.

The complete plant for the phosphating treatment of links was built and erected by the Maintenance Section. This included temperature controlled electrically heated vats, carrying baskets, stainless steel vats, drainage, drying and rustproofing facilities.

Numerous other engineering services were provided during the year, all requiring close organization and co-ordination with the other factory activities.

The Maintenance Section was responsible for the mechanically safe and efficient operation of all plant and equipment and also endeavoured to see that plant was used in a safe manner.

Tool Room.

Production of 7.62 case tools for this year increased by 245% to 9,138 units and the 7.62 bullet tools by 180% to 11,134 units. The production of .303" case and bullet tools showed a decline from 3,808 to 1,249 units.

Overall production of the Tool Room has increased from 21,180 in 1961/62 to 28,971 this year. Tool consumption is still excessive in relation to production, usually caused by sporadic high consumption of certain tools. Case tools have lately, however, shown greater consistency in consumption than bullet tools.

A lot of time was spent in the design and manufacture of tools for the production of various detonators and burster tubes required by the Department of Defence. A total of 354 tools were produced for this purpose.

The following is a summary of the Tool Room production:-

Item		Number Produced.
7.62 mm.:	Case tools	9,138
	Bullet tools	11,134
	Loading tools	830
	Cap tools	72
Total for	7.62 mm.	21,174
.303":	Case tools	641
	Bullet tools	608
	Loading tools	3
	Cap tools	13
Total for	.303"	1,265
.380":	Case tools	428
	Bullet tools	544
Total for	.380".	972
Gauges for Quality Control.		51
9 mm.	Case tools	583
	Bullet tools	1,382
Total for	9 mm.	1,965

Item	Number Produced.
Copper crushers "D" Type and "G" Type	3,164
Rolls ground (outside orders)	4 pairs
Tools hardened (outside orders)	22
No.28 Burster tools	97
No.52 Burster tools	121
1.2 Grain detonator tools	45
6.7 Grain detonator tools	31
1.7 Grain detonator tools	5
6 Grain detonator tools	2
2.8 Grain detonator tools	2
5.7 Grain detonator tools	19
V.555 Coinage tools	3
V.19 Detonator tools	29
	3,544

15/.....

Total produced: 28,971.

	Reconditioned tools.
Loading	42
Case	91
Bullet	153
Scalpers	64
Rolls	16
Rolling Room	67
Total reconditioned	433

Drawing Office.

The output of the Drawing Office increased during the year, especially the production of prints and photocopies. The bulk of the reproduction work consisted of the revision and amendment of drawings to bring them up to date. A total number of 479 new drawings, 857 photocopies and 14,085 prints were made during the year.

A number of new scaled lay-outs were also made for planning purposes. These were found very useful for planning installations of plant in existing buildings where account has to be taken of facilities such as existing drainage, power points, water etc.

With the increase of work in the Drawing Office it is anticipated that the staff will have to be increased, especially, in view of the 7.62 mm. flame tracer, and .50" flame tracer and armour piercing/incendiary cartridge production programmes anticipated in 1964.

CHAPTER 14 : LABORATORY.

The following is a summary of the work carried out by the Laboratory staff:-

Precious Metal Melting and Recovery.

Gold	Silver	Description of Melts	Number of Pots
Troy ounces	Troy ounces		
1,069.85		Granules for Mint Office	3
3,756.20		Bars for Mint Office	6
8,172.41		Bars for R2 pieces	6
150.49		Mint Office reclamations	5
33.05		R2 reclamations	2
235.86		Badge and Medals reclamations	3
	225.72	Mint Office silver reclamations	8
	100.00	Silver for Badge and Medal Section	1
13,417.86	325.72		

The marked decrease in bars and granules prepared in the Assay Section is due to the fact that the melting for the Mint Office was carried out by the Melting House melting team in accordance with recommendations contained in the Laboratory - Assay Office report brought out by the Organisation and Method Study Team. This alteration in procedure was merely an imple-

mentation of the above recommendations and a welcome relief to the Laboratory staff as several vacancies existed at the time.

Precious Metal Assays.

Gold:	Mint Office	617 samples
	S.A. Bureau of Standards	369 "
		986
Silver:	Bars	2,144
	Pyx	426
	Mint Office Badge & Medal Section	10
	S.A. Bureau of Standards	96
		2,676

Four gold samples submitted for assay by the Bureau of Standards were below standard.

Alledged Counterfeit Coin.

14 Pieces were handed in as alledged counterfeits, of which only 5 proved to be counterfeits.

General Chemical Analysis.

Metals and Alloys	Determinations.
Coinage bronze	4,527
97/3 and 90/10 Ammunition	846
97/3 and 90/10 Commercial	79
70/30 Ammunition	4,699
70/30 Commercial	80
Antimonial lead	153
Melted pennies	3,388
Miscellaneous copper alloys	89
Tin liners and lids	88
Metal dross	4
	13,953

Non - Metals.

Paper and cartons	25
Acid baths and effluents	805
Ores	156
Solutions for other sections	56
	1,042

Metallurgical.

321 Samples were examined for grain size; 3,294 copper crushers were treated and graded for ammunition testing purposes by the Department of Defence.

Miscellaneous.

A variety of 2,070 samples were examined and chemically analysed.

Illicit gold trade.

During the year assays on 923 exhibits in 441 Court cases were carried out for the S.A. Police, Gold Staff. 286 Pieces of gold were also made for trapping purposes.

In 7 cases analysts were subpoenaed to give evidence in Court.

Staff.

An improvement in the professional personnel shortage was brought about by the employment of Mr. H.S. Lombard (studying B.Sc. Extra-mural) and Mr. C.J. Jansen (recently graduated, B.Sc.)

CHAPTER 15 : WORK STUDY SECTION.

During the year the Senior Work Study Officer investigated and made the necessary studies in respect of production commitments and production problems which were encountered in the various sections, as described hereunder:-

A. Tool Room:

1. Process Charts for 7.62 mm. Tools.

The Work Study Officer, in collaboration with the Foreman of the Tool Room, established standard procedures for the manufacture of the following 7.62 mm. cartridge production tools:-

(a) Nine tool manufacturing procedures for the cutting and cupping of 7.62 mm. cases and bullets.

(b) Thirty-two standard procedures for the manufacture of 7.62 mm. case production tools.

(c) Sixty-two standard procedures for the manufacture of 7.62 mm. bullet tools.

2. Estimated Production Times.

Standard times were established through synthesis and estimating for all the operations of each of the hundred and three procedures referred to in the previous paragraph.

3. Gauges and screen drawings etc.

Reference numbers were allocated for 7.62 mm. production tool manufacture in respect of:-

(a) Ancillary tools;
(b) Gauges for tool manufacture;
(c) Screen profile drawings.

4. Ordering Levels.

Tool consumption figures were studied in respect of the cutting and cupping, case and bullet 7.62 mm. production tools and stock levels determined for stores replenishing purposes.

5. "Kardex" Horizontal Planners.

A "Kardex" planning system was installed for the purpose of exercising control over the manufacture of production tools, gauges, machine parts for all the production sections in respect of .303", 7.62 mm., .380" and 9 mm. cartridges and also for the manufacture of tools etc. for the various types of detonators, burster tubes, detonator washers, etc.

B. Melting Section.

1. Melting Production Programme.

The metal and staff requirements in respect of the 1963-1964 financial year were calculated.

2. "Wilkex" Crucibles.

A complaint in respect of "Wilkex" crucibles was investigated and reported on as follows:-

(a) An 8% loss in capacity.

(b) A 6% loss in production.

(c) A 5.19% loss of life per crucible.

3. Maximum Capacities.

The available and spare capacities of all furnaces in the Melting Section were calculated on the maximum production at a 60 rating performance.

4. Standard Times.

Standard times were established through synthesis in respect of all materials used for detonators, detonator cups, burster tubes and detonator washers.

C. Rolling Section.

1. Machine Capacities.

The available and spare capacities of all the machines in the Rolling Section were calculated on the maximum production at a 60 rating performance.

2. Standard Procedures.

The following standard procedures for rolling were established:-

(a) The rolling and processing of 97/3 copper strips required for 1.2 grain detonator cups for primer No.11.

(b) The rolling and processing of 70/30 brass .004 inch thickness, required for washers for use in 25 pounders for packing up primer No.11.

3. Standard Times.

Standard times were established for the rolling and processing of metals, which were used for the manufacture of detonators, detonator cups, burster tubes and detonator washers.

D. Cutting and Cupping.

1. Standard Times.

Standard production times were established for the cutting and cupping or blanking of the following:-

(a) 1.2 Grain detonator cups for primer No.11.
(b) 6.7 Grain A.Z.Y. detonator cups.
(c) 5.7 Grain A.Z. detonator cups.
(d) Burster tubes A/C No.28.
(e) Burster tubes A/C No.52.
(f) Brass washers .004" thick, for use in 25 pounders, for packing up primer No.11.
(g) Brass washers for 6.7 grain, 5.7 grain, 2.8 grain and 1.7 grain detonator cups.
(h) Glazed board washers for the 5.7 grain detonator cups.

E. Annealing Section.

1. Production Capacities.

The capacities of the available four rotary furnaces were calculated to determine their maximum production potential.

F. Case and Bullet Section.

1. Bullet Drawing.

The four machines set aside for 7.62 mm. bullet drawing were studied for hopper feeds and general machine efficiencies.

G. Loading Section.

1. Varnishes.

Experiments were carried out with different types of varnishes on 7.62 mm. cartridges, to eliminate water leaks at the assembled stage; this resulted in a satisfactory varnish being obtained.

2. Crimping instead of Stabbing.

Experiments were conducted with the crimping and the stabbing of 7.62 mm. cartridges for securing the bullet to withstand the vibration tests at the assembled stage. Results showed that the crimping method was the more satisfactory.

H. General.

During the year the Senior Work Study Officer also carried out the following tasks:-

1. Revision of the 1962/63 production estimates at the Ammunition Branch.

2. Preparation of the 1963/64 production estimates in respect of the various production sections for the manufacture of ammunition and coinage bronze blanks.

3. Weight conversion factors were established for all the 9 mm. components in order to control the production output.

4. Weight conversion factors, for the control of production, were established for the different types of detonators, detonator cups, burster tubes and detonator washers.

5. Additional staff requirements were calculated in respect of the Ammunition Branch for the 1963/64 financial year.

6. It was necessary, for production control statistics, to re-design the Case & Bullet Sections production form to accommodate the 9mm. components.

7. It was necessary, for tool control statistics, to redesign the 7.62 mm. weekly tool consumption sheet and the 7.62 mm. tool consumption progressive returns.

8. The metal requirements for the manufacture of detonators, detonator cups, burster tubes and detonator washers were calculated and the necessary orders were placed.

9. Production times were established for the following:-

(a) .004" thick brass washers for use in 25 pounders for packing up primer No.11.

(b) Brass washers for 6.7 grain, 5.7 grain, 2.8 grain and 1.7 grain detonator cups.

(c) Glazed board washers for 5.7 grain detonator cups.

(d) 6.7 Grain A.Z.Y. detonator cups.

(e) 1.2 Grain detonator cups for primer No.11.

(f) .25 Grain and .3 grain detonator cups.

10. Maintained a bond store for manufactured detonator components. Arranged with a commercial firm for tin-plating of components according to specification. Made arrangements for the necessary laboratory tests to be carried out and for submission of Defence acceptance certificates.

C. Mclaren

DIRECTOR OF THE S.A. MINT.