

TRINIDAD AND TOBAGO.

Council Paper No. 32 of 1938.

M I N E S.

Report of Inspector of Mines and Petroleum Technologist for 1937

*Laid before the Legislative Council on the
22nd of April, 1938.*

Previous Council Paper No. 59 of 1937.

Registered No. of Correspondence relating to the subject—M.P. No. 38446.

1938.
TRINIDAD AND TOBAGO.
PRINTED AND PUBLISHED BY A. L. RHODES, M.B.E.,
GOVERNMENT PRINTER.

[Price 72c.]

MINES.

Report of Inspector of Mines and Petroleum Technologist for 1937.

Council Paper No. 32 of 1938.

M.P. No. 33446.

HONOURABLE COLONIAL SECRETARY,

I have the honour to submit, for the information of His Excellency the Governor, the following report on the work of the Mines Department for the year 1937.

THE PETROLEUM INDUSTRY.

2. During the year 1937 the Petroleum Industry of the Colony has continued to increase its activities and a substantial development in all branches can be recorded. Interest in acquiring lands for oil exploration has shown no signs of abatement; new records in both the amount of oil produced and the footage drilled have been made, and important extensions and improvements to the principal refineries have been carried out and/or commenced upon. The year has not been a peaceful one for the Industry owing to the labour strike which closed down all operations for the period 19th June to 5th July. In view of this set-back and its attendant troubles which necessarily slowed up operations for a considerable period after the actual strike, it is most satisfactory that the results for the year as set out in the following show so much improvement when compared with the results of the previous year.

3. Exploration survey work has continued to be very actively pursued in the Colony during the past year and in this connection it is of interest to record the extensive use made of the seismic method of geophysical surveying. During the past year this method has, to a very large extent, superseded the gravimetric methods which previously had been mainly used.

4. PRODUCTION OF CRUDE OIL.—The total production of crude oil for the year 1937 amounted to 15,502,989 barrels, which is 2,265,959 barrels or 17.12 per cent. more than the production for 1936, and is the highest yet recorded in the Colony.

The Fyzabad structure continues to maintain its supremacy as the structure from which the major portion of the Colony's production of crude oil is derived and during the year under review it contributed 53.47 per cent. of the total production as compared with 56.70 per cent. for the previous year.

Of the two new producing areas to which reference was made in the last Administration Report one of them has yielded most favourable results and can be said to be a well established producing area.

5. DRILLING.—During the year 1937, 289 new wells were commenced, compared with 171 during 1936. The total number of wells commenced in the Colony to the end of 1937 is 2,705 of which 1,676 are on lands the oil rights of which are vested in the Crown and 1,029 are on private lands.

The number of feet drilled during 1937 amounted to 911,575, which represents an increase of 317,046 feet, or 53.33 per cent. on the footage for 1936.

At the end of the year there were 26 wells over 6,000 feet deep, 12 wells over 7,000 feet deep, and 4 wells over 8,000 feet deep; the deepest being 9,039 feet.

6. The following table shows, comparatively, the number of feet drilled and the quantity of oil produced during the years 1935, 1936 and 1937:—

Land.	Number of Feet Drilled.			Production in barrels of 35 gals.			
	1935	1936	1937	1935	1936	1937	
Crown Oil Rights ...	328,510	381,358	508,197	7,544,427	8,182,018	9,743,292	- 62.55%
Private Oil Rights ...	107,789	213,171	403,378	4,126,797	5,055,012	5,759,697	- 37.15%
Total ...	436,299	594,529	911,575	11,671,224	13,237,030	15,502,989	100%

7. OILFIELD OPERATORS.—The number of oilfield operators at the close of the year was 19, compared with 16 at the end of 1936. As an indication of the increased activity which took place on the oilfields during 1937, it may be noted that the daily average number of persons employed increased from 7,796 in 1936 to 10,084 in 1937.

8. LEASES AND LICENCES.—During the year 28 applications for mining leases and exploration licences were received, and 26 mining leases and 8 exploration licences were registered. The total number of mining leases and exploration licences registered at the end of the year amounted to 83, the details of which are as follows :—

	AREA.					
	Crown.			Alienated.		
	A.	R.	P.	A.	R.	P.
28 Mining Leases	50,580	0	19	...	...	...
21 Mining Leases	...	...	...	21,522	0	34
21 Composite Mining Leases on Crown and Alienated Lands	81,236	3	10	23,413	2	07
13 Exploration Licences	240,730	0	00	...	...	...
83	Total			372,546	3	29
				44,935	3	01

9. TOTAL AREA UNDER LICENCE OR LEASE.—Including privately owned oil rights under lease, the area of which has been supplied by the various operating companies, the total area of Trinidad under Licence or Lease as at the 31st December, 1937, is 496,950 acres (41.66 per cent. of the total area of Trinidad) as follows :—

Area of Crown Lands under Exploration Licence and Mining Lease	A.	R.	P.
	372,546	3	29
Area of Alienated Lands under Mining Lease the oil rights of which are vested in the Crown	44,935	3	01
Area of privately owned oil rights under lease, according to details supplied by the Oil Companies	79,467	0	23
	496,949	3	13

10. MARINE CONCESSIONS.—At the end of the year under review the terms and conditions under which concessions will be granted were still under consideration.

11. REVENUE FROM ROYALTIES, WAYLEAVES AND FEES.—The revenue collected under these heads amounted to \$726,552.56 as compared with \$622,892.39 collected during the year 1936. For purposes of comparison, the following table shows the amounts collected under each head for the years 1935, 1936 and 1937 :—

Heads.	Amounts Collected.					
	1935		1936		1937	
	\$	c.	\$	c.	\$	c.
Royalties in respect of oil produced from Crown and Alienated Lands	505,278	46	617,884	86	720,857	06
Wayleaves in respect of oil pipelines laid along public roads	1,421	59	1,877	76	1,759	50
Fees charged for pipelines crossing the Trinidad Government Railway and public roads	2,217	60	3,129	77	3,936	00
Totals	508,917	65	622,892	39	726,552	56

12. REFINERIES.—Eleven permits for the refining of oil were issued during the year under the Oil Mining and Refining Ordinance, Cap. 143. Of these permits six were issued in respect of small field topping plants the operations of which are of relative unimportance.

The total capacity of the refineries operating in the Colony amounts to approximately 17,500,000 barrels per annum. During 1937 a total quantity of 15,111,046 barrels of crude oil was refined, compared with 13,028,161 barrels during 1936.

13. GASOLENE EXTRACTION PLANTS.—Three Gas Absorption Plants and one Gas Adsorption Plant for the recovery of gasolene from natural gas were in operation during the year.

14. LOADING FACILITIES.—Four deep-water piers equipped for loading tank steamers with petroleum and its products are in use. Facilities for bunkering vessels in the Harbour of Port-of-Spain are also available.

15. PIPELINES.—Approximately 225 miles of main oil pipelines have been laid down in the Colony. During the year 9 new permits under the Pipelines Ordinance No. 29 of 1933 were issued, the total number of permits issued now amounting to 185.

16. TANK STORAGE.—The total main tank storage capacity for petroleum in the Colony is approximately 4,514,293 barrels.

17. EXPORTS OF PETROLEUM AND ITS PRODUCTS.—The quantity of petroleum and its products exported during the year increased substantially as compared with the year 1936, the amounts and values for the two years being as follows:—

1936—12,405,222 barrels valued at \$15,910,638.

1937—14,124,056 barrels valued at \$18,896,422.

Petroleum and its products continued to form the largest part of the Colony's exports in 1937, the value being more than three times that of the products of the next most important of its industries, viz. : sugar (including molasses and rum). Of the total exports petroleum and its products (including asphalt) formed 63.72 per cent.

The value of the leading staple products of the Colony exported during 1937 is shown in the following table:—

<i>Staple Products Exported.</i>	<i>Value.</i>	<i>Percentage of total.</i>
Petroleum and its products	\$18,896,422	59.93
Sugar, Molasses and Rum	6,425,729	20.38
Cocoa	3,086,995	9.79
Asphalt	1,194,914	3.79
Coconuts, Copra and Coconut Oil	653,134	2.07
Fruits and Fruit Products	567,925	1.80
Coffee	134,758	.43
Bitters	112,977	.36
Other Exports not enumerated... ..	457,819	1.45
	<u>\$31,530,673</u>	<u>100.00</u>

18. RETURNS.—The various returns required to be submitted by the Oil Companies under the various Ordinances and Regulations in respect of their operations have been regularly received in the Department, where, after being checked, they have been filed with the records of the Department.

19. INSPECTIONS.—The operations on the various oilfields were inspected by officers of this Department as frequently as possible, and I have pleasure in recording that the Managers have readily co-operated with the Department in ensuring that the provisions of the Ordinances and Regulations were effectively carried out.

20. Included in this report as Appendix "B" will be found some interesting notes and statistics relating to the progress of the petroleum industry which have been prepared by the Assistant Petroleum Technologist.

THE ASPHALT INDUSTRY.

21. The Asphalt Industry continued to operate normally. The total production of asphalt for the year amounted to 145,904 tons. The following table shows, comparatively, the quantity of asphalt produced and exported during the years 1935, 1936 and 1937 :—

		1935	1936	1937
Production (in tons)	... ..	134,578	111,965	145,904
Export (in tons)	... ..	82,349	70,543	90,872

FACTORIES.

22. During the period under review 195 factories were in operation in Trinidad and Tobago. During the inspections carried out in these factories recommendations were made for ensuring the safety of the workmen, and such recommendations were always readily carried out by the Managers concerned.

QUARRIES.

23. The number of quarries worked during the past year was 112, as compared with 109 quarries in operation during the year 1936. Most of these quarries are very small and relatively unimportant. As a result of inspection it was found that, as a general rule, the quarries were being worked in a careful manner. The various recommendations made by officers of this Department for increasing the safety of the workmen were usually carried out without delay.

PETROLEUM ORDINANCE CAP. 145.

24. The premises where dangerous petroleum products are stored have been carefully inspected, and all possible care has been taken to ensure safety. During the year 564 licences were issued for the storage and sale of petroleum and its products, the revenue derived from such licences amounting to \$2,004.

APPENDICES.

25. Appendix "A" shows the list of oil companies operating in the Colony during the year 1937.

26. Appendix "B" gives notes and statistics relating to the Petroleum Industry.

27. Appendix "C" is a statement of the quantity and value of minerals obtained and the daily average number of persons employed in the petroleum, asphalt and quarry industries.

28. Appendix "D" gives the Rates of Wages and Hours of Labour employed on the Oilfields.

29. A statement of oil produced and exported is shown in Appendix "E".

30. Appendix "F" shows the amount of oil refined year by year.

31. Appendix "G" consists of a series of charts depicting in graphic form the progress made in various industries during the past few years.

32. Appendix "H" shows the relation of mineral exports to agricultural exports.

STAFF.

33. Mr. A. C. Francis-Lau, 2nd Class Clerk, was granted 60 days vacation leave from the 28th July, 1937 and Mr. R. V. O'Neill, 3rd Class Clerk, was also granted 90 days vacation leave from the 18th October, 1937.

Mr. C. Niles, 2nd Class Clerk of the Petroleum Office, San Fernando, was seconded for duty as Shorthand Writer to the Commission of Inquiry into the labour disturbances as from the 1st September to the 4th October, 1937, on which later date he became ill and was granted four months' special sick leave from the 4th October, 1937.

I have great pleasure in recording the very able and willing assistance I have received from all members of the Staff.

R. S. MACKILLIGIN,
*Inspector of Mines and
Petroleum Technologist.*

2nd April, 1938.

APPENDIX A.

No.	Company.	Nature of tenure of lands on which operations took place.		Disposal of Oil.		Remarks.
1	Acme Oil Co., Ltd.	Private Lands	Guapo	...	...	Developing land formerly operated by F. W. Mitchell. A small amount of footage drilled. Company is now in voluntary liquidation.
2	Antilles Petroleum Co. (Trinidad), Ltd.	do.	Brighton, Vessigny, Pt. Ligoure	Crude exported	...	Both footage drilled and production obtained were considerably in excess of those for 1936.
3	Apex (Trinidad) Oilfields, Ltd.	Crown Oil Rights under lease Prospecting Licence and Private Lands	Fyzabad and Siparia	Crude oil sold to Trinidad Leaseholds, Ltd. Casing Head Gasolene sold to United British Oilfields of Trinidad, Ltd.	...	The footage drilled showed a considerable increase, and the production a slight increase over those for 1936.
4	Coldan Co., Ltd.	Private Lands	Fyzabad	Refined	...	A small amount of footage was drilled. Production decreased.
5	Colonial Oil Co., Ltd.	do.	do.	...	...	One well started.
6	Kern Trinidad Oilfields, Ltd.	Crown Lands under Lease Private Lands	Guapo and Rousillac	Some exported	...	Footage was increased and production maintained at last year's level.
7	New Dome Oilfields, Ltd.	Private Lands	Fyzabad	...	...	A small amount of footage was drilled and production maintained.
8	Petroleum Options (1925) Ltd.	do.	San Francique Moruga	Sold to Trinidad Leaseholds, Ltd.	...	A little exploratory drilling was done. Production decreased.
9	Premier (Trinidad) Oilfields, Ltd.	Crown Oil Rights under Lease	Palo Seco	...	...	Developing property formerly operated by C. C. Stollmeyer. One well was started during the year. Production decreased considerably.
10	Scottish (Trinidad) Oilfields, Ltd.	Private Lands	Rio Claro	...	...	One well drilled. No production.
11	Siparia Trinidad Oilfields, Ltd.	Crown Oil Rights under Lease	Palo Seco Morne Diablo	Sold to Trinidad Leaseholds, Ltd.	...	Both footage drilled and production obtained showed an increase over figures for 1936.

Appendix A.—Continued.

No.	Company.	Nature of tenure of lands on which operations took place.	Disposal of Oil.	Remarks.	
12	Trinidad Central Oilfields, Ltd. ...	Crown Oil Rights under Lease	Barrackpore, Guapo Lizard Springs, Tabaquite	Production from Barrackpore and Guapo sold to Trinidad Leaseholds, Ltd. Production from Lizard Springs and Tabaquite refined and sold locally	Both production and footage at Barrackpore considerably increased. Production from Tabaquite and Lizard Springs declined.
13	Trinidad Consolidated Oilfields, Ltd. ...	Crown Oil Rights under Lease and Private Lands	Fyzabad	Sold to Trinidad Leaseholds, Ltd. ...	An active drilling programme resulted in considerable increase in production.
14	Trinidad Investments, Ltd. ...	do.	Siparia	...	Exploratory drilling only. No production obtained.
15	Trinidad Lake Asphalt Operating Co., Ltd.	Crown Lands under Lease	Brighton	Pitch refined and exported	Producing and refining pitch only.
16	Trinidad Leaseholds, Ltd. ...	Crown Lands and Crown Oil Rights under Lease Private Lands	Barrackpore Fyzabad Guayaguayare	Pumped to Company's Refinery at Pointe-a-Pierre and there refined Most of the refined products are exported in bulk	The most important marketing and refining Company in the island; also the biggest producer. Both the footage drilled and production obtained have been increased this year.
17	Trinidad Oil Lands, Ltd. ...	Private Lands	Pointe Ligoure	Sold to United British Oilfields of Trinidad, Ltd.	A small amount of footage was drilled and a little production obtained.
18	Trinidad Oil Fields Operating Co., Ltd. ...	Crown Oil Rights under Lease and Private Lands	Palo Seco San Francique, Sobo	Refined and exported	A small amount of footage drilled. Production decreased.
19	Trinidad Petroleum Development Co., Ltd.	do.	Siparia, Palo Seco	Sold to United British Oilfields of Trinidad, Ltd.	A very considerable increase in production was obtained from the Siparia Field. Palo Seco production declined slightly.
20	Turner, Charles ...	Private Lands	Fyzabad	Sold to Trinidad Oil Fields Operating Co., Ltd.	One well drilled.
21	United British Oilfields of Trinidad, Ltd. ...	Crown Oil Rights under Lease Private Lands	Cedros, Morne L'Enfer Forest Reserve Point Fortin, Penal	Pumped to Company's Refinery at Point Fortin and there refined	Both footage drilled and production obtained showed an increase on those for 1936.

APPENDIX B.

HON. INSPECTOR OF MINES AND PETROLEUM TECHNOLOGIST.

The production of crude oil reached the record figure of 15,502,989 barrels, which is an increase of 17.12 per cent. over that for 1936. The footage drilled was 911,575 feet. This is also a record and 53.32 per cent. greater than that in 1936.

A comparison of footage and production figures for 1936 and 1937 is given below:—

	Footage.		Production.	
	1936.	1937.	1936.	1937.
Crown	235,804	345,393	5,982,993	7,128,085
Alienated	145,554	162,804	2,199,025	2,615,207
Private	213,171	403,378	5,055,012	5,759,697
	<u>594,529</u>	<u>911,575</u>	<u>13,237,030</u>	<u>15,502,989</u>

DRILLING.—During the year 289 wells were started bringing the total number of wells started in the Colony to 2,705 at the end of the year. The following table gives an analysis of the drilling operations carried out during the year.

	Crown.	Alienated.	Private.	Totals.
Unfinished at end of 1936	22	6	21	49
Started in 1937	92	46	151	289
	<u>114</u>	<u>52</u>	<u>172</u>	<u>338</u>
Completed as Oil Wells	87	38	124	249
Completed Water Wells	5	5	—	10
Completely abandoned	1	3	11	15
Unfinished at end of 1937	21	6	37	64
Old Wells abandoned in 1937... ..	—	1	1	2
Old Wells Re-completed in 1937	7	12	11	30

At the end of the year the deepest well in the Colony was 9,039 feet deep.

There were 199 wells over 4,000 feet deep, 59 over 5,000 feet, 26 over 6,000 feet, 12 over 7,000 feet, 3 over 8,000 feet and 1 over 9,000 feet.

Although a number of deep wells were drilled during the year, the average depth of completions was just over 300 feet per well less than last year. This was due to an active shallow drilling programme on three fields.

In 1936 the Monthly Returns showed that the average number of rigs running was 32, the total footage made during that year being 594,529 feet or an average of 18,579 feet per rig. During the year under review the footage drilled was 911,575 feet, while the average of the Monthly Returns of rigs running was 36, giving an average footage of 25,321 feet per rig. This increase is also largely due to shallow drilling.

A number of new rigs were imported to the Colony during the year, most of which were of a heavier type than was in use last year.

The use of Rotary Tables with directly coupled engines noticeably increased.

Deviation tests were taken at frequent intervals while drilling by the more important Companies who appreciate that the slight delay in drilling occasioned by these tests is more than offset by the insurance they provide against casing and production troubles due to crooked holes, and by the more accurate interpretation which can be put on the geological records with their help.

Of the 911,575 feet drilled during the year, over 850,000 feet were surveyed by electrical methods. While electrical logging of bore holes has resulted during the last few years in a considerable decrease in the amount of footage cored, frequent mechanical coring is still done by the larger Companies in order to obtain palaeontological data.

Multiple stage cement jobs became more frequent during the year.

Samples of water from 26 wells were analysed by this office during the year for those operators who do not undertake this type of work themselves.

Variations in composition of salt waters have been found in several fields to be related to faulting.

PRODUCTION.—The number of wells producing per month ranged from 1,108 to 1,235, the average being 1,170 per month.

The following Table gives an analysis of the average number of producers per month and a comparison with the three previous years:—

	1934	1935	1936	1937
Wells Flowing	222	235	273	357
Wells Pumping	465	466	469	491
Wells Bailing or Swabbing	140	146	140	139
Wells on Air or Gas Lift	70	105	107	100
Wells on Plunger Lift	—	8	38	68
Wells on Displacement Pumps	9	14	14	15
	<u>906</u>	<u>974</u>	<u>1,041</u>	<u>1,170</u>

The Fyzabad Structure contributed 53.47 per cent. of the total production of the Colony.

During the year under review the gas actuated Plunger Lift came into more general use, the number of units increasing from 38 in December, 1936, to 85 in December, 1937. Nearly 75% of these were being operated by one company. It is surprising that this very efficient method of lifting oil has not been more widely applied.

One oil storage tank was struck by lightning during the year, the resulting fire being rapidly extinguished. Five other fires occurred during the year, all of which were due to sabotage. One resulted in the destruction of 100-barrel oil tank, and another in the collapse of a wooden derrick. The damage done by the other three was negligible.

Band Wheel Pumping Powers continued to replace older types of Central Pumping Power. One geared pumping power was put into operation during the year, and a second was being installed.

It is satisfactory to note that several Companies took considerable trouble to prevent pollution of streams by oil. It is hoped that other operators will follow their example, since there are several sections of coast line which are still being fouled by oil.

It is not generally appreciated how much oil can be saved if the well location drains to a pit where oil can be picked up.

In spite of more careful control of gas oil ratios, the gas produced was considerably in excess of the amount which could be usefully employed as fuel and for lifting purposes on the fields.

Three Companies continue to return surplus gas to formation. Temporary local shortage of gas on three fields was met by the purchase of gas from neighbours having a surplus.

The following Tables are attached :—

No. 1 showing the monthly drilling and production figures for 1937.

No. 2 showing the number of wells started and footage drilled since the commencement of the industry in 1867.

No. 3 showing the annual production since returns were first sent to the Government in 1908.

No. 4 showing the number of wells started annually and the status of these wells at the end of the year.

W. N. FOSTER,
Assistant Petroleum Technologist.

March, 1938.

**TABLE I.
DRILLING AND PRODUCTION RETURN FOR 1937.**

1937.	Wells started.			Wells completed as Producers.			Completed water wells.			Wells recompleted as Producers.			Wells abandoned.			Total wells started in Colony.	Footage drilled during month.	Production (barrels).	Flowing.			Pumping.			Bailing or swabbing.			Air or Gas Lift.			Plunger Lift.			Displacement pumping.	Total number of wells producing.			Grand Total.	Percentage wells producing to total wells drilled.		
	C	A	P	C	A	P	C	A	P	C	A	P	C	A	P				C	A	P	C	A	P	C	A	P	C	A	P	C	A	P		C	A	P				
Jan.	8	1	16	6	3	9			2	2	2				2,441	75,996	1,263,456	165	39	109	197	70	212	96			39	37	51	24	37	17	7	8	495	204	409	1,108	45.39		
Feb.	5	3	11	7	2	11			1	2	2	1			2,460	64,958	1,157,668	171	41	112	201	72	216	110			39	19	50	24	36	19	7	8	501	206	418	1,126	45.73		
March	8	6	10	8	4	9			2	3	1		2		2,484	77,417	1,287,097	172	39	111	206	74	220	92			40	35	53	20	37	21	7	9	505	210	421	1,136	45.73		
April	8	3	12	9	3	14	1		1	3			1		2,507	72,619	1,301,250	180	44	114	205	75	227	98			37	29	48	21	23	8	25	7	8	514	212	432	1,158	46.19	
May	8	4	16	4	2	12	1						1		2,535	85,426	1,351,198	177	43	123	204	75	220	103	1		37	29	51	21	23	9	25	7	8	515	216	434	1,165	45.96	
June	4	2	10	4	2	9									2,551	52,905	928,752	179	41	123	198	74	222	88			29	29	51	21	34	1	24	7	8	497	214	427	1,138	44.61	
July	9	2	14	10	2	14			1	1			1	2	2,576	66,273	1,377,549	184	43	130	200	75	226	106	1		41	29	45	23	34	2	23	7	8	522	213	451	1,186	46.04	
Aug.	6	7	16	5	2	8			1	3	2			2	2,605	93,347	1,433,474	186	46	140	198	73	214	94			39	28	44	19	64	1	22	7	8	512	211	442	1,165	44.72	
Sept.	11	5	12	10	9	16	1	1							2,633	80,465	1,358,600	190	56	142	194	69	211	94			42	31	46	21	64	2	20	7	8	515	220	444	1,179	44.78	
Oct.	11	3	16	7	3	7	1	1			1		1	2	2,663	91,794	1,393,317	192	50	144	195	72	223	102			43	31	44	22	65	3	24	6	8	526	225	464	1,215	45.63	
Nov.	7	5	11	7	1	8	1							3	2,686	86,049	1,300,720	189	51	155	197	71	223	115			43	30	47	20	75	0	23	6	8	538	225	472	1,235	46.00	
Dec.	7	5	7	10	5	7	2	1						1	2,705	64,326	1,349,908	198	54	147	185	68	234	105			43	30	42	23	75	5	23	5	8	525	224	478	1,227	45.36	
Totals	92	46	151	87	38	124	5	5	7	12	11	1	4	12	2,705	911,575	15,502,989	182	46	129	198	72	221	100	Average s			per m o n t h						7	8	514	215	441	1,170		
Grand Totals	289			249			10			30			17			2,705	911,575	15,502,989	357			491			139			100			68			15			1,170				

C=Crown. A—Alienated. P=Private.

W. N. FOSTER,
Asst. Petroleum Technologist.

TABLE 2.
COLONY OF TRINIDAD.
Number of Wells started and Footage Drilled Annually.

YEAR.	WELLS STARTED.								FOOTAGE DRILLED.						YEARLY TOTALS.	CUMULATIVE.
	CROWN.		ALIENATED.		PRIVATE.		TOTALS.		CROWN.		ALIENATED.		PRIVATE.			
	Annual.	Cum.	Annual.	Cum.	Annual.	Cum.	Annual.	Cum.	Annual.	Cum.	Annual.	Cum.	Annual.	Cum.		
1867	—	—	—	—	1	1	1	1	—	—	—	—	964	964	964	964
1900	—	—	—	—	1	2	1	2	—	—	—	—	600	1,564	600	1,564
1902	1	1	—	—	2	4	3	5	600	600	—	—	1,315	2,879	1,915	3,479
1903	1	2	—	—	—	4	1	6	1,172	1,772	—	—	1,060	3,939	2,232	5,711
1904	1	3	—	—	—	4	1	7	860	2,632	—	—	—	3,939	860	6,571
1905	—	3	—	—	—	4	—	7	—	2,632	—	—	—	3,939	—	6,571
1906	1	4	—	—	2	6	3	10	1,104	3,736	—	—	1,499	5,438	2,603	9,174
1907	1	5	—	—	2	8	3	13	798	4,534	—	—	1,563	7,001	2,361	11,535
1908	—	5	—	—	4	12	4	17	—	4,534	—	—	2,352	9,353	2,352	13,887
1909	—	5	—	—	6	18	6	23	—	4,534	—	—	5,362	14,715	5,362	19,249
1910	5	10	—	—	7	25	12	35	3,771	8,305	—	—	4,319	19,034	8,090	27,339
1911	8	18	—	—	38	63	46	81	4,902	13,207	—	—	34,010	53,044	38,912	66,251
1912	10	28	—	—	35	96	45	126	6,839	20,046	—	—	32,881	85,925	39,720	105,971
1913	25	53	—	—	18	114	43	169	13,813	33,859	—	—	26,388	112,313	40,201	146,172
1914	50	103	—	—	16	132	66	235	35,146	69,005	—	—	23,283	135,596	58,429	204,601
1915	31	134	—	—	19	151	50	285	29,208	98,213	—	—	25,652	161,248	54,860	259,461
1916	28	162	—	—	20	171	48	333	30,866	129,079	—	—	28,035	189,283	58,901	318,362
1917	38	200	—	—	6	177	44	377	41,227	170,306	—	—	9,557	198,840	50,784	369,146
1918	38	238	—	—	4	181	42	419	47,700	218,006	—	—	6,796	205,636	54,496	423,642
1919	40	278	—	—	13	194	52	471	49,741	267,747	—	—	16,769	222,405	66,510	490,152
1920	43	321	1	1	23	217	68	539	53,002	320,749	1,665	1,665	24,009	246,414	78,676	568,828
1921	49	370	4	5	32	249	85	624	71,318	392,067	2,896	4,561	44,631	291,045	118,845	687,673
1922	68	438	4	9	20	269	91	715	88,299	480,366	8,701	13,262	39,463	330,508	136,463	824,136
1923	70	508	5	14	33	302	108	823	79,907	560,273	7,060	20,322	58,805	389,313	145,772	969,908
1924	67	575	8	22	34	336	110	933	90,141	650,414	6,190	26,512	55,197	444,510	151,528	1,121,436
1925	46	621	16	38	37	373	99	1,032	86,904	737,318	18,446	44,958	63,543	508,053	168,893	1,290,329
1926	69	690	13	51	46	419	128	1,160	109,234	846,552	18,732	63,690	72,691	580,744	200,657	1,490,986
1927	73	763	13	64	73	492	159	1,319	101,920	948,472	17,288	80,978	122,465	703,209	241,673	1,732,659
1928	43	806	33	97	64	556	139	1,458	71,481	1,019,953	58,842	139,820	112,863	816,072	243,186	1,975,845
1929	52	858	58	155	48	604	159	1,617	92,590	1,112,543	118,583	258,403	96,309	912,381	307,482	2,283,327
1930	76	934	31	186	56	660	163	1,780	170,389	1,282,932	85,561	343,964	116,706	1,029,087	372,656	2,655,983
1931	9	943	25	211	26	686	60	1,840	42,972	1,325,904	95,410	439,374	80,260	1,109,347	218,642	2,874,625
1932	21	964	20	231	20	706	61	1,901	44,568	1,370,472	67,162	506,536	61,557	1,170,904	173,287	3,047,912
1933	36	1,000	22	253	23	729	81	1,982	85,946	1,456,418	87,550	594,086	62,206	1,323,110	235,702	3,382,614
1934	56	1,056	30	283	38	767	124	2,106	167,952	1,624,370	88,503	682,589	95,328	1,328,438	351,783	3,635,397
1935	55	1,111	46	329	38	805	139	2,245	185,788	1,810,158	142,722	825,311	107,789	1,436,227	436,299	4,071,696
1936	59	1,170	39	368	73	878	171	2,416	235,804	2,045,962	145,554	970,965	213,171	1,649,398	594,529	4,666,225
1937	92	1,262	46	414	151	1,029	289	2,705	345,393	2,391,355	162,804	1,133,769	403,378	2,052,776	911,575	5,577,800
		1,262		414		1,029		2,705		2,391,355		1,133,769		2,052,776		5,577,800

Cum = Accumulative.

W. N. FOSTER,
Asst. Petroleum Technologist.

TABLE 3.
Yearly Trinidad Production.

Year.	Crown.	Accu- mulative Total.	Alienated.	Accu- mulative Total.	Private.	Accu- mulative Total.	Yearly Totals.	Grand Accumu- lative Total.
1908	—	—	—	—	37	37	37	37
1909	—	—	—	—	47,295	47,332	47,295	47,332
1910	55	55	—	—	105,023	152,355	105,078	152,410
1911	3,994	4,049	—	—	217,298	369,653	221,292	373,702
1912	9,104	13,153	—	—	476,801	846,454	485,905	859,607
1913	52,153	65,306	—	—	533,029	1,379,483	585,182	1,444,789
1914	512,299	577,605	—	—	480,917	1,860,400	993,216	2,438,005
1915	392,389	969,994	—	—	512,330	2,372,730	904,719	3,342,724
1916	478,815	1,448,809	—	—	449,060	2,821,790	927,875	4,270,599
1917	1,065,945	2,514,754	—	—	536,357	3,358,147	1,602,302	5,872,901
1918	1,588,805	4,103,559	—	—	493,115	3,851,262	2,081,920	7,954,821
1919	1,539,973	5,643,532	—	—	301,063	4,152,325	1,841,036	9,795,857
1920	1,758,039	7,401,571	—	—	325,071	4,477,396	2,083,110	11,878,967
1921	1,751,943	9,153,514	300	300	601,916	5,079,312	2,354,159	14,233,126
1922	1,534,796	10,688,310	147	447	909,727	5,989,039	2,444,670	16,677,796
1923	1,847,118	12,535,428	63,334	63,781	1,140,335	7,129,374	3,050,787	19,728,583
1924	2,410,737	14,946,165	76,467	140,248	1,570,856	8,700,230	4,058,060	23,786,643
1925	2,647,095	17,593,260	200,781	341,029	1,538,634	10,238,864	4,386,510	28,173,153
1926	2,630,100	20,223,360	310,953	651,982	2,030,426	12,269,290	4,971,479	33,144,632
1927	2,039,363	22,262,723	297,761	949,743	3,043,676	15,312,966	5,380,800	38,525,432
1928	2,652,981	24,915,704	1,470,333	2,420,076	3,561,273	18,874,239	7,684,587	46,210,019
1929	2,987,795	27,903,499	1,627,439	4,047,515	4,100,554	22,974,793	8,715,788	54,925,807
1930	3,429,030	31,332,529	1,831,338	5,878,853	4,158,589	27,133,382	9,418,957	64,344,764
1931	2,795,572	34,128,101	2,530,175	8,409,028	4,417,751	31,551,133	9,743,498	74,088,262
1932	3,200,083	37,328,184	2,410,813	10,819,841	4,515,225	36,066,358	10,126,121	84,214,383
1933	3,684,148	41,012,332	1,606,595	12,426,436	4,270,610	40,336,968	9,561,353	93,775,736
1934	4,586,366	45,598,698	1,805,178	14,231,614	4,502,819	44,839,787	10,894,363	104,670,099
1935	5,288,943	50,887,641	2,255,484	16,487,098	4,126,797	48,966,584	11,671,224	116,341,323
1936	5,982,993	56,870,634	2,199,025	18,686,123	5,055,012	54,021,596	13,237,030	129,578,353
1937	7,128,085	63,998,719	2,615,207	21,301,330	5,759,697	59,781,293	15,502,989	145,081,342

W. N. FOSTER,
Asst. Petroleum Technologist.

TABLE 4.

Table showing number of Wells started in each year and status of Wells at 31st December, 1937.

YEAR.	WELLS STARTED.			PRODUCING.			IDLE.			ABANDONED.			UNFINISHED.			TOTALS.			
	C	A	P	C	A	P	C	A	P	C	A	P	C	A	P	Producing.	Idle.	Aban- doned.	Un- finished.
1867	—	—	1							—	—	1				—	—	1	
1900	—	—	1							—	—	1				—	—	1	
1902	1	—	2							1	—	2				—	—	3	
1903	1	—	—							1	—	—				—	—	1	
1904	1	—	—							1	—	—				—	—	1	
1905	—	—	—							—	—	—				—	—	—	
1906	1	—	2							1	—	2				—	—	3	
1907	1	—	2				—	—	2	1	—	—			—	2	1		
1908	—	—	4	—	—	1	—	—	—	—	—	3			1	—	3		
1909	—	—	6	—	—	3	—	—	1	—	—	2			3	1	2		
1910	5	—	7	—	—	1	3	—	1	2	—	5			1	4	7		
1911	8	—	38	—	—	4	4	—	8	4	—	26			4	12	30		
1912	10	—	35	1	—	8	4	—	3	5	—	24			9	7	29		
1913	25	—	18	10	—	6	4	—	2	11	—	10			16	6	21		
1914	50	—	16	12	—	7	15	—	2	23	—	7			19	17	30		
1915	31	—	19	8	—	7	13	—	11	10	—	1			15	24	11		
1916	28	—	20	7	—	11	11	—	5	10	—	4			18	16	14		
1917	38	—	6	16	—	1	7	—	2	15	—	3			17	9	18		
1918	38	—	4	16	—	—	11	—	—	11	—	4			16	11	15		
1919	40	—	13	17	—	1	13	—	3	10	—	9			18	16	19		
1920	43	1	23	15	—	5	13	—	3	15	1	15			20	16	31		
1921	49	4	32	17	—	9	17	—	7	15	4	16			26	24	35		
1922	68	4	20	24	1	5	24	—	4	20	3	11			30	28	34		
1923	70	5	33	23	1	9	20	—	7	26	4	17	1	—	33	27	47	1	
1924	67	8	34	23	—	7	26	1	15	18	7	12	—	—	30	42	37	—	
1925	46	16	37	21	3	11	13	2	12	12	11	14	—	—	35	27	37	—	
1926	69	13	46	17	2	22	31	3	13	21	8	11	—	—	41	47	40	—	
1927	73	13	73	17	2	33	30	8	17	26	3	23	—	—	52	55	52	—	
1928	43	33	64	17	23	29	15	7	24	11	3	11	—	—	69	46	25	—	
1929	52	58	48	19	31	27	18	21	11	15	6	10	—	—	77	50	31	—	
1930	76	31	56	31	17	23	32	9	18	12	5	14	1	—	71	59	31	2	
1931	9	25	26	4	13	19	3	10	3	2	2	4	—	—	36	16	8	—	
1932	21	20	20	11	12	13	6	8	4	4	—	3	—	—	36	18	7	—	
1933	36	22	23	14	9	16	12	12	4	7	1	3	3	—	39	28	11	3	
1934	56	30	38	38	22	29	9	6	6	6	2	3	3	—	89	21	11	3	
1935	55	46	38	37	31	30	12	13	4	3	2	2	3	—	98	29	7	5	
1936	59	39	73	45	31	51	10	4	9	3	4	4	1	—	127	23	11	10	
1937	92	46	151	66	34	92	17	4	24	—	2	10	9	6	25	192	45	12	40
Totals	1,262	414	1,029	526	232	480	393	108	225	322	68	287	21	6	37	1,238	726	677	64
	=			=			=			=			=			=			
	2,705			1,238			726			677			64			2,705			

C= Crown. A= Alienated. P= Private.

March, 1938.

W. N. FOSTER,
Asst. Petroleum Technologist.

APPENDIX C.

Statement of the Quantity and Value of Minerals obtained and the Daily Average Number of Persons employed in the Petroleum, Asphalt and Quarry Industries during the years 1936 and 1937.

Industry.	1936					1937				
	Quantity.	Approximate Value.*	Daily average number of persons employed.			Quantity.	Approximate Value.*	Daily average number of persons employed.		
			Males.	Females.	Total.			Males.	Females.	Total.
Petroleum	13,237,030 brls.	\$10,254,853 96	7,680	116	7,796	15,502,989 brls.	\$12,404,477 66	9,957	127	10,084
Asphalt (a)	91,333 tons	273,999 00	640	2	642	118,474 tons	355,422 00	650	2	652
Private Quarries (Limestone, Gravel, &c.)	257,333 tons	120,625 95	761	226	987	336,462 tons	139,204 94	624	225	849
Government Quarries (Limestone, Gravel, &c.)	67,714 tons	39,158 47	275	73	348	76,632 tons	47,098 97	198	77	275

15

* The values given are those returned by owners and managers and represent value at place of production.

(a) In addition to the figure shown against this item, the following quantities were extracted from the Pitch Lake by the Public Works Department for use on the roads of the Colony, viz. :—

1936 20,632 tons. 1937 27,430 tons.

APPENDIX D.

Rates of Wages and Hours of Labour employed on the Oilfields.

Class of Worker.	HOURLY WAGE.		DAILY WAGE.		Normal Weekly hours of Labour.	Explanatory Notes.
	Min. Cents	Max. per hour.	Min.	Max.		
Rigmen employed in Drilling ...	15	24	56 hours	<p><i>General Remarks.</i></p> <p>1. <i>Housing.</i> Accommodation is sometimes provided for those employees whose presence is required on the Fields.</p> <p>2. <i>Medical attention.</i></p> <p>(a) In the case of accident arising from employment medical attention is usually free. In other cases the practice varies from Company to Company.</p>
Rigmen employed in Production ...	12	26	...	...	48 hours
Production men ...	9	17	...	...	56 hours
Rig Builders ...	12	26				
Blacksmiths ...	9	26				
Boilersmiths ...	9	26				
Cabinet Makers ...	9	26				
Carpenters ...	9	26				
Chauffeurs ...	14	26	\$1.25	\$2.00		
Electricians ...	9	26				
Firemen ...	9	20				
Fitters ...	9	26				
Masons ...	9	22				
Motor Mechanics ...	9	26			45 hours	
Moulders ...	9	22				
Painters ...	9	17				
Plumbers ...	9	26				
Riveters ...	9	26				
Tinsmiths ...	9	26				
Turners ...	9	26				
Welders ...	9	26				
Semi-skilled ...	9	22				
Unskilled ...	9	14				

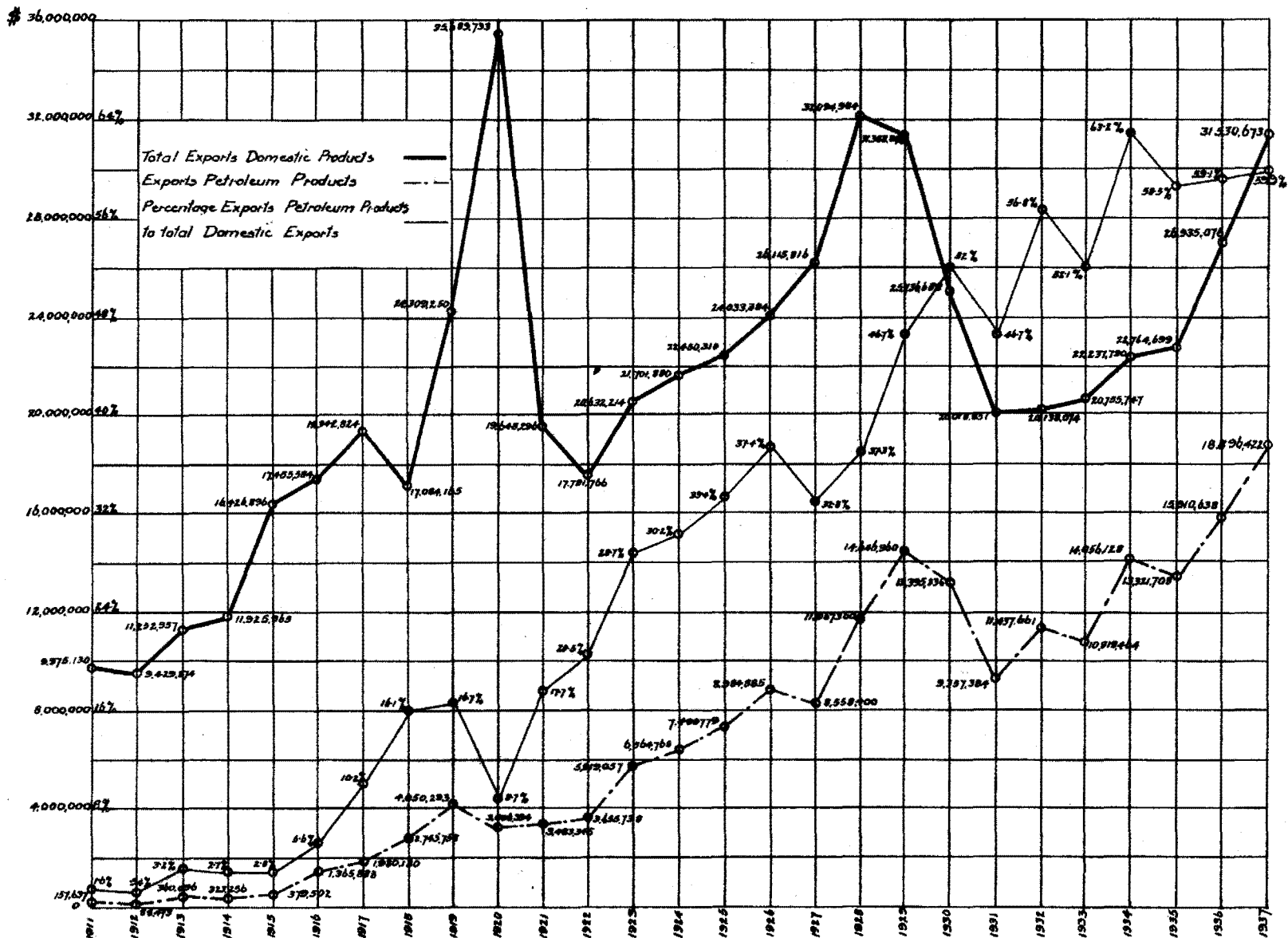
APPENDIX E.

Statement of Oil produced and exported year by year since the inception of the Petroleum Industry in the Colony.

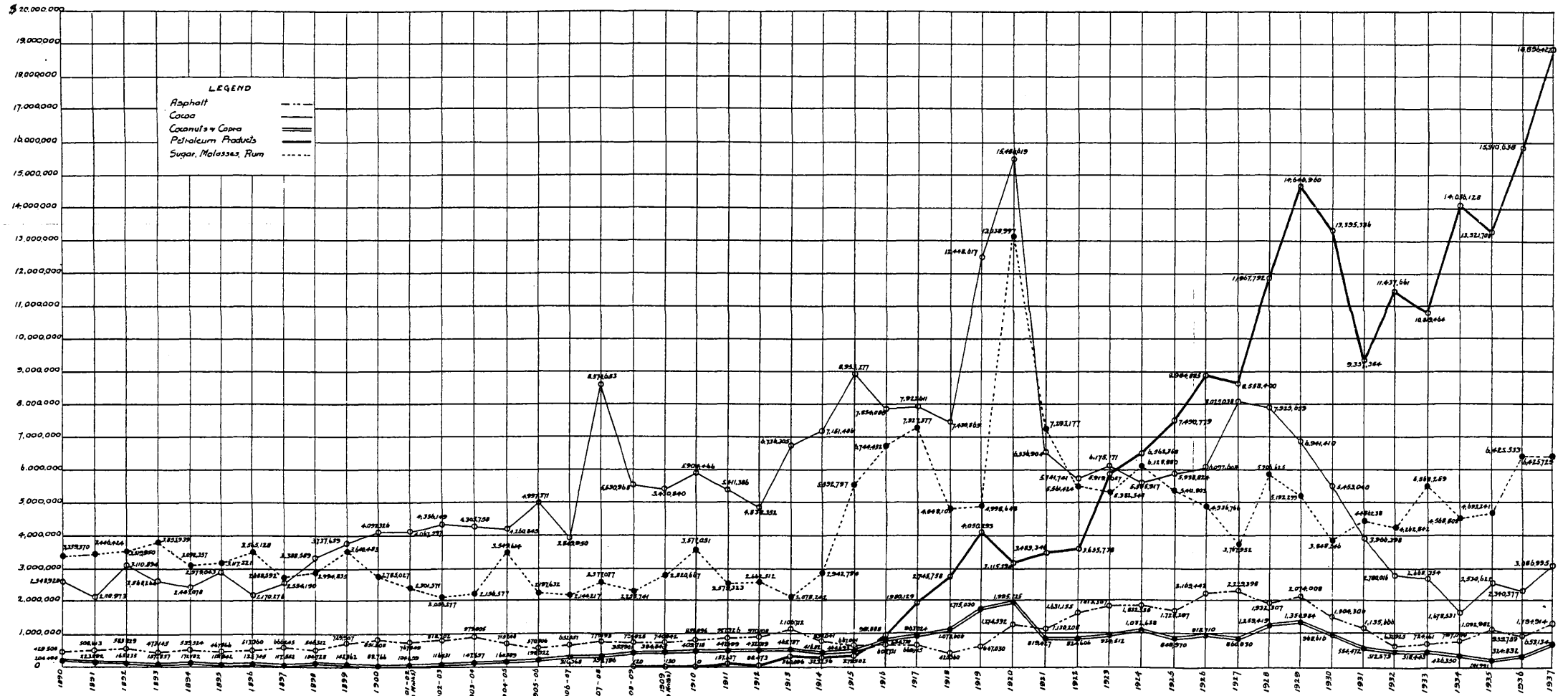
Year.	Production in barrels.	Quantity of Crude oil and refined oil exported in barrels.
1908	37	...
1909	47,295	46
1910	105,078	...
1911	221,292	219,582
1912	485,905	122,734
1913	585,182	387,719
1914	993,216	348,351
1915	904,719	408,188
1916	927,875	975,142
1917	1,602,302	1,079,369
1918	2,081,920	1,305,407
1919	1,841,036	1,406,264
1920	2,083,110	1,034,907
1921	2,354,159	1,223,346
1922	2,444,670	1,615,740
1923	3,050,787	2,432,470
1924	4,058,060	3,224,529
1925	4,386,510	3,606,608
1926	4,971,479	3,988,308
1927	5,380,800	4,456,770
1928	7,684,587	6,361,675
1929	8,715,788	8,243,023
1930	9,418,957	7,678,807
1931	9,743,498	8,964,303
1932	10,126,121	9,637,474
1933	9,561,353	8,909,298
1934	10,894,363	9,981,774
1935	11,671,224	10,993,540
1936	13,237,030	12,405,222
1937	15,502,989	14,124,056
	145,081,342	125,134,652

A
TRINIDAD AND TOBAGO

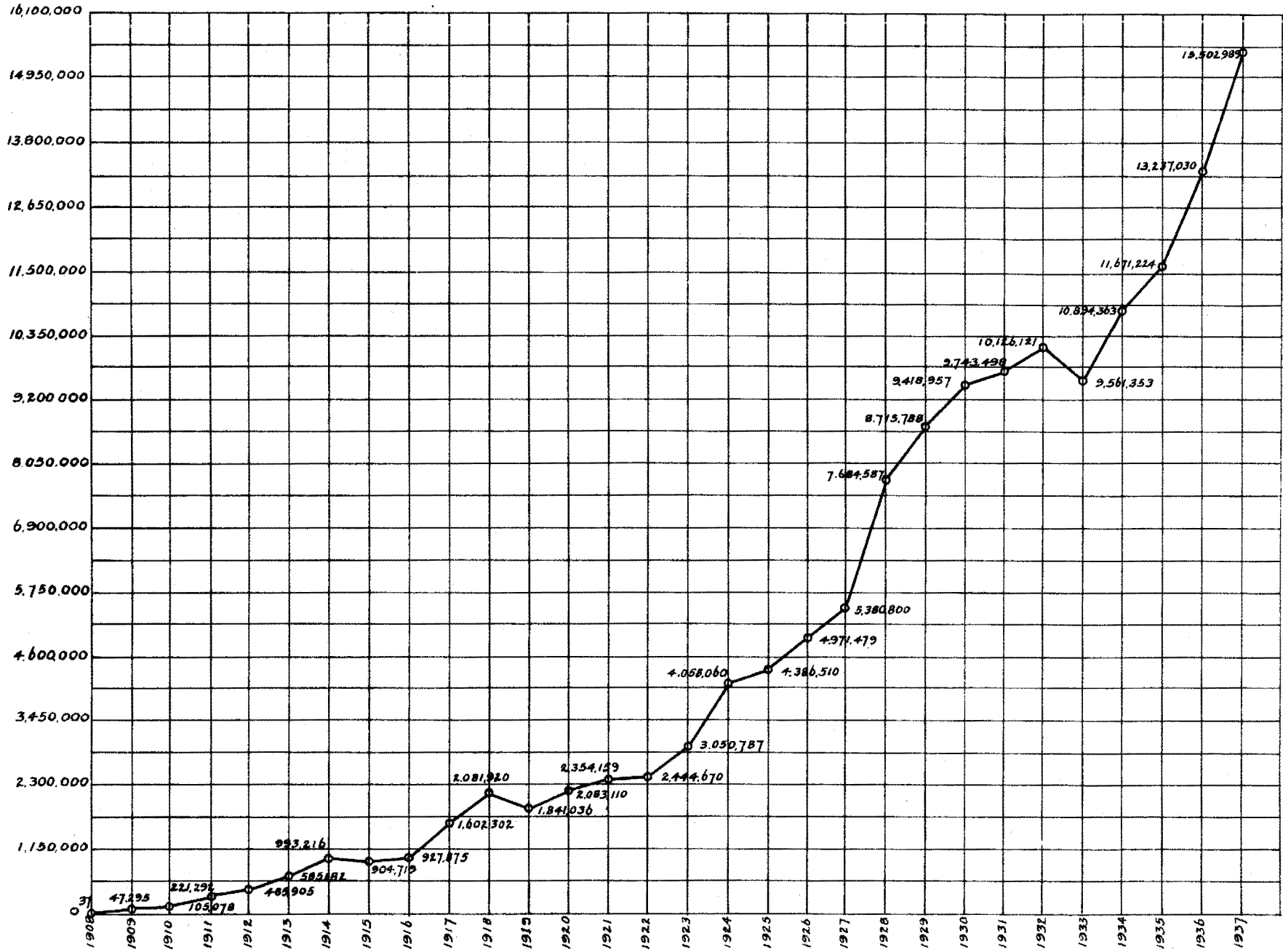
APPENDIX G.



"B"
EXPORT OF LOCAL PRODUCE



C
 Total Annual Production of Crude Oil in Barrels
 One Barrel = 35 Imperial Gallons



D

Curve showing yearly output of Asphalt from the Colony
in Tons from 1st April 1911 to 31st December 1937

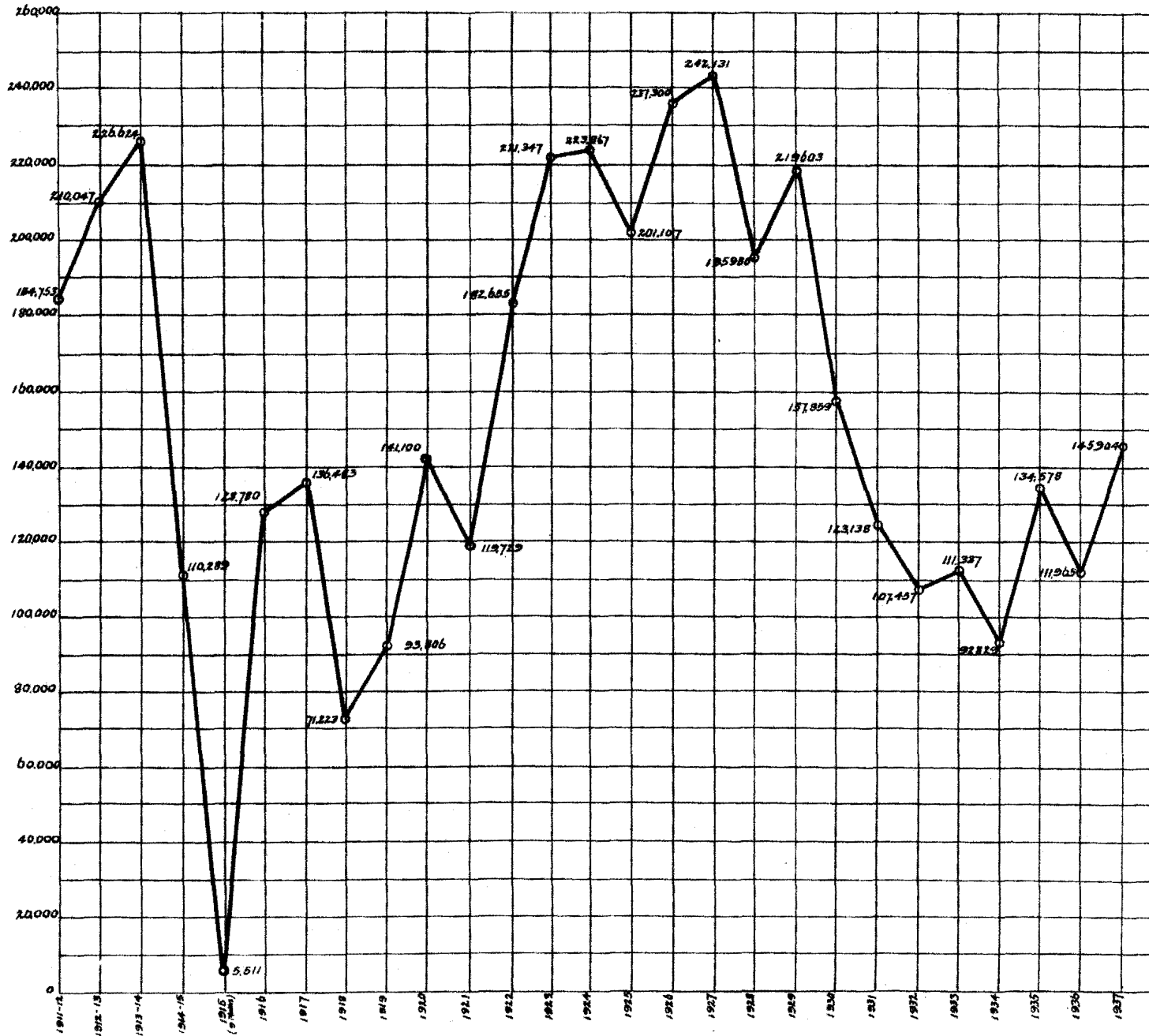
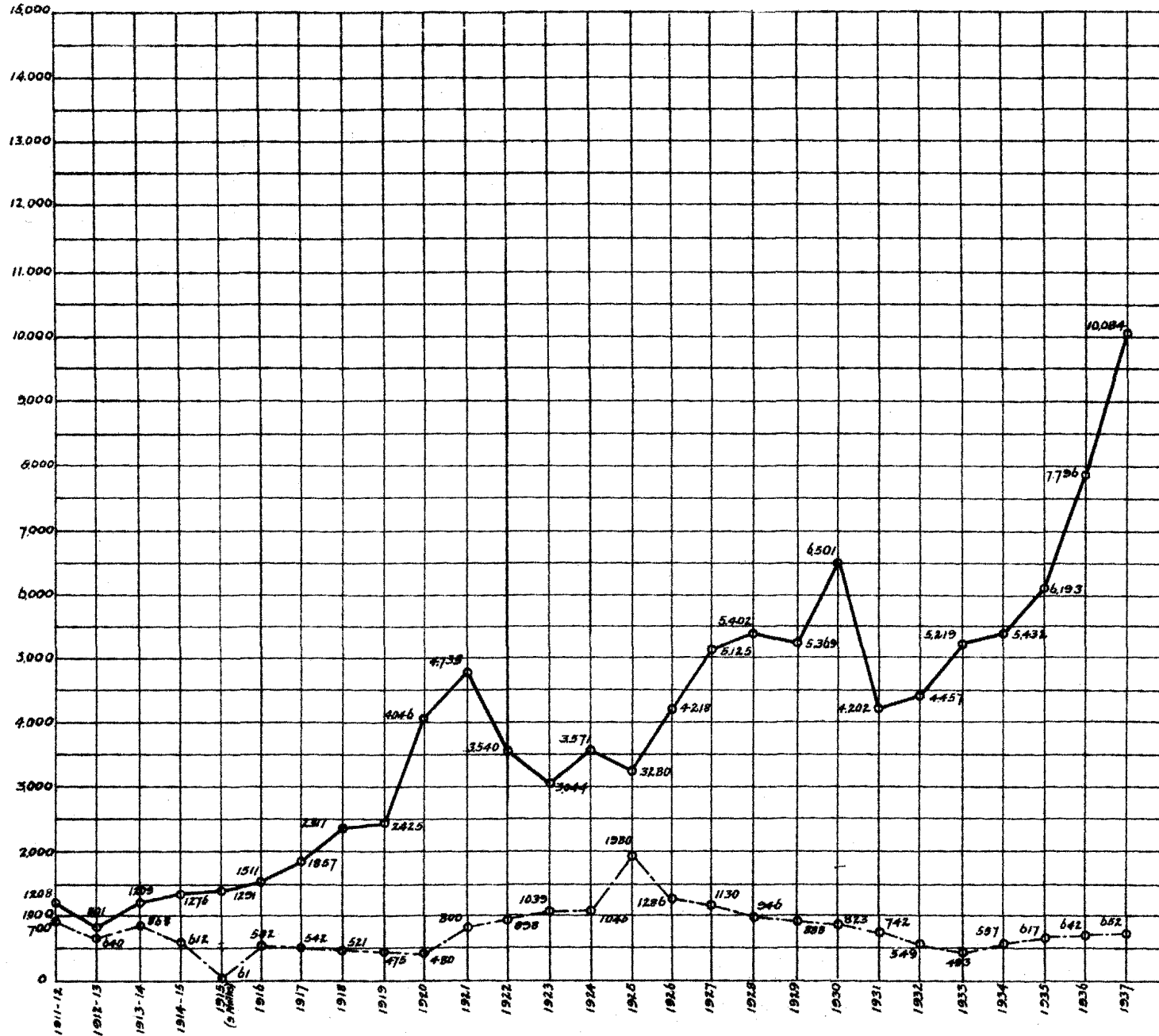
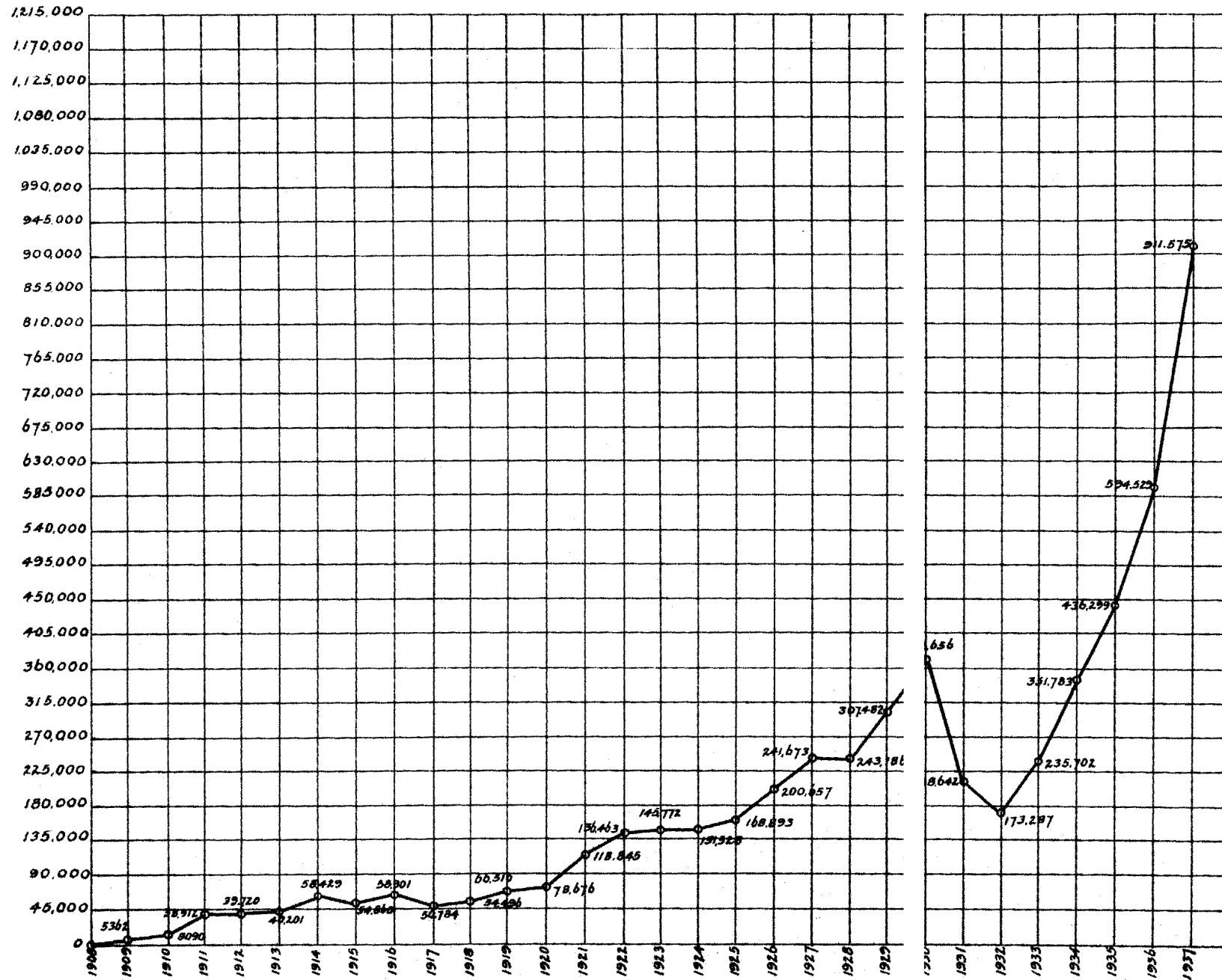


Chart showing comparison of daily average number of persons employed in the Oil and Asphalt Industries of the Colony from 1st April 1911 to 31st December 1937



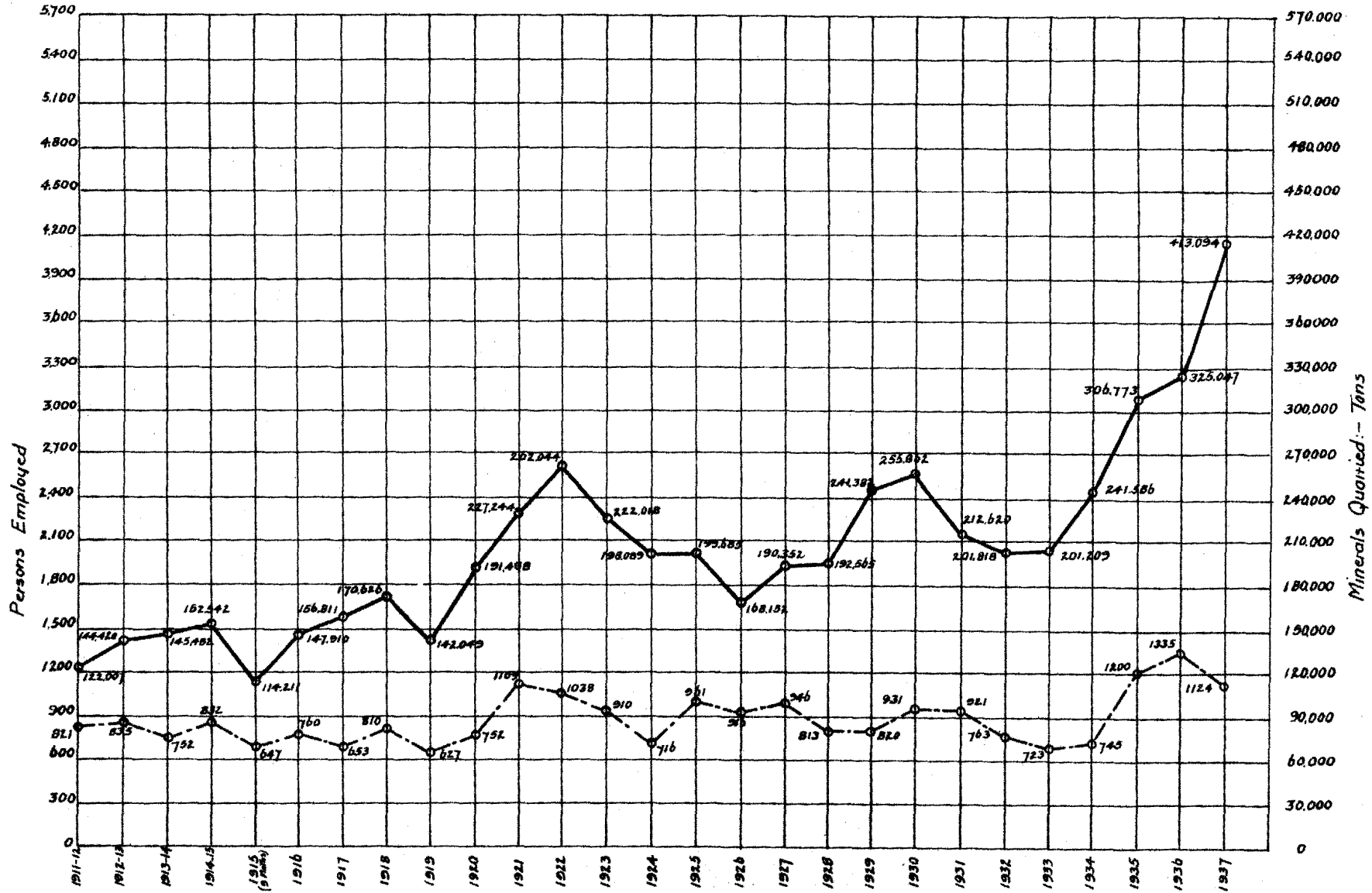
F
Total number of feet drilled annually
in the Colony



"G"

Chart showing the yearly total quantity of Minerals quarried and a comparison of the daily average number of persons employed in quarries in the Colony from 1st April 1911 to 31st December 1937

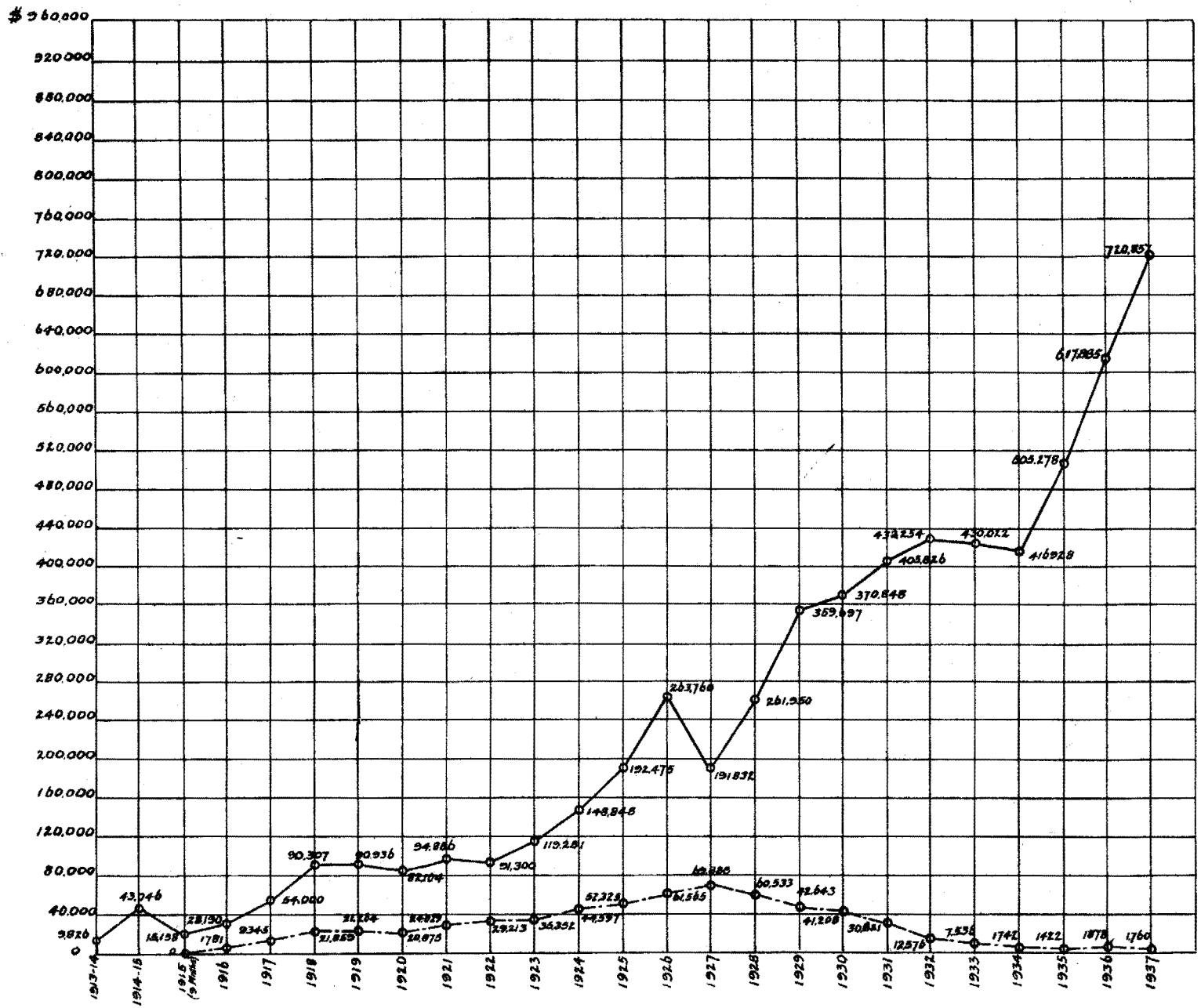
Minerals quarried — Persons employed - - -



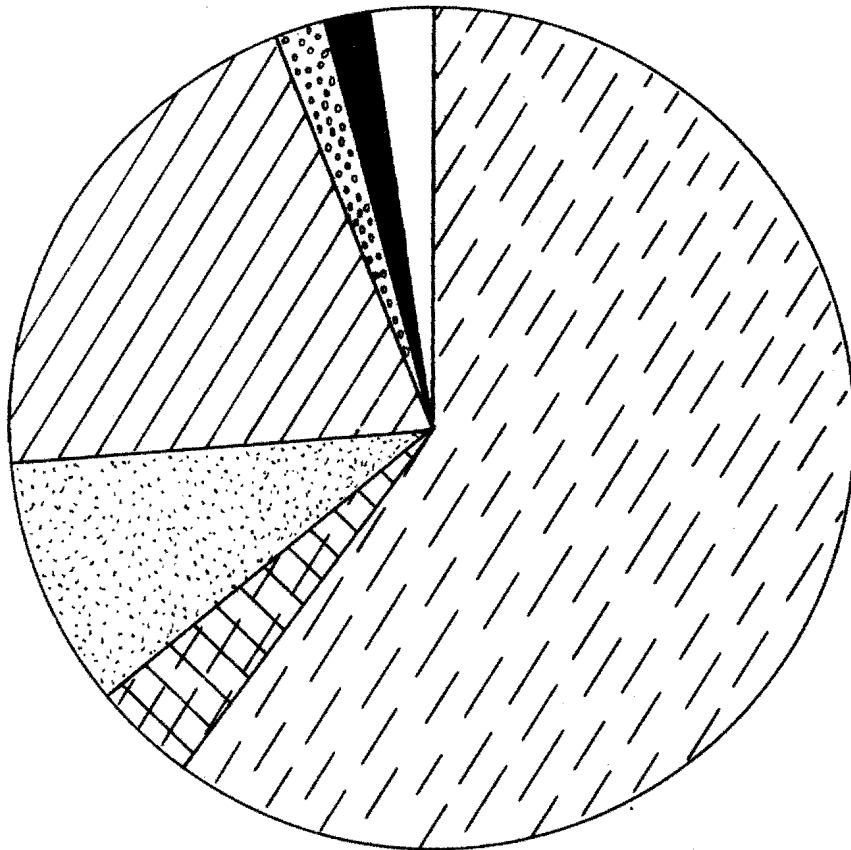
"H"







ROYALTY AND WAYLEAVE

Royalty shown thus ———
Wayleave - - - -



Appendix "H"



<u>Mineral Exports</u>	63.7%	
Petroleum Products	59.9	
Asphalt	3.8	
<u>Agricultural & other Exports</u>	36.3%	
Cocoa	9.8	
Sugar, Molasses, Rum	20.4	
Coconuts, Copra, Coconut Oil	2.1	
Fruit & Fruit Products	1.8	
Other Exports	2.2	