

TRINIDAD AND TOBAGO.

Council Paper No. 53 of 1939.

MINES.

Report of the Inspector of Mines and Petroleum Technologist
for 1938.

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1939.
TRINIDAD AND TOBAGO.
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Report of the Inspector of Mines and Petroleum Technologist
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Council Paper No. 58 of 1939.

M.P. No. 47854.

HON. ACTING COLONIAL SECRETARY,

I have the honour to submit, for the information of His Excellency the Acting Governor, the following report on the work of the Mines Department for the year 1938.

THE PETROLEUM INDUSTRY.

2. The progress made by the Petroleum Industry of the Colony during the year 1938 has been entirely satisfactory and its activities in all branches have been well maintained. Towards the latter part of the year a fall in the price of crude oil and its products resulted in some curtailment of drilling programmes but such curtailment did not affect the production of crude oil which continued to show a steady increase with the result that a new production record was established in respect of the operations for the year 1938. There has been no abatement of interest in acquiring lands for oil development and the area now held under lease or licence shows a substantial increase as compared with the year 1937.

During the past year important additions and improvements to the larger refining installations have been completed and further considerable extensions are now under construction.

3. Exploration work both by geophysical methods (chiefly seismic) and also by actual drilling operations has continued to be actively pursued and various new areas remote from existing known oil bearing areas are now being tested.

4. PRODUCTION OF CRUDE OIL.—The total production of crude oil for the year 1938 amounted to 17,737,201 barrels, which is 2,234,212 barrels or 14.4 per cent. more than the production for 1937 and is the highest yet recorded in the Colony.

The Fyzabad structure continues to maintain its supremacy as the largest producing structure in the Colony and during the year under review it contributed 45.5 per cent. of the total production as compared with 53.47 per cent. for the previous year.

5. DRILLING.—During the year 1938—279 new wells were commenced, compared with 289 during 1937. The total number of wells commenced in the Colony to the end of 1938 is 2,984 of which 1,853 are on lands the oil rights of which are vested in the Crown and 1,131 are on private lands.

The number of feet drilled during 1938 amounted to 905,908, which represents a slight decrease of 5,667 feet, or 0.6 per cent. on the footage for 1937.

At the end of the year there were 34 wells over 6,000 feet deep, 18 over 7,000 feet deep, four over 8,000 feet deep and two over 9,000 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 1936, 1937 and 1938:—

Land.	Number of Feet Drilled.			Production in Barrels of 35 gallons.		
	1936	1937	1938	1936	1937	1938
Crown Oil Rights ...	381,358	508,197	592,042	8,182,018	9,743,292	11,640,696
Private Oil Rights ...	213,171	403,378	313,866	5,055,012	5,759,697	6,096,505
Total ...	594,529	911,575	905,908	13,237,030	15,502,989	17,737,201

7. OILFIELD OPERATORS.—The number of registered oilfield operators during the year was 23 of which 16 were active at the close of the year compared with 19 at the end of 1937.

8. PERSONS EMPLOYED.—The average number of persons employed in the Petroleum Industry during 1938 amounted to 14,199 per day as compared with 10,084 during 1937; this large increase being partly due to the inclusion of contract labour which has not been included in previous years.

9. LEASES AND LICENCES.—During the year 127* applications for mining leases and licences were received and eight Principal and nine Supplemental Mining Leases and one Exploration Licence were registered. The total number of mining leases and exploration licences registered at the end of the year amounted to 92, the details of which are as follows:—

	AREA.					
	Crown.			Alienated.		
	A.	R.	P.	A.	R.	P.
30 Mining Leases	114,431	0	13			
28 Mining Leases				36,939	2	16
20 Composite Mining Leases on Crown and Alienated Lands	17,447	3	04	23,681	1	32
14 Exploration Licences	243,520	3	25			
92 Total	375,399	3	02	60,621	0	08

*This includes supplemental applications.

10. TOTAL AREA UNDER LEASE OR LICENCE.—The total area under Crown and private leases on the 31st December, 1938, amounted to 567,084 acres (or 47.54 per cent. of the total area of Trinidad) made up as follows:—

	A.	R.	P.
Area of Crown Lands under Exploration Licence and Mining Lease	375,399	3	02
Area of Alienated Lands under Mining Lease the Oil rights of which are vested in the Crown	60,621	0	08
Area of privately owned oil rights under lease, according to details supplied by the oil companies	131,063	0	09
	567,083	3	19

11. REVENUE FROM ROYALTIES, WAYLEAVES AND FEES.—The revenue collected under these heads amounted to \$912,109.18 as compared with \$726,552.56 collected during the year 1937. For purposes of comparison, the following table shows the amounts collected under each head for the years 1936, 1937 and 1938:—

Heads.	Amounts Collected.					
	1936		1937		1938	
	\$	c.	\$	c.	\$	c.
Royalties in respect of oil produced from Crown and Alienated Lands	617,884	86	720,857	06	907,695	00
Wayleaves in respect of oil pipelines laid along public roads	1,877	76	1,759	50	1,774	18
Fees charged for pipelines crossing the Trinidad Government Railway and public roads	3,129	77	3,936	00	2,640	00
Total	622,892	39	726,552	56	912,109	18

12. REFINERIES.—Ten permits for the refining of oil were issued during the year under the Oil Mining and Refining Ordinance, Cap. 143. Of these permits five 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 23,600,000 barrels per annum. During 1938 a total quantity of 17,560,515 barrels of crude oil was refined, compared with 15,111,046 barrels during 1937.

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 285 miles of main oil pipelines have been laid down in the Colony. During the year twelve new permits under the Pipelines Ordinance, No. 29 of 1933 were issued and the total number of permits issued to date amounts to 197.

16. TANK STORAGE.—The total main tank storage capacity for petroleum in the Colony is approximately 4,777,173 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 1937, the amounts and values for the two years being as follows :—

1937	...14,124,056 barrels valued at \$18,896,422.
1938	...16,417,020 barrels valued at \$23,656,561.

Petroleum and its products continued to form the largest part of the Colony's exports in 1938, the value being more than four 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 73.46 per cent.

The value of the leading staple products of the Colony exported during 1938 is shown in the following table :—

<i>Staple Products Exported.</i>	<i>Value.</i>	<i>Percentage of total.</i>
Petroleum and its Products	\$23,656,561	70.11
Sugar, Molasses and Rum	5,156,718	15.28
Cocoa	2,369,286	7.02
Asphalt	1,131,078	3.35
Fruits and Fruit Products	617,034	1.83
Coconuts, Copra and Coconut Oil	235,389	0.70
Bitters	114,788	0.34
Coffee	40,504	0.12
Other Exports not enumerated	420,234	1.25
	<hr/> \$33,741,592 <hr/>	<hr/> 100.00 <hr/>

18. RETURNS.—The various returns submitted by the oil companies under the various Ordinances and Regulations in respect of their operations have been regularly received and after being checked 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 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 Acting Assistant Petroleum Technologist.

THE ASPHALT INDUSTRY.

21. The production of asphalt during the year amounted to 127,859 tons as compared with 145,904 tons for the year 1937, a decrease of 18,045 tons. The following table shows, comparatively, the quantity of asphalt produced and exported during the years 1936, 1937 and 1938 :—

	1936.	1937.	1938.
Production (in tons)	111,965	145,904	127,859
Export (in tons)	70,543	90,872	85,089

FACTORIES.

22. During the period under review 219 factories exclusive of oilfield machinery were in operation in Trinidad and Tobago. During the inspections of these factories by officers of this Department recommendations were made for ensuring the safety of the workmen, and such recommendations were at all times readily carried out by the Managers concerned.

QUARRIES.

23. The number of quarries worked during the past year was 124 as compared with 112 quarries in operation during the year 1937. 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 workman were usually carried out without delay.

ACCIDENTS.

24. All fatal and serious accidents which occurred on oilfields and in refineries factories and quarries during the period under review have been investigated, as in the past, by officers of this Department under the Mines, Borings and Quarries Ordinance, Cap. 142 and the Prevention of Accidents Ordinance, No. 28 of 1934, and, where necessary, recommendations have been made to the employers with the object of reducing the incidence of such accidents to a minimum. During the year 1938 nine fatal accidents occurred in the Petroleum Industry compared with eight for the year 1937 and three occurred in other industries. Practically all these accidents were due to carelessness on the part of the workmen concerned or were unavoidable.

PETROLEUM ORDINANCE, CAP. 145.

25. The premises where dangerous petroleum products are stored have been inspected, and all possible care has been taken to ensure safety. During the year 613 licences were issued for the storage and sale of petroleum and its products, the revenue derived from such licences amounting to \$2,270.40.

LEGISLATION.

26. An Ordinance No. 4 of 1938 to repeal and replace the Petroleum Office and Conservation Board Establishment Ordinance No. 8 of 1929 and to make further provision in relation to the Petroleum Office and the Conservation Board was passed by Legislative Council on the 1st April 1938 and came into force as from the 7th April, 1938.

The principal innovation introduced by this Ordinance is the obligation on the part of all persons operating for oil to deposit with the Treasurer the sum of Ten thousand dollars or an approved guarantee for that amount as a security for the observance and performance of any of the obligations imposed on them by any law relating to oil mining operations.

APPENDICES.

27. Appendix "A" shows the list of oil and asphalt operators in the Colony during the year 1938.

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

29. 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.

30. Appendix "D" gives the Rates of Wages and Hours of Labour employed in the oilfields for the year 1938.

31. A statement of oil produced and exported is shown as Appendix "E".

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

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

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

STAFF.

35. On the 13th May, 1938, Mr. R. G. Ffoulkes-Jones was appointed to the vacant post of the 2nd Assistant Petroleum Technologist.

Mr. R. S. Mackilligin, Inspector of Mines and Petroleum Technologist, was granted 104 days vacation leave with effect from the 3rd June, 1938, and during his absence Mr. N. Betancourt, Assistant Inspector of Mines, acted as Inspector of Mines and Mr. W. N. Foster, Assistant Petroleum Technologist, acted as Petroleum Technologist.

Mr. W. N. Foster, Assistant Petroleum Technologist, was granted 84 days vacation leave with effect from the 11th December, 1938 and in his absence, Mr. R. G. Ffoulkes-Jones, 2nd Assistant Petroleum Technologist, carried out the duties of Assistant Petroleum Technologist.

During the period 5th December, 1938 to the 30th January, 1939, Mr. C. Niles, 2nd Class Clerk in the Petroleum Office, San Fernando, was seconded for duty as Shorthand Writer to the Oilfields Arbitration Tribunal.

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.

22nd April, 1939.

APPENDIX A.

No.	Company.	Nature of tenure of lands on which operations took place.	District in which operations took place.	Disposal of Oil	Remarks.
1	Acme Oil Co. Ltd.	Private Lands	Guapo ... ..	...	Land formerly operated by F. W. Mitchell. No drilling during the year. A small production obtained. Company in voluntary liquidation and field now closed down.
2	Antilles Petroleum Co. (Trinidad) Ltd.	Private Lands	Brighton, Vessigny, Pt. Ligoure, Erin	Crude exported	Production and footage drilled both showed large decreases compared with 1937. Some exploratory drilling carried out.
3	Apex (Trinidad) Oilfields, Limited	Private Lands, Crown Lands and Crown Oilrights under Lease	Fyzabad and Siparia	Crude sold to Trinidad Leasehold, Ltd. Casing head gasolene sold to United British Oilfields of Trinidad, Limited	Decrease in footage drilled but production showed only slight decrease. Second largest producer in Colony.
4	Coldan Company Limited	Private Lands	Fyzabad	Refined	Small amount of footage drilled. Production decreased considerably. Field and refinery now shut down.
5	Colonial Oil Company Limited	Private Lands	do. ... ..	...	No footage or production. ∞
6	Golding, C. B.	do.	Boodoosingh ... ..	...	Commenced operations in November. Very small footage and production.
7	Kern Trinidad Oilfields, Limited	Private Lands, Crown Lands and Crown Oilrights under Lease	Guapo, Rousillac	Some exported. Some sold to Trinidad Leaseholds, Ltd. and some to United British Oilfields of Trinidad, Ltd.	Small increase in footage drilled. Appreciable increase in production.
8	New Dome Oilfields, Limited	Private Lands	Fyzabad	Sold to Trinidad Leaseholds, Limited	No footage. Decrease in production. Company now in voluntary liquidation and field shut down at end of year.
9	Petroleum Options (1925) Limited	do.	San Francique, Moruga	Sold to Trinidad Leaseholds, Limited	Some exploratory drilling carried out at Moruga. Production at San Francique showed appreciable decline.
10	Premier (Trinidad) Oilfields, Limited	Crown Lands under Lease	Palo Seco	Sold to Trinidad Leaseholds, Limited	Operated by Trinidad Petroleum Development Co. Ltd. Footage showed large increase. Production increased appreciably.
11	Scottish Trinidad Oilfields, Limited	Private Lands	Rio Claro ... ..	...	No production or footage.
12	Siparia Trinidad Oilfields, Limited	Crown Lands and Crown Oilrights under Lease	Palo Seco, Morne Diablo	Sold to Trinidad Leaseholds, Ltd.	Production and footage both showed small increases.

APPENDIX A.—Continued.

No.	Company.	Nature of tenure of lands on which operations took place.	District in which operations took place.	Disposal of Oil.	Remarks.
13	Trinidad Central Oilfields, Limited ...	Crown Lands under Lease	Barrackpore, Guapo Lizard Springs, Tabaquite	Production from Barrackpore and Guapo sold to Trinidad Leaseholds, Limited, that from Lizard Springs and Tabaquite refined and sold locally	Footage and production from Barrackpore showed appreciable increase. Guapo showed small decrease in both. No drilling at Lizard Springs or Tabaquite but small production maintained.
14	Trinidad Consolidated Oilfields, Limited	Private Lands, Crown Oilrights under lease	Fyzabad ...	Sold to Trinidad Leaseholds, Ltd. ...	Footage showed further appreciable increase and production small increase over previous year.
15	Trinidad Investments, Limited ...	Private Lands and Crown Oilrights under Lease	Siparia ...	...	No drilling or production during year.
16	Trinidad Lake Asphalt Operating Co. Ltd.	Crown Lands under Lease	La Brea ...	Pitch refined and exported ...	Operate for and refine pitch only.
17	Trinidad Leaseholds, Limited ...	Crown Lands and Crown Oilrights under Lease. Private Lands	Barrackpore, Fyzabad Guayaguayare	Pumped to Company's refinery at Pointe-a-Pierre. Most of refined products exported in bulk.	Markets locally in conjunction with Shell. Largest producers and refiners in Colony. Footage showed small increase. Production small decrease.
18	Trinidad Oil Lands, Limited ...	Private Lands ...	Point Ligoure ...	Sold to United British Oilfields of Trinidad, Limited.	No Footage. Production showed slight increase.
19	Trinidad Oil Fields Operating Co. Ltd.	Crown Oilrights under Lease Private Lands	Palo Seco San Francique Sobo	Refined and exported ...	A small amount of footage drilled. Production showed slight increase.
20	Trinidad Petroleum Development Co. Ltd.	Crown Lands and Crown Oilrights under Lease. Private Lands	Coora, Los Bajos Palo Seco	Sold to United British Oilfields of Trinidad, Limited	Footage drilled showed slight decrease. Production at Palo Seco showed a decrease but at Coora and Los Bajos large increases were obtained.
21	Trinidad Northern Areas, Limited ...	Private Lands, Crown Lands and Crown Oilrights under Lease	Talparo ...	...	Commenced operations in December. No production and only small footage obtained. Controlled by United British Oilfields of Trinidad, Limited and Trinidad Leaseholds, Limited.
22	Turner, Charles ...	Private Lands ...	Fyzabad ...	Sold to Trinidad Oilfields Operating Company, Limited.	Very small footage and production. Shut down at end of year.
23	United British Oilfields of Trinidad, Ltd.	Crown Lands and Crown Oilrights under Lease. Private Lands	Cedros, Morne L'Enfer Forest Reserve, Point Fortin, Penal	Pumped to Company's refinery at Point Fortin and refined there.	Footage shows small decrease but production large increase.
24	Zenith Trinidad Oilfields, Limited ...	Private Lands ...	Fyzabad ...	Sold to Trinidad Leaseholds, Limited ...	Started operations in January, 1938. Small footage drilled. Production obtained from two flowing wells.

APPENDIX "B."

HON. INSPECTOR OF MINES AND PETROLEUM TECHNOLOGIST.

The production of crude oil for the year under review reached a further high record of 17,737,201 barrels, an increase of 14.4 per cent. over the figure for 1937.

The footage drilled amounted to 905,908 feet, a small decrease of 0.6 per cent. on the previous year.

A comparison of footage and production figures for 1937 and 1938 is given below.

	Footage.		Production.	
	1937.	1938.	1937.	1938.
Crown	345,393	384,103	7,128,085	8,165,149
Alienated	162,804	207,939	2,615,207	3,475,547
Private	403,378	313,866	5,759,697	6,096,505
	<u>911,575</u>	<u>905,908</u>	<u>15,502,989</u>	<u>17,737,201</u>

DRILLING.—During the year 279 wells were started as compared with 289 in 1937, bringing the total number of wells started in the Colony to 2984 by the end of the year.

The following table gives an analysis of drilling operations carried out during the year.

	Crown.	Alienated.	Private.	1938	
				Totals.	1937 Totals.
Unfinished at end of 1937	21	6	37	64	49
Started during 1938	110	67	102	279	289
	<u>131</u>	<u>73</u>	<u>139</u>	<u>343</u>	<u>338</u>
Completed as oil producers	93	63	99	255	249
Completed Fresh Water Wells	5	4	1	10	10
Completed Dry Hole	0	1	1	2	—
Abandoned	10	4	17	31	15
Unfinished at end of 1938	23	1	21	45	64
Old Wells abandoned in 1938	6	2	6	14	2
Old Wells re-completed in 1938	12	3	14	29	30

The depth of the deepest well drilled in the Colony at the end of the year was still 9,039 feet. Another well drilled during the year, however, reached a depth of 9,033 feet.

There are now in the Colony two wells deeper than 9,000 feet, four deeper than 8,000 feet, 18 deeper than 7,000 feet and 34 deeper than 6,000 feet.

The average depth of completions during the year was about 70 feet less than in 1937.

During 1938 the average number of rigs running was 42. This gives an average footage per rig of 21,568 feet as compared with 25,231 feet per rig last year. At the end of the year only 35 rigs were in operation.

The testing of wells for deviation by running an acid bottle or some such similar device is now adopted as standard practice by all the larger companies whilst some companies find it advisable in certain fields to make directional surveys of all wells drilled.

A total of 807,103 feet or 89.1 per cent. of the footage drilled was surveyed by electrical methods. The difference is due almost entirely to the upper part of the hole cased off by the conductor string not being usually surveyed and it, therefore, appears from these figures that all operators fully appreciate the benefit gained from this device and have adopted its use as standard practice.

The use of the Wire Line Retractable Core Barrel, enabling cores to be taken without withdrawing the drillpipe, further increased during the year, whilst some companies also introduced a lateral wall sampling device. This enables samples of formation to be obtained from the walls of the hole after the well has been drilled.

The completion of wells by cementing blank strings of casing and gun-perforating at selected points opposite the productive horizons has found increasing popularity during the year. This method has met with much success and has certain distinct advantages in Trinidad where oil and watersands often exist in close proximity separated by only thin breaks of shale. Where sand conditions are bad, some operators have been very successful in controlling sand entry by using fine mesh screen pipe.

For exploratory work diesel driven rigs have been generally employed and three such rigs have been in operation for most of the year.

A few 136 feet steel derricks have been put into use during the year.

All operators now appreciate the value of maintaining drilling mud in good condition and most of them pay careful attention to its treatment whilst a few have on their Staffs men specially trained in this type of work.

The use of screens for the removal of drill cuttings from drilling mud showed a further increase during the year.

WATER ANALYSES.—Fourteen samples of water were analysed in this office during the year for those operators who have not the facilities for carrying out this type of work themselves.

PRODUCTION.—The number of wells producing per month ranged from 1213-1319, the average being 1260 per month.

The following table gives an analysis of the average number of producers per month and a comparison with the three previous years. In addition the quantity of production obtained by various methods during 1938 is shown.

	1935.	1936.	1937.	1938.	Production Barrels.
Wells Flowing	255	273	357	405	11,852,792
Wells Pumping	466	469	491	507	3,667,472
Wells on Plunger Lift	8	38	68	108	1,497,104
Wells on Air or Gas Lift	105	107	100	75	622,660
Wells on Displacement Pumps	14	14	15	8	32,671
Wells Bailing or Swabbing or Collected from Sumps	146	140	139	157	29,413
Light Fractions returned to Crude	—	—	—	—	35,089
	<u>974</u>	<u>1,041</u>	<u>1,170</u>	<u>1,260</u>	<u>17,737,201</u>

The Fyzabad structure still continues to be the main producing structure, and contributed 45.5 per cent. of the total production of the Colony. The Point Fortin and Coora Structures, however, both showed appreciable increases.

The number of wells on plunger lift again increased, the total number of units, including self-operated units, increasing from 85 in December 1937 to a maximum of 124 in November, 1938.

As will be seen from the accompanying Table No. 2 the Colony's production is obtained mostly from flowing wells and is made up as follows:—

Flowing	66.8 per cent.
Pumping	20.6 do.
Plunger Lift	8.5 do.
Air or Gas Lift	3.5 do.
Other Methods	0.6 do.

Two large and one small tank fires occurred during the year. Of these fires one was proved to be due to lightning. The fire, in each case, was confined within the firewalls surrounding the tank. No persons were injured and no damage was done to surrounding property.

One other small fire of unknown origin occurred at an old idle well. This was quickly extinguished.

Anti-pollution measures were pursued by some companies with the result that pollution of certain rivers improved considerably. It is to be regretted, however, that in other instances little work was done with the result that some rivers and parts of the foreshore are still being fouled by oil.

Seven fatal accidents occurred in the oilfields in the period under review.

The following tables are attached:—

No. 1.—Showing drilling summary for 1938.

No. 2.—Showing Production Summary for 1938.

No. 3.—Showing number of wells started and footage drilled since the commencement of the industry in 1867.

No. 4.—Showing the annual production since returns were first sent to the Government in 1908.

No. 5.—Showing the number of wells started annually and the status of these wells at the end of the year.

22nd March, 1939.

R. G. FFOULKES-JONES,
Acting Assistant Petroleum Technologist.

TABLE No. 2.
ANNUAL PRODUCTION SUMMARY BY MONTHS DURING 1938.

Month.	Light Fractions returned to crude.	FLOWING		GAS/AIR LIFT.		PUMPING.		PLUNGER LIFT.		DISPLACEMENT PUMP.			BAILING/SWABBING OR COLLECTED FROM SUMPS.			Total No. of Wells started in the Colony	Total No. of Wells	PRODUCTION.					Total Barrels.									
		Percentage.	No. of Wells.	Production.	Percentage.	No. of Wells.	Production.	Percentage.	No. of Wells.	Production.	Percentage.	No. of Wells.	Production.	Percentage.	No. of Wells.			Production.	Percentage.	No. of Wells.	Production.	Percentage.		No. of Wells.	Production.	Percentage.	No. of Wells.	Production.	Percentage.	No. of Wells.	Production.	
January	3,425	.2	385	913,520	66.3	90	59,450	4.3	488	276,579	20.1	88	117,915	8.6	13	4,499	.3	149	2,633	.2	1,213	2,733	44.4	517	640,673	216	259,295	480	478,653	1,378,021		
February	2,821	.2	387	857,377	65.7	82	57,143	4.4	493	273,802	21.0	89	108,140	8.3	12	4,092	.3	151	1,815	.1	1,214	2,755	44.1	522	593,157	208	246,759	484	465,274	1,305,190		
March	2,697	.2	392	933,276	4.8	86	55,313	3.8	505	318,690	22.2	94	121,886	8.5	10	4,360	.3	152	2,214	.2	1,239	2,779	44.6	528	627,720	216	288,979	495	521,737	1,438,436		
April	1,846	.1	386	917,933	64.8	76	55,759	3.9	515	312,187	22.0	93	125,992	8.8	6	2,832	.2	152	2,276	.2	1,228	2,801	43.8	514	644,092	211	267,280	503	507,453	1,418,825		
May	3,012	.2	384	969,904	65.5	82	56,220	3.8	503	312,775	21.2	105	134,929	9.0	5	1,652	.1	160	2,793	.2	1,239	2,828	43.4	502	643,931	227	295,886	510	541,468	1,481,285		
June	2,862	.2	394	943,228	65.9	76	51,510	3.6	490	299,556	21.0	109	130,010	9.0	6	1,819	.1	162	2,491	.2	1,237	2,847	43.4	496	619,286	231	289,871	510	522,319	1,431,476		
July	2,605	.2	406	994,518	66.4	61	46,800	3.0	508	310,056	20.7	117	141,660	9.4	6	2,155	.1	167	2,377	.2	1,266	2,877	44.0	517	665,955	226	310,827	522	523,389	1,500,171		
August	3,510	.2	414	998,160	66.4	71	50,732	3.3	507	315,319	20.9	121	133,298	8.8	8	2,517	.2	151	2,423	.2	1,272	2,899	43.9	509	685,831	242	310,753	521	509,375	1,505,959		
September	2,986	.2	416	1,037,567	68.6	64	41,899	2.8	521	302,995	20.0	120	123,627	8.0	8	2,218	.2	159	3,601	.2	1,288	2,927	44.0	532	708,228	233	297,105	523	509,560	1,514,893		
October	3,149	.2	427	1,076,693	67.7	69	48,063	3.0	531	336,374	21.0	119	125,972	7.9	8	2,169	.1	165	2,060	.1	1,319	2,946	44.8	559	773,214	237	292,114	523	529,152	1,594,480		
November	2,835	.2	440	1,051,989	70.0	73	44,597	3.0	510	280,079	18.6	124	119,644	7.9	8	1,683	.1	155	2,662	.2	1,310	2,966	44.2	556	756,139	245	282,291	509	465,059	1,503,489		
December	3,341	.2	429	1,158,627	69.7	73	55,174	3.3	516	329,060	19.7	123	114,031	6.8	8	2,675	.2	156	2,068	.1	1,305	2,984	43.7	547	807,523	250	334,387	507	523,066	1,664,976		
Totals	35,089	Average	.2 405	11,852,792	Average	66.8 75	622,660	Average	3.5 507	3,667,472	Average	20.6 108	1,497,104	Average	8.5 8	32,671	Average	.2 157	29,413	Average	.2 1,260	2,984	Average	44.0 525	8,165,149	Avg.	228	3,475,547	Avg.	507	6,096,505	17,737,201

TABLE 3.
COLONY OF TRINIDAD.
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	2	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	970,865	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	1,133,669	403,378	2,052,776	911,575	5,577,800
1938	110	1,372	67	481	102	1,131	279	2,984	384,103	2,775,458	207,939	1,341,608	313,866	2,366,642	905,908	6,483,708
		1,372		481		1,131		2,984		2,775,458		1,341,608		2,366,642		6,483,708

Cum = Cumulative.

R. G. FFOULKES-JONES
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TABLE 4.
Yearly Trinidad Production.

Year.	Crown.	Cumulative Total.	Alienated.	Cumulative Total.	Private.	Cumulative Total.	Yearly Totals.	Grand Cumulative 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
1938	8,165,149	72,163,868	3,475,547	24,776,877	6,096,505	65,877,798	17,737,201	162,818,543

R. G. FFOULKES-JONES,
Acting Asst. Petroleum Technologist.

TABLE 5.

Table showing number of Wells started in each year and status of Wells at 31st December, 1938.

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	2	—	5	2	—	7	4	—	26			7	9	30		
1912	10	—	35	1	—	6	4	—	6	5	—	23			7	10	28		
1913	25	—	18	7	—	6	7	—	2	11	—	10			13	9	21		
1914	50	—	16	11	—	8	16	—	1	23	—	7			19	17	30		
1915	31	—	19	7	—	8	14	—	10	10	—	1			15	24	11		
1916	28	—	20	7	—	11	11	—	5	10	—	4			18	16	14		
1917	38	—	6	14	—	2	9	—	1	15	—	3			16	10	18		
1918	38	—	4	15	—	—	12	—	—	11	—	4			15	12	15		
1919	40	—	13	15	—	1	15	—	3	10	—	9			16	18	19		
1920	43	1	23	14	—	3	15	—	5	14	1	15			17	20	30		
1921	49	4	32	17	—	9	17	—	7	15	4	16			26	24	35		
1922	68	4	20	23	1	5	24	—	4	21	3	11			29	28	35		
1923	70	5	33	25	1	8	18	—	8	26	4	17	1	—	34	26	47	1	
1924	67	8	34	24	—	7	23	1	15	20	7	12	—	—	31	39	39	—	
1925	46	16	37	17	3	9	17	2	14	12	11	14	—	—	29	33	37	—	
1926	69	13	46	14	2	19	34	3	16	21	8	11	—	—	35	53	40	—	
1927	73	13	73	13	3	32	31	7	17	29	3	24	—	—	48	55	56	—	
1928	43	33	64	12	19	21	20	10	32	11	4	11	—	—	52	62	26	—	
1929	52	58	48	17	23	23	20	29	15	15	6	10	—	—	63	64	31	—	
1930	76	31	56	30	10	20	33	16	21	12	5	14	1	—	60	70	31	2	
1931	9	25	26	4	12	16	3	11	6	2	2	4	—	—	32	20	8	—	
1932	21	20	20	11	12	9	6	8	8	4	—	3	—	—	32	22	7	—	
1933	36	22	23	12	8	12	14	14	8	7	—	3	3	—	32	36	10	3	
1934	56	30	38	33	22	24	14	6	10	6	2	4	3	—	79	30	12	3	
1935	55	46	38	31	25	26	18	18	8	3	3	2	3	—	82	44	8	5	
1936	59	39	73	38	31	44	16	4	16	4	4	10	1	—	113	36	18	4	
1937	92	46	151	63	32	111	28	12	24	1	2	12	—	—	206	64	15	4	
1938	110	67	102	74	58	60	16	4	19	9	4	12	11	1	11	192	39	25	23
Totals	1,372	481	1,131	551	262	510	460	145	292	338	73	308	23	1	21	1,323	897	719	45
	=2,984			=1,323			=897			=719			=45			=2,984			

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

R. G. FFOULKES-JONES,
Acting Asst. Petroleum Technologist.

March, 1939.

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 1937 and 1938.

Industry.	1937					1938				
	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	15,502,989 brls.	\$12,404,477 66	9,957	127	10,084	17,737,201 brls.	\$12,741,566 12	14,039	160	14,199
Asphalt (a)	118,474 tons.	355,422 00	650	2	652	104,680 tons	314,040 00	614	3	617
Private Quarries, (Limestone, Gravel, etc.)	336,462 tons	139,204 94	624	225	849	412,366 tons	160,401 57	665	239	904
Government Quarries (Limestone, Gravel, etc.)	76,632 tons	47,098 97	198	77	275	84,797 tons	5 259 93	265	91	356

* 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. :—

1937 27,430 tons 1938 23,179 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 per hour.	Max.	Min.	Max.		
Rigmen employed in Drilling	15	24	...	...	48-56 hrs.	<i>General Remarks.</i>
Rigmen employed in Production	12	26	...	...	48-56 hrs.	I. <i>Housing.</i>
Production men	9	17	...	...	48-56 hrs.	Accommodation is sometimes provided for those employees whose presence is required on the Fields.
Rig Builders	12	26			} 45-48 hrs.	
Blacksmiths	9	26	...	...
Boilersmiths	9	26				
Cabinet Makers	9	26				
Carpenters	9	26				2. <i>Medical attention.</i>
Chauffeurs	14	26				(a) In the case of accident arising from employment Medical attention is usually free. In other cases the practice varies from Company to Company.
Electricians	9	26				
Firemen	9	20				
Fitters	9	26				
Masons	9	22				
Motor Mechanics	9	26				
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
1938	17,737,201	16,417,020
	162,818,543	141,551,672

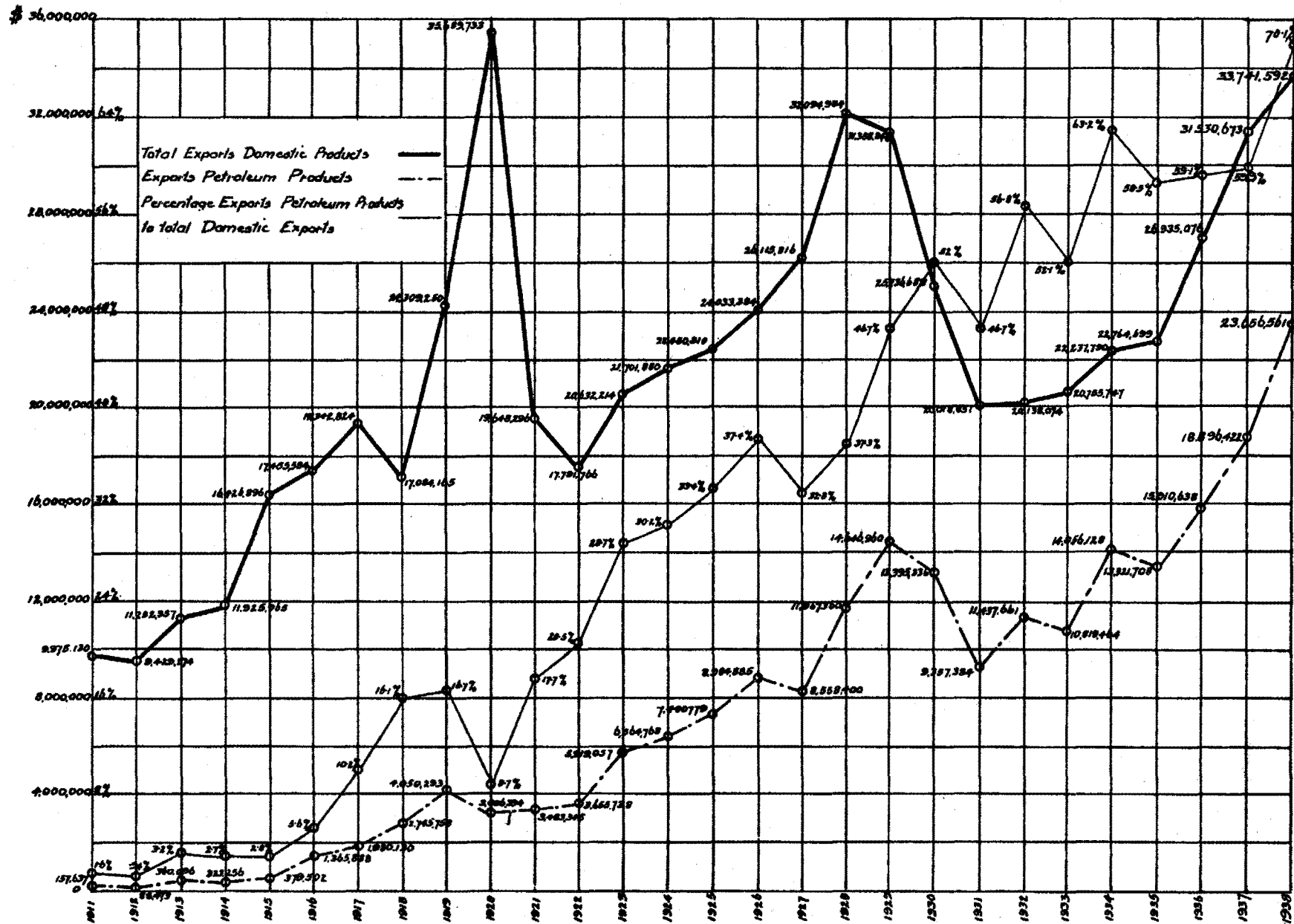
APPENDIX F.

Comparative Statement of Oil refined in the Colony.

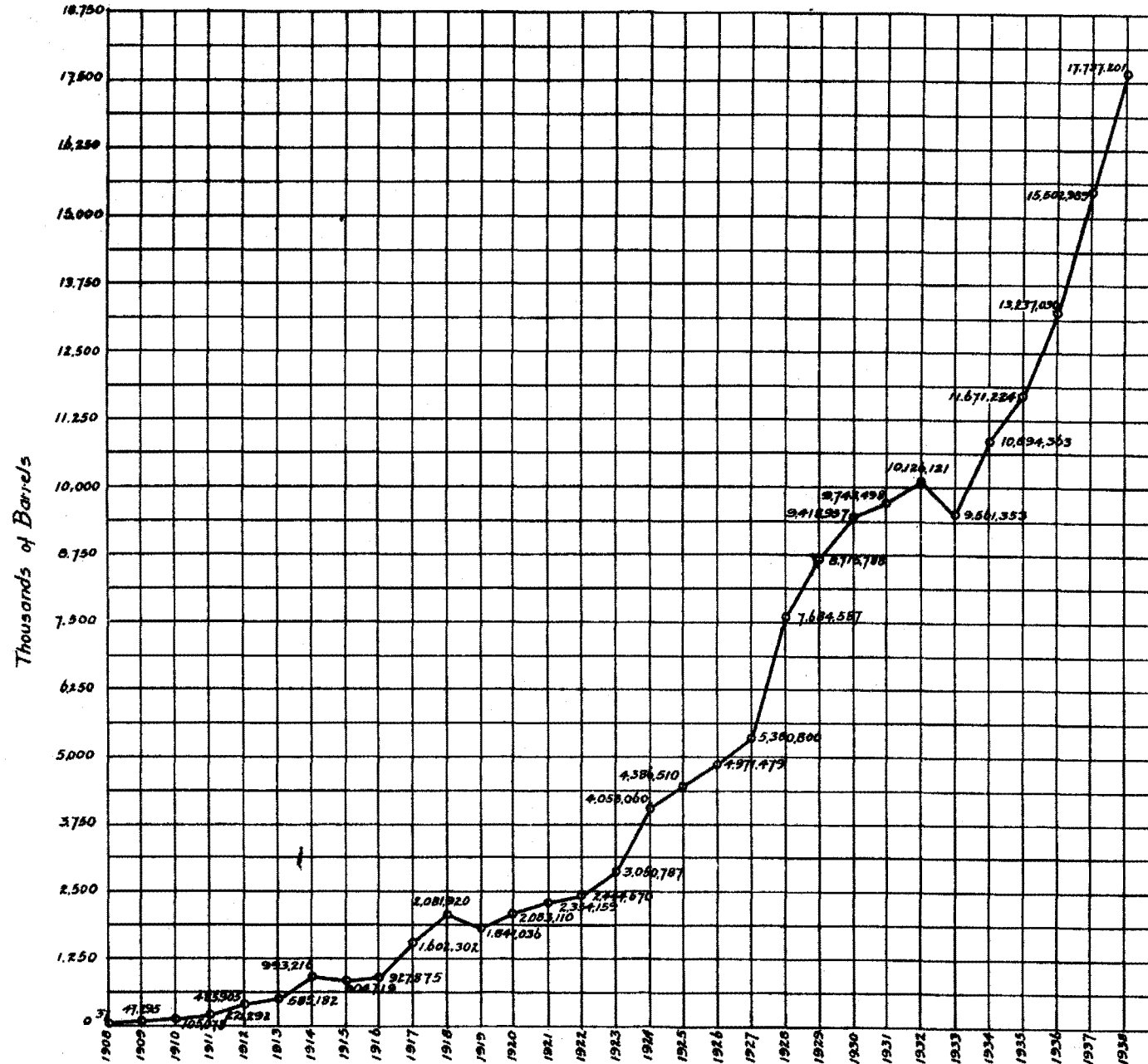
Previous to 1920 ...	...	...	...	...	...	...	4,051,373 barrels.
1920 ...	...	...	...	...	...	...	1,395,487 do.
1921 ...	...	...	...	...	...	...	1,806,016 do.
1922 ...	...	...	...	...	...	...	1,820,018 do.
1923 ...	...	...	...	...	...	...	2,360,279 do.
1924 ...	...	...	...	...	...	...	3,433,902 do.
1925 ...	...	...	...	...	...	...	3,790,343 do.
1926 ...	...	...	...	...	...	...	3,786,876 do.
1927 ...	...	...	...	...	...	...	4,796,223 do.
1928 ...	...	...	...	...	...	...	6,725,383 do.
1929 ...	...	...	...	...	...	...	7,642,726 do.
1930 ...	...	...	...	...	...	...	7,989,679 do.
1931 ...	...	...	...	...	...	...	6,899,144 do.
1932 ...	...	...	...	...	...	...	7,635,296 do.
1933 ...	...	...	...	...	...	...	9,129,810 do.
1934 ...	...	...	...	...	...	...	10,846,584 do.
1935 ...	...	...	...	...	...	...	11,148,285 do.
1936 ...	...	...	...	...	...	...	13,028,161 do.
1937 ...	...	...	...	...	...	...	15,111,046 do.
1938 ...	...	...	...	...	...	...	17,596,932 do.
	Total	...	...	...	...	...	<u>140,993,563</u>

A
TRINIDAD AND TOBAGO

APPENDIX G.

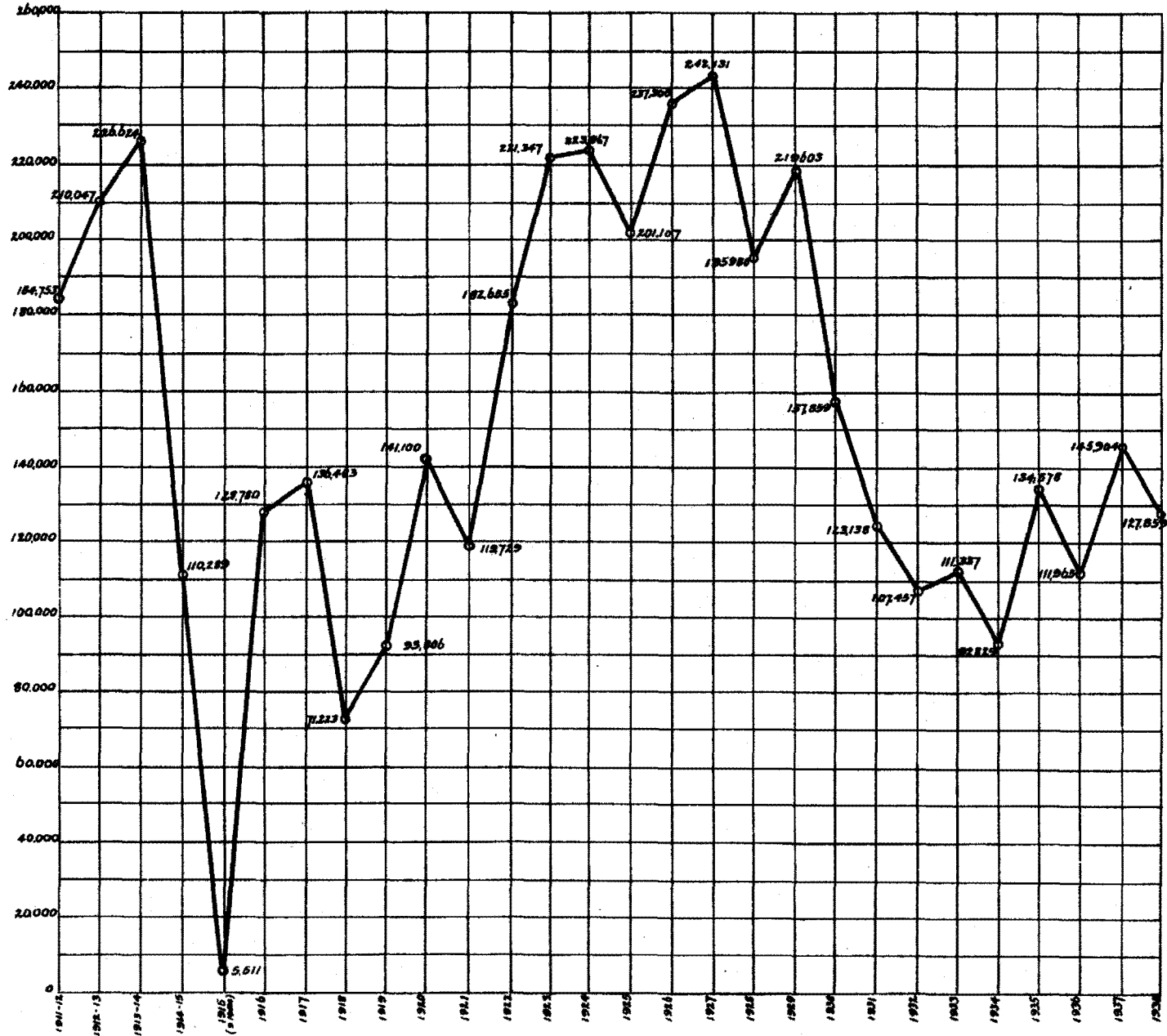


C
Total Annual Production of Crude Oil in Barrels
One Barrel - 35 Imp. Gallons



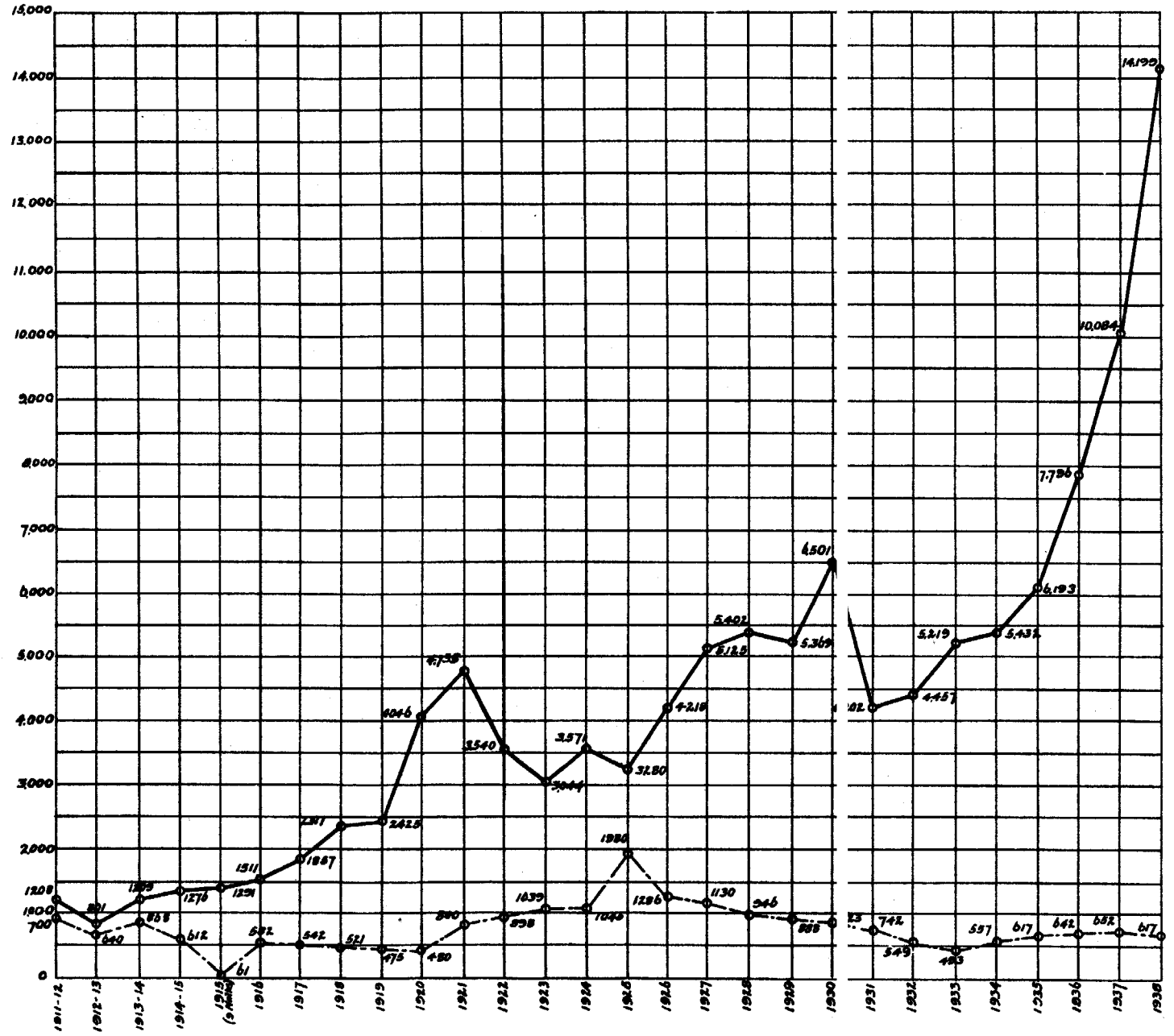
D

Curve showing yearly output of Asphalt from the Colony
in Tons from 1st April 1911 to 31st December 1938



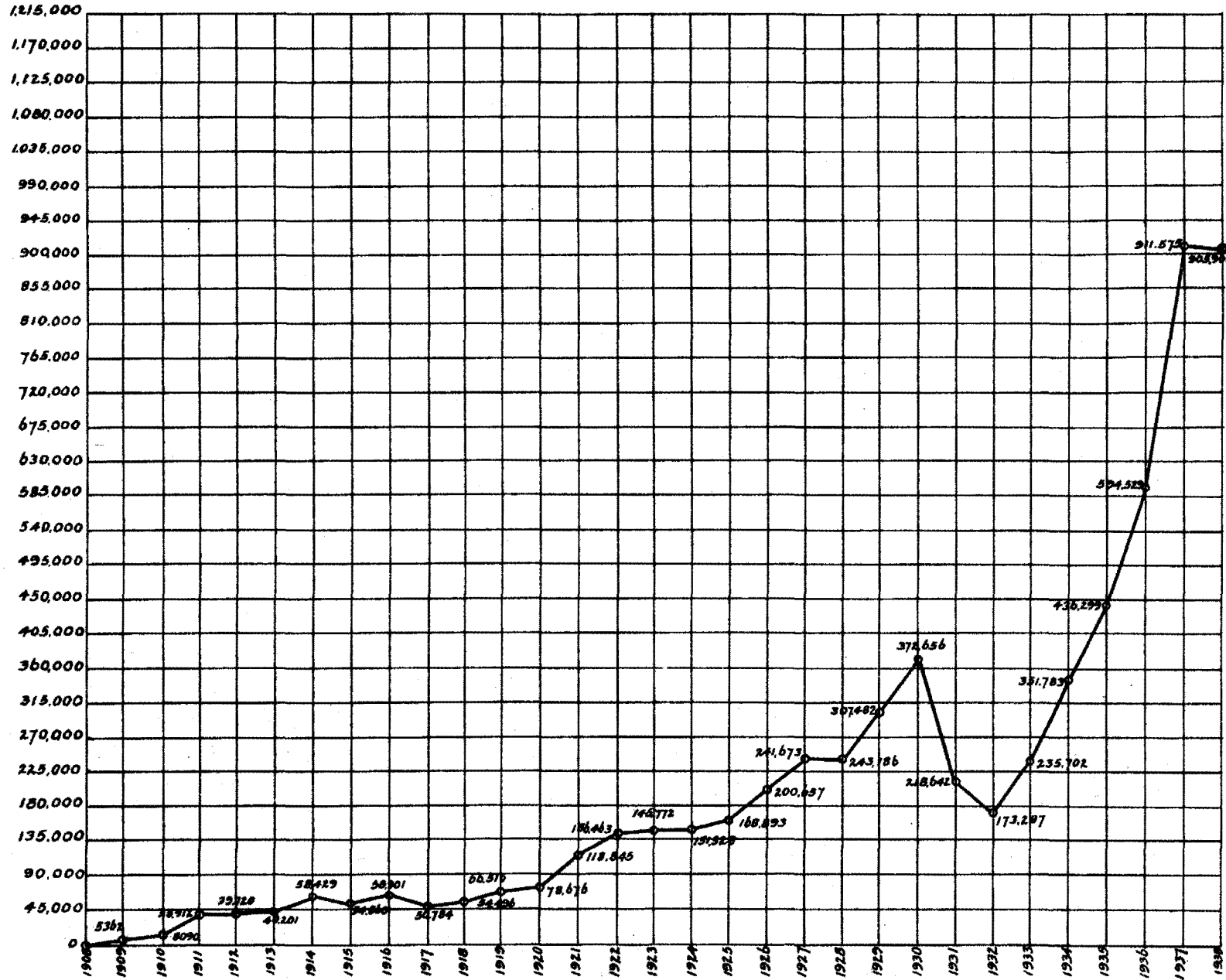
'E'

Chart showing comparison of daily average number of persons employed in the Oil and Asphalt Industrie of The Colony from 1st April 1911 to 31st December 1938



"F"

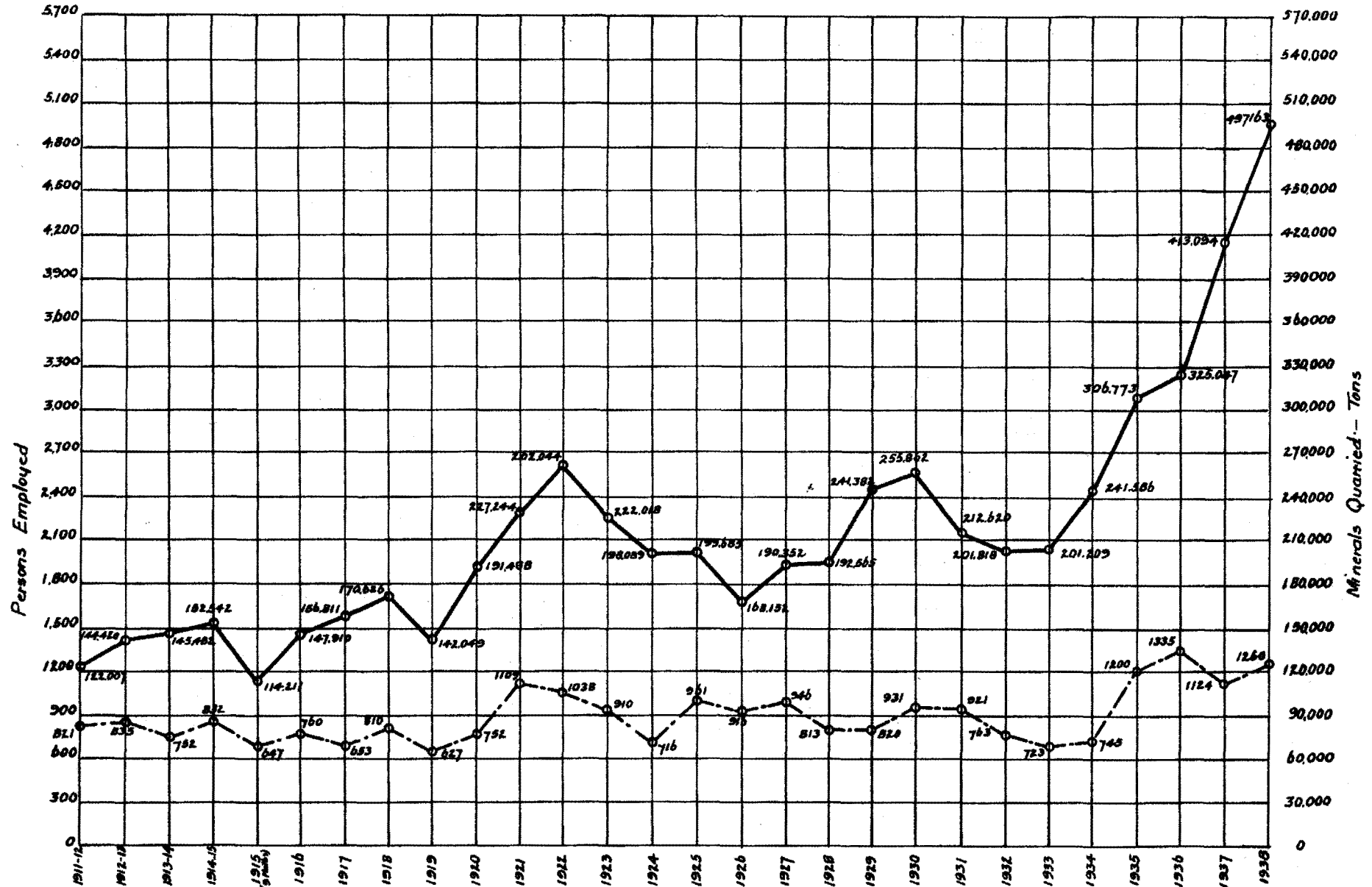
Total number of feet drilled annually
in the Colony



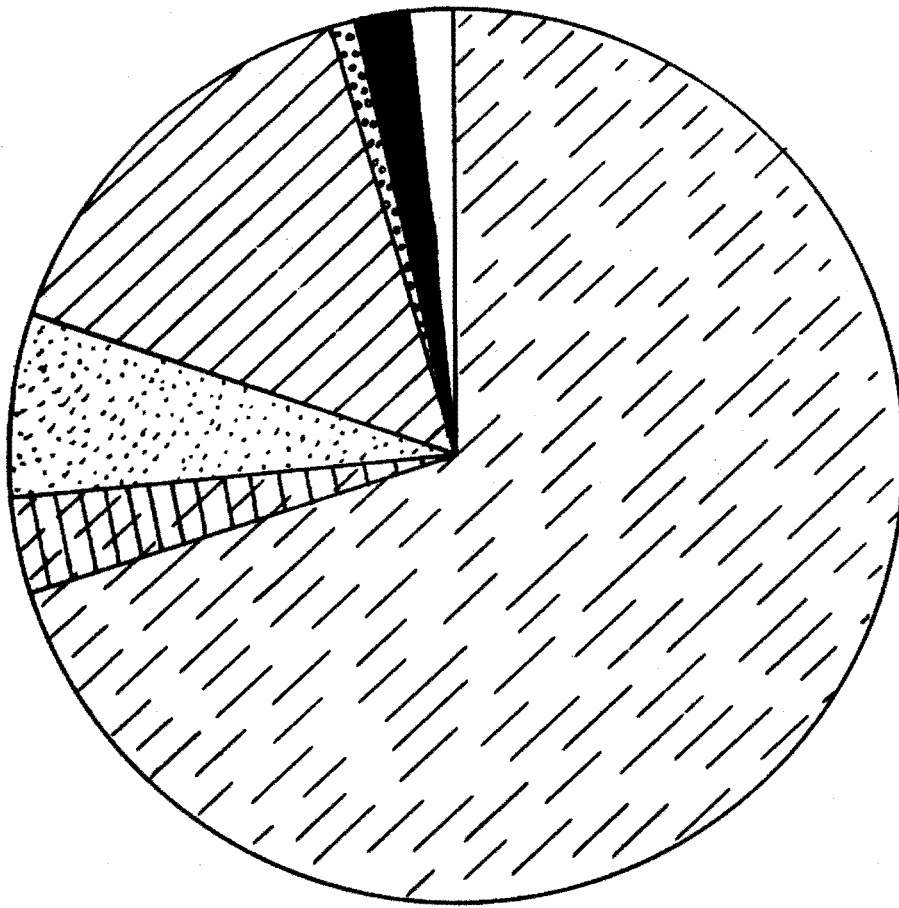
"G"








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 1938

Minerals quarried — Persons employed - - -



APPENDIX H.



<u>Mineral Exports</u>	73.5%	
Petroleum Products	7.1%	
Asphalt	3.4	
<u>Agricultural & other Exports</u>	26.5%	
Cocoa	7.0	
Sugar, Molasses, Rum	15.3	
Coconuts, Copra, Coconut Oil	7.7	
Fruit & Fruit Products	1.8	
Other Exports	1.7	

'H'

ROYALTY AND WAYLEAVE

Royalty shown thus ———
Wayleave - - - -

