

BAKU

An Eventful History

J. D. Henry

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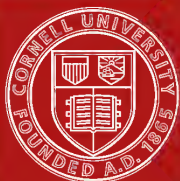
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Mr. Urquhart was born at Aidin, in the Province of Smyrna, Asia Minor. He studied engineering at Glasgow, chemistry at Edinburgh University, and afterwards went into the laboratories of the Broxburn and the Lanark Oil Works, Scotland. He subsequently joined his father, Mr. Andrew Urquhart, in business at Ondjari. Some four years ago he was appointed general manager of the Schibaieff Company at Baku, and a year ago he became general manager of four of the chief British oil companies in Russia. He is a nephew of the late Mr. Thomas Urquhart, M.I.C.E., M.I.M.E., the first to introduce liquid fuel on the railways in Russia.

MR. LESLIE URQUHART.



Mr. Goulisambarov, of the Ministry of Finance, has been officially connected with the Caucasian oil industry from the early days of its development on modern lines. No one has written more exhaustively on the engineering, liquid fuel and business aspects of the industry. As the representative of the Ministry of Finance he has visited most of the oil fields of the world, and some three years ago he reported on the state of the British oil market.



MR. STEPHEN GOULISHAMBAROV.

BAKU

AN EVENTFUL HISTORY

BY

J. D. HENRY

WITH MANY ILLUSTRATIONS AND A MAP.

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BRADBURY, AGNEW, & CO. LD., PRINTERS,
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TO

MR. LESLIE URQUHART

(British Vice-Consul at Baku)

FOR MANY REASONS, BUT CHIEFLY BECAUSE OF THE UNIQUE
POSITION HE HAS MADE FOR HIMSELF IN THE CAUCASUS
BY ACTING IN MORE THAN ONE CRISIS WITH
RARE ABILITY, RESOURCE AND PERSONAL
BRAVERY.

INTRODUCTORY NOTE BY SIR BOVERTON

REDWOOD, D.Sc., F.R.S.E.,

*Hon. Corr. Mem. Imperial Russian Technical Society
(Baku Division).*

TWENTY years have passed since the late Charles Marvin gave to the British public a vividly descriptive account of the Baku petroleum industry in "The Region of the Eternal Fire." The subject dealt with was necessarily highly technical, but it was presented with such literary ability that although the work is one which, on account of the accuracy of the recorded data, may still with advantage be consulted by the technologist, it has probably been found by the general public more interesting than any other similar publication.

It has now fallen to another journalist, Mr. J. D. Henry, Editor of the *Petroleum World*, who has returned from the Russian oil fields equally impressed with the magnitude and importance of the work which has been accomplished, to describe the industry as it exists to-day, and to indicate the scope for far greater expansion. That this task will be successfully performed I am confident, for I have had ample opportunities for learning that Mr. Henry possesses in a high degree the capacity for rapid collection and orderly recording of facts.

The progress of the Caucasian oil business has been temporarily arrested by the recent disorders and destruction of property, but the first effect has been to bring into greater prominence the extent to which the industrial life of the Empire depends upon the supply of petroleum in the form of liquid fuel, and the ultimate result will unquestionably be to place the business upon a more secure footing. The appearance, therefore, of Mr. Henry's contribution to the literature of the subject may be regarded as opportune.

BOVERTON REDWOOD.

PREFACE.

BAKU has been a remarkable city for centuries. It was not, however, until this year that its ancient history, portentous modern developments and vast and growing industrial influence really became of interest outside Russia. Twelve months ago the man who knew nothing about oil was ignorant of Baku; to-day Baku is known to millions. We have seen one of the most terrible dramas in modern Caucasian life played on the stage of Baku. The drama of a year has been played in three well defined and separate acts. December—strikes, terrorism and murders; February—three days of race butchery; September—fourteen days of unbridled savagery and massacre, a battle of tribes fought in blazing oil fields and in the streets of a most mysterious city. Unfortunately, it is as the arena of inter-tribal strife that Baku has become known to the civilised world, and not in its more important character of one of the wealthiest and most remarkable cities in Russia, producing nearly half of the world's oil supply.

For a decade, Baku had in its modern industry and ancient customs an unnatural combination of forces which were bound sooner or later to convulse humanity. In the days when Charles Marvin wrote his "Region of the Eternal Fire," the new conditions had not reached their zenith and the industry had not attained anything like its present dimensions. Naturally, the throwing together of an unmixable mixture of races and spiritual influences and such an essentially modern commercial enterprise was bound to provide material for much stirring history.

Although necessarily in parts technical and statistical—and consequently, it is to be hoped, of permanent value to oil men in all parts of the world—this book is largely a product of the violent upheaval resulting from the collision of the new and old and an incredible amount of bitterness born of race antagonism and trade rivalry.

What has taken place has entirely altered the face of the oil fields and upset the balance of the commercial and financial parts of the oil world. The times, I am bold enough to think, demand a book, and all the more so seeing that there

is a poverty of non-technical information about Baku and the origin, progress and present position of its chief industry.

A word about the scope of the book. I attempt to epitomise the early history of the city and its industry, bring the story of the spouting wells up to date, record the leading results of each year's work, and give some new information about men and methods at the oil fields and in the refineries, many of which I visited as recently as February last. On its social and political side, I am pleased to be able by means of letters from unquestionable authorities and in especial from Armenians themselves to assist in refuting the charge brought against my fellow-countrymen in Baku of deliberately deserting Armenians at the hour of danger and of handing them over to their Tartar enemies. I should like to make it plain that on this point, and indeed on all questions touched on, I have written without bias; I have sought to limit the part referring to the massacres to a dispassionate record of acts of heroism and thrilling incidents which show that even in Baku there is much that is civilised, intensely human and even chivalrous.

Leaving the historical side of the book to speak for itself, perhaps I may venture a few remarks on the quite romantic development of the industry in South Russia. In recent years I have pitched my tent on virgin oil lands on Texas prairies; I visited Spindle Top in boom time; I have seen the small but wonderfully productive fields in the Carpathians; and inspected every property of note at Boryslaw, in Galicia; but in no part of the world have I seen an oil region the compeer of those old and famous fields at Baku, an oil city that can equal in wealth this metropolis of the Caucasus, or a body of oil men who surpass in energy, enterprise, or business capacity those who are at the head of the industry in Baku.

The oil fields of Russia are not played out, and theories of early exhaustion are made to look absurd by the most recent drilling records and production results. The history of the marvellous oil field of Bibi-Eibat, frequently mentioned in this book, has proved the falsity of numerous theories put forward by technologists who have vainly attempted to solve its subterranean mysteries, forecast the length of its life, and gauge the capacity of its wealth-earning power. Professor Abich was one of the first to go seriously wrong in his calculations on two most important points. Just before the abolition of the contract system, this geologist predicted (1) that oil would not be found at a greater depth than 60 or 70 ft., and (2) that the introduction of steam drilling would not be beneficial to Baku. Trautschold, another expert of European

fame, visited Baku (1873) and made up his mind that oil of commercial value would not be struck below 200 ft. The oil, he thought, would decline in value as the drill went below the 140 ft. limit. This was quickly proved to be a fallacy by the bringing in of the first famous (Khalafi) spouter.

The most prolific wells of to-day are between 1,500 and 2,000 ft., and the hand-dugs, favoured by Abich, were discarded as far back as 1878. It is a remarkable fact, that although Bibi-Eibat has only 222, or practically only a tenth, of the 2,000 wells it is yielding nearly a third of the production of the Peninsula. The deepest stratum has not been reached at Bibi-Eibat and Ramani, or indeed at any of the fields, with perhaps the single exception of Balakhani. Not only are there some important reserve properties at Bibi-Eibat, but the Government has in hand a reclamation scheme which should win an oil field from the sea (see map). There is abundant evidence that the oil fields of Russia are not played out.

I am not too hopefully prophetic when I say that there will be an early expansion of the oil fields of Russia. New fields are being opened up on every hand. Close to Balakhani is Binagadi, on the surface of which the drill has only started to make its first impressions; further away are the promising Grosny fields, where, *en passant*, Rothschild has just acquired the property of the Akverdov Company, and the Spies Petroleum Company has just brought in another spouter, while on the shores of the Caspian Sea we have Berekei, opened up by Nobel, and the scene of a great deal of drilling activity, and Kaia-Kent, the property of an Anglo-Russian enterprise. Then there are Chatma, Tcheleken, Fergana, Telavi, and other fields in the northern Caucasus, in the Urals, and on the shore of the Black Sea, not far from the oil port of Batoum.

At Baku the worst consequences of a revolutionary movement have been experienced. Labour has been meddled with, unsettled, and made offensively dictatorial, and a splendid industry has been placed in jeopardy. To-day there are more strikes at Baku, and cables announce that for the first time in the history of the petroleum industry the houses of British oil field officials have been attacked. There is, however, some reason why the petroleum men of the Caucasus should see in the Czar's manifesto and the resumption of office and power by Count Witte evidence of the approach of better times in the commercial and industrial centres of Russia, and, of course, amongst these we must not fail to include the Caucasus with its vast mineral resources and a great petroleum industry. Count Witte is known to be a friend of this industry; he

knows its needs, none better, and as the late Minister of Finance he had abundant opportunities for appreciating its immense value as a factor in Imperial revenue.

This brings me to the subject of the future of the industries of the Caucasus, Siberia and the Urals. Russia, confessedly poor, is not now, any more than she was a quarter of a century ago, a philanthropist amongst civilised nations, but she has new industrial aspirations which will not materialise without foreign financial assistance. It is known that the country is anxious to secure the assistance of outside capital in many parts of Siberia, right along the Trans-Siberian line, in the Urals, in the Caucasus, and even in the cities. Overtures for concessions will be welcomed, not discouraged, while everything will be done to convince foreigners of standing that scrupulously honest business is meant.

The Caucasus is endowed by nature with practically inexhaustible mineral wealth; copper, iron, zinc, tin, and many other metals are not only found throughout the region, but found in marvellously extensive deposits. We are near the time when this vast region will be thrown open to the foreign financier. British interests should be well represented in this country of great potentialities, and steps should be immediately taken to strengthen the bonds which connect Great Britain with a number of important trading centres. What we have in Russia we must hold, and now that Germans and Americans are bidding more vigorously for Russian favours and options, British financiers should give serious thought to the question of how they can best secure a fair share of those fields of industry which Russia will shortly attempt to open up with the assistance of foreign finance. No doubt the recent conference at St. Petersburg will not only ensure greater protection for life and property, but result in bringing about an entirely new era of industrial development.

Obviously, practically the chief thing wanted to ensure the return of prosperity to Baku is a lasting peace—not a patched-up arrangement amongst the fanatical races of the Caucasus, but a real, permanent peace guaranteed by a military force which the country must keep in the Caucasus before it can expect to enlist the assistance of foreign capital in the development of its mineral and industrial resources.

THE AUTHOR.

DOWNSWOOD, NEAR LINGFIELD,
SURREY.

November, 1905.

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PART I.
BAKU AND ITS PEOPLE.

BAKU.

CHAPTER I.

BAKU AND ITS PEOPLE.

BAKU A CENTURY AGO—A CITY OF BLOOD—THE FIRST STEAM-DRILLED WELL IN THE CAUCASUS—BAKU MISREPRESENTED—SOME MILLIONAIRE OIL KINGS—A WORLD-FAMOUS SYSTEM OF TRADING—IS MODERN BAKU DIRTY?—CHARLES MARVIN'S CONFESSIONS AND PREDICTIONS—NIGHT SCENE AT BAKU—THE CONFUSION OF THE ANCIENT AND MODERN—A POPULATION COMPOSED OF FORTY-FOUR NATIONALITIES—WHERE EAST AND WEST MEET—ENGLISH GRAVES AT THE CEMETERY—THE BAY—NIGHT SCENES—COL. STEWART'S DESCRIPTION—FLAT-ROOFED HOUSES—THE INDUSTRY WILL RISE, PHENIX-LIKE.

BAKU, one of the most ancient cities of Russia, and described by Elise Reclus as "a great natural workshop," was a flourishing place as far back as the eighth century. It fell into the hands of Persia in the sixteenth century, although it maintained its autonomy under a separate Khan. The Russians finally stormed and took it in 1806, and in a few months' time it will have been a century under the dominion of Russia. That is the Baku of encyclopædic history.

Modern Baku, the city that has been so much talked about this autumn, is the greatest blood spot in the mysterious, rebellious and blood-stained Caucasus. On

March 12th, this year, when I sent off my first account of the massacres of that time, I started in this manner—

“Baku has the reputation of being a city of blood. Over a period of 400 years more blood has been shed in Baku than in any other part of the Caucasus. The horrors of the week will do a great deal to keep alive its reputation for inter-racial savagery, a sheer love of butchery, and an almost expert knowledge of the awful art of mutilation with that most terrible weapon, the kinjal.”

Baku has written a corroboration of this in letters of blood. The September tragedy has dwarfed into insignificance the horrors of those three days of panic, massacre and starvation in February, when 2,000 persons were murdered in the streets and oil fields of Baku. Twice this year has Baku burned red in the eye of the world.

If it is infamous and notorious on account of unimaginable inter-tribal hatreds which culminated in the terrible massacres of February and September, and for which we can find no parallel in any other part of Russia, we must not forget that in oil there is no greater name than Baku. The world owes much to Baku, the most ancient, just as it was before these racial risings the most prolific and profitable, oil-producing and refining centre in the world.

It is just about thirty years since the steam-drilled well put an end to the era of primitive hand-dugs at Baku. A start was made with a single well, and from this small beginning there has sprung into existence an industry quite as important as those of coal and iron.

For nearly a quarter of a century it has ruled the petroleum world with the marvellous production of its

vast oil fields and the output of its numerous refineries. For a generation Baku has kept the balance of trade in the important matter of a world's commodity ; her subterranean stores have provided those supplies which have prevented a world-wide American monopoly and kept oil cheap on this side of the Atlantic.

In oil Baku is incomparable. I know of no oil city that will compare with it, either in subterranean wealth or, to leave the commercial for a moment, in wealth of history and tradition, legend and story. Los Angeles, chief town in the oil fields of far-away California ; Petrolea, Canada's petroleum capital ; Beaumont, the four-year-old creation of Texas oil ; Boryslaw, chief of the widely scattered group of oil fields in Galicia, home of the ancient Poles ; Campina, in Roumania, and a score of other oil-producing centres can in no way be compared with Baku. Baku is greater than any other oil city in the world. If oil is king, Baku is its throne.

Baku is unique ; its wild life is full of memories of insurrections and romance ; while the mysteries of its people—an extraordinary conglomeration of conflicting races and antagonistic spiritual influences—and that greatest mystery of all, the limitless extent of its oil deposits, are not more fascinating than its actual achievements in the realms of trade and commerce.

In this country we speak of Russian oil ; rather should we speak of Baku oil, for practically all the oil in Russia comes from the Bibi-Eibat and Balakhani-Saboonchi-Ramani oil fields, the two most famous groups in the world, and, strangely enough, almost beyond the southern fringe of the vast empire of the Muscovite. American oil comes from many states, Pennsylvania, Ohio, Indiana, Texas, California and half a dozen others, and in this

respect is more truly American than the oil of the Apscheron Peninsula is Russian.

* * * *

It is the misfortune of Baku to have been frequently and absurdly misrepresented, and during the massacres oftener than ever. To-day, when many of the buildings are in ruins, it is impossible to paint the picture too black, but before the massacres Baku was a great and splendid city. While modern Baku was burning we were given a confusing epitome of rival ancient descriptions of its appearance, population, and oil trade. It would almost seem as if there had been a daily paper conspiracy to write down this most unfortunate city. For instance, if we omit the first four words, the following will most assuredly mislead those who have not seen Baku—"Baku is very rich, but it is very ugly . . . The first impression is a dismal one; nor is a closer view much more inviting." This calumny, penned innocently enough, no doubt, appeared in a regulation column on the editorial page of a leading London morning paper. Only the first four words are correct. Baku is unquestionably, but not ostentatiously, rich, some would say romantically rich. There are more millionaires interested in Baku oil than in any other Russian industry. Some of these, notably Nobel (Swede), Rothschild (Frenchman), Gukassoff (Armenian), and Mantascheff (Armenian), mentioned because their petroleum companies have offices in London, may lose fortunes through the wholesale destruction of the oil wells, tanks and pipe lines, but they will remain millionaires all the same. Some of the greatest of the oil kings of the Caucasus laid the foundations of their fortunes by selling petroleum-bearing territories to British and other foreign companies. Some are still active workers in oil and retain

leading positions in producing and refining concerns. There are a number of private palaces (designed by the greatest architects of the country, and lavishly decorated by famous Italian artists) owned by the principal oil men of the Caucasus. The statement that Baku has made more men wealthy than America is true, if we leave Mr. John D. Rockefeller and his lieutenants out of the calculation.

Baku is indeed rich ; it is a city in which there is indisputable evidence of immense wealth, more wealth, I should say, than in any English city of the same size. Oil has made it so.

It is a city of great failures, chiefly foreign ; and gigantic successes. The ramifications of its world-famous system of trading do not come to an end at Astrakhan or even at Nizhni, but, pushed forward with all the power and resource of such firms as Nobel and Rothschild, extend up the mighty Volga through the heart of the Empire to the Baltic shore, can be traced across the Caucasus to Batoum and Novorossisk and thence on to Europe, the Near and Far East, and our own Indian Empire, or across the Caspian Sea to Persia and Central Asia.

Why is Baku rich ? The answer is simple—because it produces a commodity which has a market wider than the civilised world, for it is carried on camels into the innermost parts of the Asian Continent, and on yaks into the wild regions of the Himalayas.

* * * *

There is another respect in which the newspapers have misrepresented Baku.

“Over the town hangs a dense black cloud of smoke, and long before you reach it you perceive the all-pervading

smell of oil, which you will breathe everywhere and taste in everything so long as you remain at Baku."

The writer of this paragraph draws much too black a picture. When the Bibi-Eibat field had reached its zenith—and that was five years ago, when it was a common thing for a single plot to have three fountains simultaneously—oil rain was carried over Bailov Promontory (separating Baku from Bibi-Eibat) and fell in the ancient part of the city. The only black spots at Baku are Bibi-Eibat and the Black Town; Balakhani is nine miles north of Baku. Within the city walls Baku is cleaner than the best kept towns in our own black country, and much of what has been written about its oily and unclean appearance is but a repetition of word painting done by writers who visited it when the bringing in of fountains was a daily occurrence, and when, in the day of wooden derricks, ordinary oil field fires were more serious than they are to-day, when a large percentage of the derricks are covered with fire-resisting gypsolite or iron sheets.

I can best continue the subject of the misrepresentation of Baku by giving Charles Marvin's opinion, written nearly thirty years ago, when an architectural metamorphosis was taking place, and the city was being rapidly modernised to meet the needs of the new industry of oil. Marvin, starting with the ejaculatory confession, "Baku fairly amazed me," proceeded thus—

"The numerous reports that had appeared in the Russian Press of late years, describing and extolling its progress, had prepared me for a spectacle of rapid development, but I must confess that I had no idea Baku was such a large place. To most English people the Caspian is a sort of

Dead Sea. They think there is little or no activity there. They forget that it is the natural outlet of the stream of life, of commerce, and of progress flowing down the Volga—the main artery of the Russian Empire. To such people a glimpse of Baku would be what Dick Swiveller would term a 'regular stunner.' What was ten years ago a sleepy Persian town is to-day a thriving city. There is more building activity visible at Baku than in any other place in the Russian Empire. . . . Baku is situated on a magnificent bay, in the shape of a crescent, seven miles across from point to point, and about fifteen in circumference. Across the mouth of the bay, well out to sea, is disposed an island, much in the same fashion as the Plymouth breakwater, thoroughly protecting it from adverse winds, and enabling it to give secure anchorage to thousands of vessels. I was astonished at the amount of shipping in the bay. . . . From one end of the town to the other, we saw the character of Baku being transformed. Everywhere old houses were being pulled down and new ones being built; streets were being laid out in regular lines, and paved with stone or asphalt; the wretched booths of the Persians were being replaced by spacious Russian shops; and the great old Persian Fortress was being exhumed from the mass of surrounding buildings, and laid bare to the gaze of the world. In two or three years Baku will be a new city, with most of the comforts and luxuries of civilisation, including even tramways, for the construction of which a syndicate is now being formed in Russia. As the place develops, its disadvantages—the heat, dust, absence of good water, rainlessness and the want of vegetation—will be largely mitigated."

Time has justified the predictions of the petroleum

pamphleteer and distinguished Russian traveller and scholar. Baku is indeed a new city. I should say that since Marvin's day it has, instead of "a wretched little shanty station in the midst of a wilderness," into which "the trains dropped him," a magnificent station, one of the most perfectly designed and spacious in a country that is famous for huge stations and slow trains.

Before I give my impressions of the city let me dispose of one more misrepresentation, pardonable, perhaps, because it occurs in connection with a legend of which every traveller is given a new and original version. I refer to the famous Maiden's Tower. Mr. F. H. Skrine, who visited Baku about six years ago, gives the following account:—"Once on a time (it runs) there was a lovely princess who was sought in marriage by a youth of equal rank. But her heart was already pledged, and she 'ever would unto his suit say no.' At last she was conquered by his importunity, reinforced as it was by parental pressure, and consented to be his on condition that he built a tower in the Caspian Sea. Love laughs at difficulties, and soon a fortress raised its head a hundred and twenty feet above the waves. The poor girl had no excuse for postponing her lover's bliss. The wedding was celebrated in the new tower with lavish magnificence; but, when the young husband advanced to raise the veil which had concealed the virgin's charms she broke from him and leapt headlong into the sea. This is the popular Black Town version of this love romance."

I noticed that during the massacres the sad story of this lovely princess received a new and startling rendering in the columns of a London daily paper famous for the manner in which it gives everything in microscopic epitome form. Thus, the new rendering of the legend of the Maiden's

Tower—"The brick walls of the old Persian citadel in the middle of the town are still standing almost intact, and below them rises the Maiden's Tower, a double structure also of brick, about 150 feet high. According to the legend, a Tartar Khan and his son were both enamoured of the same maiden, and being unable to decide which would marry her, *solved the question by throwing her down from the top of the tower.*"

Now, the story I favour differs only slightly from the one told by Mr. Skrine, and comes into conflict with the daily paper rendering in the vitally important matter of whether it was a case of suicide or murder. In Baku I was assured that the maiden's lover was a lascivious old Khan, and not a "youth of equal rank," and that the maid threw herself, and was not thrown by the Khan, from the top of the tower into the sea.

* * * *

The census returns of Baku town, Bailov Promontory, White Town, the villages of Kishli and Akhmedli, the oil field region of Bibi-Eibat, the Balakhani-Saboonchi-Ramani fields and Balakhani, Saboonchi, Ramani and Zabrat villages put the population at 206,757.* Forty-four nationalities are registered. These include representatives of nearly all European nations, Central Asia, Asia Minor, Persia, Arabia, and even Abyssinia. The chief nationalities number thirteen, and each of these has more than 500 representatives. The first place is occupied by Russians, who number 74,254; then follow 53,827 local Tartars, 34,259 Armenians, 18,572 Persians, 5,859 Jews, 5,025 Germans, 4,157 Tartars from south-eastern Russia (known as Kazan Tartars), 3,857 Lezghins, 2,614 Georgians,

* Twenty years ago the population of Baku was between 70,000 and 80,000.

1,548 Poles, 617 Greeks, and 679 Mordovtzis. The other inhabitants—to the number of 1,646—represent thirty-one nationalities. Eight of these—Swedes, Ossetins, Letts, Bohemians, Slovaks, Frenchmen, Lithuanians, Englishmen, and Turks—have each over one hundred representatives. The remaining twenty-three nationalities account for less than 100 each, while seventeen are represented by less than 25 persons each.

The sexes are :

	City.	Suburbs.	Oil Fields.	Total.
Men	78,863	11,144	38,080	128,087
Women	59,748	6,121	12,795	78,664
Total	138,611	17,265	50,875	206,751
Number of women per 1,000 men	758	549	336	614

* * * *

Baku, commercially and ethnologically the Johannesburg of Russia, has within herself, historically, architecturally, and even in its ordinary street scenes, a most extraordinary confusion of the ancient and modern. You see this everywhere. The modern, stone-built palaces of the oil kings, the new technical school, erected on the best European model, and hundreds of fine public buildings, are not more conspicuous than the ancient land marks of the city—the Maiden's Tower (Baku's extraordinary lighthouse), the ancient and crumbling battlemented walls, the mosque of the Persian Shahs (1078), the palace of the Khans* (15th century), the old buildings in which lived the

* The palace of the Khans, a fine specimen of Oriental architecture, has been used this year as an ammunition store. Just before the massacres the municipal authorities asked the chiefs of the military to permit them to convert it into a public museum. The request was refused on the ground that the ancient building will be used as a hospital for the wounded returning from Manchuria.



THE CHURCH AT THE OIL FIELD OF BALAKHANI. WHEN THE SEPTEMBER MASSACRES WERE STARTING THE BELL IN THE GREAT TOWER WAS TOLLED MYSTERIOUSLY AND OMINOUSLY, BY WHOM, NO ONE KNEW.



THE ANCIENT PALACE OF THE KHANS AT BAKU.

[To face page 12.]

princes of other days, and the thousands of small shops in which sad-eyed Asiatics and more business-like and industrious Armenians sell their famous Caucasian carpets, hammered and filagree silver goods, "slop" clothing, and all kinds of ancient weapons.

In it the electric light and the telephone are more used by private persons than in any city of the same size in this country. Though so very modern in these respects, Baku remains loyal to its ancient water-carts and camel teams. I have said that the ancient and modern meet; and they even come together in the huge cemeteries of the city. The ancient one lies conspicuously on the steep slopes of a hill at the back of Baku. Thousands of head-stones on the graves of Christians, Armenians, and Mahommedans have fallen and lie about in the greatest confusion, giving one the impression that there has been a land slide. On the top of the hill is the new cemetery. In the German part, near to the Armenian quarter, the remains of three Britishers have found a last resting-place. Mr. A. W. Wagstaff, the general manager of the Schibaieff Petroleum Company, is buried there, and close by are the resting-places of Mr. Wiskin and Mr. Ferguson.

Approached from the Caspian, Baku—on the hillside, a panorama of white houses and splendid public buildings, and below the business thoroughfare stretching from Bailov Point and Black Town, a distance of seven miles—is picturesque, nay, majestic and noble, I care not whether it is seen beneath the winter snow or the tropical summer sun.

In the curve of the Bailov horn of the crescent, a natural harbour of refuge within the larger bay, the vessels of the Caspian Sea fleet ride at anchor, and seldom put out to sea. They are mostly of the gunboat type, too small to be a serious factor in the fierce fights of the factions of the

city. Huge wooded oil-carrying barges are being constantly towed by screw tugs from the oil field at Bibi-Eibat, behind Bailov Point, to the Black Town and White Town refineries at the other side of the beautiful crescent-shaped bay. The night scene at Baku, the range of lights, as they rise on the hills, skirt the promenade, light up the wharves, landing piers, and passenger steamers, is one of exceptional beauty, and (if I may venture on another comparison) in no way inferior to the best artificial effects secured in the bays of our own most famous watering-places.

Colonel Stewart, who in 1886 wrote an interesting account of his travels in the Caucasus, says:—

“The town itself is situated on a fine well-sheltered bay; immediately to the south of it is situated the *small* oil field of *Bibiabad*, on a bay of its own; then nearer the town, on a promontory, are situated the naval quarters. Then along the coast of the bay, in a line running from west to east are situated—first, the town itself, where trade is carried on; then the Black Town, in which the majority of the refineries are situated. Still further eastwards comes the White Town, where most of the modern and superior refineries are placed. Messrs. Nobel’s refinery, though it is one of those conducted on the modern system, has the misfortune to be situated near the Black Town. There is a very marked difference between the appearance of the Black and White Towns; in the second, no smoke, or hardly any, is seen to come out of the refinery chimneys, while in the former, with a few exceptions, volumes of black smoke are vomited forth.”

Baku, once its battered, shot-marked and scorched buildings are repaired, will again have those indisputable charms, and, better known, no one should be able to deny

it the possession of those numerous anciently-famous and still glorious architectural possessions, those magnificent harbour lights, and the best of bays in this inland sea.

If Baku were a deserted city, the vilest elements of her polyglot population gone, her ruins restored, and her industries silent—if one could wander through the ancient city alone, and behold it as it once stood, that mecca of the fire-worshippers, “ the purest font of their sacred element ” —it would be, not ugly, not dirty, but one of the most picturesque cities of Transcaucasia. I hold that if Baku were artificially irrigated it would excel in beauty many world-famous spots on the western side of the Caucasus and the eastern shore of the Black Sea.

Baku, with its flat-roofed houses, is truly Asiatic; only some barrack-like buildings, covered with asphalt and sloping sheet-iron, painted green, and the orthodox cathedral, with its gilded cupola, proclaim the dominion of Russia. Everyone who has attempted to describe Baku agrees that the most picturesque part is the old city with its Persian Citadel, the minaret and mosque, and the ruins of the baths of the Khans. In the old Tartar city, intersected by winding alleys, with curious, flat-roofed, windowless houses, in which so many murders took place in February and September, Tartar and Armenian merchants are wont to display their wares in front of small, dark shops. When I visited the bazaar the shops of the Armenian merchants were closed. Their owners had either fled or been killed on the first day of the February massacres. There is not an Armenian in the old Tartar quarter at the present time.*

* Since the massacres the Armenian vineyards in the villages of Mashtagi, Mardakiany, Buzovna, and Bilga on the northern shore of the Apscheron Peninsula have been deserted. They were until this

But, after all, the oil fields are its crowning glory ; these have made it what it is—the metropolis of the Caucasus and a city which is destined to play a still greater part in the industrial history of those wild parts when once it is fully realised in Russia that the prosperity of a nation can be best estimated by the extent and richness of its mineral resources.

The calamity is one of unparalleled magnitude in a world-wide industry, but the Caucasian oil industry is not, and cannot be, irretrievably ruined. It will rise, phoenix-like, from the ashes of those wonderful oil fields and that anciently-famous and industrially useful city.

summer inhabited by Baku families of average means. Some of the gardens and vineyards belonged to rich Armenians, who not only built luxurious villas but grew rare fruit trees and grapes. During the summer the doors and windows of the Armenian villas were nailed up, and the gardens and vineyards were allowed to fall into decay. A house and vineyard worth £3,000 was offered for £100, and even then there were no buyers. The Russians were afraid and Tartars were unwilling to buy, thinking that they would get everything for nothing in time. During September there was a great change in the value of real estate at Baku. A number of houses and plots in the upper Tartar quarter were empty, their Armenian owners having fled. Those who did not leave Baku went in a body to the lower quarter of the town ; in some parts they almost entirely displaced the householders of other nationalities, so that the lower part, marshy and fever-stricken, and close to Black Town, became known as the 'Second Armenikend,' an allusion to the first Armenian settlement at Baku. While the value of real estate and rooms in the Tartar quarter declined, property in the two Armenian settlements greatly increased in value.

CHAPTER II.

THE REGION OF THE ETERNAL FIRES.

BIBLICAL REFERENCES TO OIL AND BITUMEN—OIL IN EGYPT—THE WELLS OF ZANTE—ALEXANDER THE GREAT AT BAKU—ONE OF THE EARLIEST SPOUTERS—PETER'S INSTRUCTIONS TO GENERAL MATUSHKIN—REMARKABLE PROCLAMATIONS; A COINCIDENCE—PETER'S DESCENT ON BAKU—BAKU KHANS AND THE OIL WELLS—THE CULT OF FIRE WORSHIP—EMPEROR HERACLIUS DESTROYS THE TEMPLES OF THE MAGI, BUT LEAVES THE SURAKHANI TEMPLE—NATURAL GAS FIRES ON THE SEA OFF BIBI-EIBAT—"THE SEA AS THOUGH IT WERE ON FIRE"—A TEXAS PHENOMENON.

"The oil that dimly lit a shrine now illuminates an empire, and bids, ere long, to give light and heat to an entire hemisphere."

IN the brief chronicles of the "inextinguishable," or as they were more frequently called, the "eternal" fires at Surakhani, an ancient village ten miles from Baku, we have an epitome of the early stories of the presence of oil in the Apscheron Peninsula. When, twenty-five years ago, the priestly attendant—a Parsee from India, and the last of the long list of fire-worshippers reaching back 2,500 years—died at Surakhani the oil industry at Baku was beginning to feel the benefit of foreign enterprise. Capital followed when Ludwig Nobel was able to prove the immense potentialities of Russian oil.

When the light of the temple went out, Petrolia for Canada, Pennsylvania for America, and Bobrka for Galicia were supplying the world with a new light. Baku oil was gradually creeping into the dark places of the interior of

mighty Russia, across the Caspian to the secret towns and unknown hamlets of Persia, and to the Orient, coming in time as a light, but never as a fuel, to our own country.

* * * *

Petroleum was known to the ancients, and in the earliest period of civilisation it was used as mortar or cement. References are made to it in Biblical history. In the Book of Maccabees we read that the Jews, when they were taken into captivity to Persia, hid the sacred altar fire in a well. On their return to Palestine with the Prophet Nehemiah the descendants of the Jews started a search for the sacred fire hidden by their ancestors, but found instead a "thick water," which, poured upon the heated altar stone, immediately burst into flames. The spot was surrounded, declared to be sacred, and was thenceforth known as "The purifying spot Naphthar."

There are also the following scriptural references—

Genesis xiv. 10—"The vale of Siddim was full of slime-pits."

Deuteronomy xxxii. 13—"And he made him to suck honey out of the rock, and oil out of the flinty rock."

Job xxix. 6—"And the rock poured me out rivers of oil."

Micah vi. 7—"Will the Lord be pleased with thousands of rams, or with ten thousands of rivers of oil?"

*Petroleum was used by the Egyptians for embalming

* Dr. Pettygrew, in his history of Egyptian Mummies, states that many of the mummies he exhumed had the cavities filled with asphaltum. Modern research and observation seem to confirm the assertion of the extensive use of petroleum in the process of embalming. The colour, odour, and inflammability of the mummy all indicate the presence of petroleum. Even bodies are used by the wandering Arabs as fuel, and modern travellers in those regions have used them for the same purpose; it was also used in the manufacture of the ancient

and medicinal purposes. At Babylon, an asphalt-like material prepared from oil collected on a tributary of the Euphrates, a few hundred miles from Babylon, was used for building purposes. Some investigators think that petroleum entered into the composition of the famous "Greek fire" employed for military purposes; this fire burned on water, and it was in this way that the Greeks destroyed the Russian war vessels during the descent of Igor on Constantinople.

Greek and Roman writings contain numerous references to the use of petroleum and its derivatives as a fuel.

Herodotus, 500 B.C., spoke of the oil-wells of the Island of Zante (often exploited for oil, but never commercially successful, and this year given up by an English company which has failed to get oil in paying quantities), and Pliny and Dioscondes described the oil of Agrigentum, which was used in lamps under the name of Sicilian oil.

Curtius, Diodorus, Pliny, Bochart, and Josephus all speak of bitumen as forming part of the mighty walls, lofty towers,

papyrus, as an agglutinant to prevent the attacks of insects and the corroding effects of time. Mention is made of its use in the building of Babylon. Herodotus says: "Digging a fosse, or ditch, the earth which was cast up they formed into bricks, and, desiring large ones, they burned them in furnaces, using for lime or mortar hot asphaltas or bitumen." He further relates that the bitumen was brought from the river, a tributary of the Euphrates. Cartwright, a traveller of the eighteenth century, says: "From the ruins of old Babylon we came to a town called Ait (the modern Heet), near unto which town is a valley of pitch, very marvellous to behold, and things almost incredible, wherein are many springs like unto tar or pitch, which serveth all the countries thereabouts, to make staunch their barks and boats, every one of which springs makes a noise like a smith's forge, which never ceaseth night or day, and the noise is heard a mile off." Mr. Rich, a Latin traveller, says: "The principal bitumen pit at Heet has two sources, and is divided by a wall in the centre, on one side of which the bitumen bubbles up and on the other the oil of naphtha."

and pensile gardens of Babylon, which were one of the wonders of the world. After the lapse of close on thirty-six centuries, with all that time could accomplish in corroding and destroying the work of man, the remains of these petroleum-cemented walls and towers exist; fragments of bricks with the asphaltum still clinging to them are still exhumed from the ruins of ancient cities.

During the middle ages petroleum was utilised as a fuel, as a medicine, and, in the case of the petroleum of Amiano, as an illuminant in the streets of Genoa. Oil collected on the Teggern Lake in Bohemia, was known as St. Quirinus oil, a specific against certain ills.

In the Caucasus there is a legend that Alexander the Great, while passing near the spot now occupied by Baku, burned a boy by drenching him with "burning water." Among the natives of the Apscheron Peninsula the use of oil for practical purposes on a fairly large scale was known long ago. Istarkhi, the Arabian chronicler, who lived in the eighth century A.D., mentions that the people of Baku, having no wood, prepared food by means of earth saturated with oil.

According to Marco Polo, the renowned Venetian trader, who travelled from the Black Sea through Central Asia to China in the thirteenth century, petroleum was exported on camels to the surrounding countries, finding its way as far as Bagdad, where it was used as an illuminant. This writer refers to a prolific petroleum spouter which erupted in one hour "a quantity of oil sufficient to load up to one hundred vessels."

Dr. Oscar Schneider states that in an old oil pit at Baku a stone with an Arabic inscription was found; according to this the pit was worked in the year 1003 after the

Hedjera (1600 according to our chronology), and was rented for that purpose from Allah Jaz, the son of Mohammed Nurrs.

In my reading of ancient Russian works on the Caucasus, I have been struck with the great desire Peter the Great displayed to take Baku from the Persians. The most commercial of Russian autocrats appears to have recognised the potentialities of the oil sources of the Apscheron. In 1723, when the Baku Khanate passed under Russian control, Peter gave special attention to Baku, as he believed it to be a suitable point for centralising the trade with the East. He also had an eye on its liquid mineral wealth. In his instructions to General Matushkin, who took Baku by assault, Peter wrote: "Of white petroleum send a thousand poods, or as much as possible, and find here a refining master."

Students of Caucasian history will remember that in 1722 Peter undertook an expedition to Persia. On the 15th June, same year, when he arrived at Astrakhan, he issued a manifesto in the Tartar, Turkish, and Persian languages. In this he said:—

"Dand-Beg, Governor of the Lesgian country, and Surchai, Governor of the Kasi-Kumyl province, under the authority of His Majesty, the Most Serene, the Most Potent, and Most Formidable Shah of Persia, our great friend and neighbour, assembled in those parts many evil-disposed and turbulent persons of different nations, and rebelled against His said Majesty our friend the Shah, and likewise took by storm his town of Schamachi, situated in the province of Schirwan, and not only killed many of the subjects of His Majesty our friend the Shah, but also most wantonly and inhumanly put to death such of our Russians

as agreeably to treaties and ancient customs had removed thither for the sake of their trade, and seized their property and merchandise to the amount of four millions of roubles, and thus injured our empire, in violation of treaties and of the public peace. As therefore our Russian nation has been injured and insulted by these villains, and can obtain no reparation, we are compelled, after fervent prayer to our Lord God for victory, to march in person with our invincible army against the rebels, in full confidence that we shall bring to condign punishment those villains who have occasioned so much vexation and mischief to both parties, and do ourselves ample justice. For this reason we hereby give to all the commanders and subjects of our dear friend His Majesty, the Most Serene, Most Potent, and Most Formidable Shah, of whatever religion and nation they may be, Persian and foreigners (Adshem), Armenians, Georgians, and all others residing in these parts, our most gracious Imperial assurance ; and it is our fixed and sincere determination that not the slightest injury shall be done either to natives or foreigners in the above-mentioned provinces, and that no one shall harm their persons or their property, towns, and villages ; as we have most strictly forbidden our generals, officers, and other commanders, both of horse and foot, and the whole army in general, to do the least mischief to any individual ; but should any of our people be convicted of the smallest misdemeanour, punishment and execution shall instantly follow. This, however, must be understood to depend on this condition, that ye remain quietly as befits friends in your habitations, without removing your property. Should we find, on the contrary, that you take part with those atrocious robbers and supply them privately or publicly with money or provisions, or that, in spite of our gracious assurances, you quit your

houses or villages, *we shall be compelled to number you among our enemies, and to pursue you without mercy with fire and sword. You will then be put to death, and all your property given up to plunder.* You, and you alone, will be to blame for this, and will have to answer for it at the second coming of the Lord our God."

The italics are mine and are intended to direct attention to a coincidence, *i.e.*, the similarity between Peter's threats and one which is made in the last sentence of the following proclamation printed in Baku and dated August 25th, this year—

"Military, including artillery, are arriving. All houses from which shots have been fired have been noted; the owners, managers and occupiers of these houses will be dealt with as persons responsible for these shots, and losses sustained owing to shooting will be charged up to them. Therefore, I caution you that everyone guilty in future of such criminal actions as shooting from houses and roofs will be dealt with in a similar manner. Those who, in any way whatever, interfere with the military or trouble the inhabitants *will receive no mercy whatever.*—(Signed) Lieut.-General Fadeiev, Governor-General, *pro tem.*"

On the 18th of July the Emperor sailed from Astrakhan with a fleet of 442 vessels, and at the head of an army of 22,000 regular troops and 5,000 seamen. The whole of the force destined for this expedition is said to have amounted to 106,000 men, as it consisted of 22,000 infantry, 20,000 Cossacks, 30,000 Tartars, 20,000 Calmucks, 9,000 cavalry and 5,000 sailors. After fighting several battles, on the 23rd of August, 1722, the Emperor made his entry into Derbent, the governor of which had voluntarily

surrendered the city. The attempts to take Baku had not, however, proved so successful, and the Emperor set out on his return to Astrakhan at the beginning of September. In 1723 General Matushkim, ordered to possess himself of Baku, bombarded it, and was preparing to assault, when, on July 26th, the gates were opened to him. (At the time I am writing this chapter soldiers are making their way down to the Caspian and the Vladicaucasian Railway to put an end to the violence and bloodshed and stifle the fires of insurrection in the Caucasus.—AUTHOR.)

To make the story historically complete I should say that in 1735, under the reign of Empress Anna, Baku was restored to Persia, and that it was only in 1813 that the city was once more, and that finally, secured to Russia.

Lerche, who visited Baku in 1735, writes—"At Balakhani there were fifty-two oil wells, which were a great source of wealth. The oil from the wells is collected in large and deep stone-made ponds and carted to Baku in large leather bags. The oil is used in all houses as a fuel (all houses are blackened by the dense smoke) and as a remedy for rheumatics and skin diseases, while, used internally, it cured gravel. It is quite likely that the fact that the Black Death did not touch Baku was due to the presence of petroleum."

At the time of his visit the oil wells, which produced a total of 1,500 to 3,500 tons per annum (against about 10,000,000 tons last year), were a great source of income to the Baku Khans, who leased them to contractors. The oil was chiefly burned in clay lamps and used for lubricating the axles of *arbas* (heavy two-wheeled vehicles). The unrefined crude was also used on the Kuban and Terek along the northern slope of the Caucasus.

* * * *



THE ANCIENT TEMPLE OF THE FIRE WORSHIPPERS AT SURABAH, NEAR BAKU.

The Apscheron Peninsula with its "eternal" fires early attracted the attention of the aborigines of the East, who considered them manifestations of the Deity.

Fire worshippers existed in the sixth century B.C., and the "eternal" fires of Baku were employed by Zoroaster (thought to have been a native of the north-eastern slope of the Caucasian ridge) in the building up of his teaching about light and fire and the cult of fire worship. For many centuries the followers of Zoroaster worshipped before the fires in temples, which existed down to A.D. 624. In that year, according to Gibbon, Emperor Heraclius during his campaign against the Persians wintered in the steppes at the mouth of the Kura, ten miles south of Baku. There, Gibbon says, he signalled the zeal and revenge of a Christian emperor; at his command the soldiers extinguished the fire and destroyed the temples of the Magi. Twelve years later (A.D. 636) Persia was vanquished a second time by the Arabs, who at the edge of the sword converted the people from fire worship to the Mussulman faith. Large numbers fled to Ormus, thence to India and gave origin to what are now the Parsees of Bombay. These Parsees of Guebrs frequently made pilgrimages to the Apscheron Peninsula. The temples of the Guebrs have been regularly visited by fire worshippers from India, Persia, and, it is alleged, from time to time by pilgrims from Lithuania.

The temples existed until quite recently. To-day only one remains—the one to which I have referred as being a few miles from Baku, in the village of Surakhani, and near the old Kokorev refinery owned by the Baku Oil Company.

In 1879, this, the last of the Pagan shrines, was threatened with destruction, when the Government, to the dismay of its votaries, granted the Transcaspian the concession for

exploiting the natural gas sources of the district. It is now deserted.

The first reference to the oil sources and eternal fires of Baku by a European scientist was made by the academician Kämpfer, who visited the Apscheron Peninsula in the beginning of the seventeenth century. He was followed a few years afterwards by Hanway, Hmelin and Lerche.

Jonas Hanway who stayed at Baku in 1754, stated that ten miles to the north-east of Baku, on a dry, rocky plain, there were old shrines or temples, built of rock, and used in ancient times for fire worship; one of these, he said, continued to serve as a shrine for worship on the part of Hindoo pilgrims. Near the temple in the fissure of a low boulder was a longitudinal opening, 6 ft. 3 ins., from which continuously issued a flame resembling in colour and intensity the flame of a spirit lamp, but much purer. In windy weather the flame at times rose to a height of eight feet, but in calm weather it was much lower. According to Hanway the Indian fire worshippers who flocked to Baku had a tradition that the eternal fire had flamed ever since the Flood and that it would last to the end of the world.

Hmelin, the Russian academician, who visited Baku in 1771, mentioned that the local fire worshippers are descendants of the old Guebrs. He says:—"They honour this inextinguishable fire as something most sacred and as a manifestation of a deity which could not manifest itself to human beings in a purer or more perfect medium than fire or liquid; or, in other words, in a medium which is of such great purity that it can be no more classified amongst material bodies. To gain salvation these devotees come from India to the eternal fires of Baku and there conduct

their supplicatory devotions before the Eternal Being in such a touching manner that they give one an impression quite different from the one generally held regarding idolators. Round the spot where the eternal fire burns they have erected vaulted temples ranging in height from 12ft. to 20ft."

In 1845 Prof. Beresin, describing the fires, said:—"At the eastern termination of the Caucasian range, ten miles from Baku, and near the village of Surakhani, jets of inflammable gas issue from the porous, shelly limestone. In the day time these fires are not particularly striking, but at night, when they illuminate the gloomy and deserted neighbourhood, the picture changes, and, behold, the simple temple of the fire worshippers becomes a fairy castle. Multi-coloured tongues of fire dance weirdly in the winds. Tongues of fire are carried away by the breeze, but at the points which they leave there spring up flames of greater brilliancy. It is not surprising that the imagination of Easterners should be played upon by a spectacle of such rare beauty and grandeur and that these fire worshippers should credit these eternal fires with a mysterious and supernatural significance. We must remember that Easterners are not the only ones who have indulged in fire worship; as a matter of fact there is scarcely a country in the world that has not had its fire worshippers."

Emanations of natural gas are still observed at many points around Baku. They are not entirely confined to the mainland, but are also observed in the Caspian Sea. If burning tow is thrown into the sea, half-an-hour's row from the headland at Bibi-Eibat, an immediate ignition of natural gas bubbling up from the bottom is observed, the flames spreading over a considerable area. Only the wind and waves are capable of extinguishing the fire, which is a

most interesting spectacle, especially at night time. These phenomena are observable in the sea near other oil fields. Just outside the Sabine Pass, close to the coast line of the Texas oil fields, which I visited during the Spindle Top boom (1901) gas bubbles up on the surface of the sea. Sir Boverton Redwood, in his standard work on the technology of petroleum, has described this phenomenon in Texas, while the travellers who have referred to the fires on the sea at Baku are Mr. Arthur Arnold (writing in 1875, when he was M.P. for Salford), Mr. Augustus Mounsey (connected with the British Embassy at Vienna), Mr. Marvin, Mr. Edmund O'Donovan (*Daily News* correspondent), and Mr. Osmaston. Mr. Osmaston wrote:—
'One of the sailors threw out a piece of lighted tow, and after one or two ineffectual attempts the waves were wrapt for several yards in flame. It was quite dusk, so we saw it beautifully. It was a most extraordinary sight; the sea as though it were on fire; a patch of bright flame burning upon its cold bosom. Setting the Thames on fire one had heard of, but I never thought I should really witness the sea in a blaze. We rowed round it, and then away, but the flame could be seen dancing up and down with the waves till we had gone nearly a mile distant. The wind then blew stronger and extinguished it, for it suddenly disappeared. There are several other spots in the Caspian where naphtha gas bubbles up in the same way.'

CHAPTER III.

THE DAWN OF THE RUSSIAN OIL INDUSTRY (1813).

RULERS OF BAKU AND THE OIL PITS—ARBITRARY PROCEEDINGS—
CONTRACT SYSTEM STARTED—CROWN REVENUE FROM OIL—
HUMBOLDT'S ESTIMATE OF EIGHTY-TWO PITS IN 1829—1832-1840
PRODUCTION STATISTICS — HALF OF THE OUTPUT SENT TO
PERSIA — REICHENBACH'S EXPERIMENTS IN 1830 — PHOTOGEN
WORKS ERECTED BY LIEBICH AT SURAKHANI—THE 1863-1873
PERIOD—MELIKOV'S REFINERY AT BAKU—FIRST AUCTIONS AT
BAKU—FOLLOWED BY THE IMPOSITION OF NEW TAXES—PRO-
TECTION AGAINST AMERICAN COMPETITION—THE FIRST MACHINE-
DRILLED WELL—MIRZOIEV'S RECORD.

THE final acquisition of the Baku Khanate, by the Gulistan treaty concluded with Persia October 11th, 1813, marked a turning-point in the history of the Russian petroleum industry. A start was made to develop it on commercial lines. The Crown Department of the Georgian Government, the highest government institution in the Caucasus of that time, finding that all the pits, with the exception of two, were the property of Hussin, the former ruler of Baku, confiscated and leased them to a contractor for £13,000 per annum, which was then considered an appreciable item in the revenue of this Caucasian Government. The two wells not confiscated were on the private property of the Selimkhanovs at Bibi-Eibat. The owners had, however, to deliver the oil produced, some 174 tons per annum, to the Crown at 18½ copecks per pood (roughly 22s. 3d. per ton).

In order to increase its income from the petroleum industry, the production of crude from shallow wells, and

its sale for illuminating purposes, the Crown attempted to work it as a monopoly, but did not meet with success; as a matter of fact, in 1825, when the Crown took over the wells, the revenue from this source declined from £13,000 to £7,600, and it was decided to revert to the contract system. The contract system lasted till 1872, when it was abolished. The Crown revenue for this period never exceeded £15,000 per annum, while consumers were compelled to pay the contractors high prices. The sole measure of protection adopted by the Crown in the consumer's interest was a rule making it impossible for contractors to charge more than forty-six copecks per pood for crude.

In these days the production of crude was small. According to A. Humboldt, the famous traveller, there were only eighty-two pits in 1829. In 1850 there were in the whole of the province of Shemakha some 136 petroleum pits, with an aggregate output of 5,436 tons, but by 1872 the number had increased to 415 and the production to 22,581 tons. Between 1834 and 1849, when the oil pits were worked by the Government, the output remained more or less stationary, as is shown in the following table:—

1832	...	150,000 poods.	1841	...	212,117 poods.
1833	...	180,000 "	1842	...	215,142 "
1834	...	230,091 "	1843	...	212,919 "
1835	...	237,479 "	1844	...	213,503 "
1836	...	228,604 "	1845	...	212,779 "
1837	...	230,538 "	1846	...	215,650 "
1838	...	233,915 "	1847	...	216,318 "
1839	...	234,950 "	1848	...	269,769 "
1840	...	221,032 "	1849	...	207,029 "

The oil, obtained by primitive methods (pits), was almost exclusively used in its crude state, principally for household

use, for illuminating purposes and the oiling of leather, wheels and horse trappings, as a cattle dip, &c. Small as the production was, it was impossible to consume the bulk on the spot, and about half of the production had to be exported to Persia.

The extent of the home consumption as well as of the exports to Persia always depended on the price fixed by the Government for the crude. In 1825 the price was thirty-five copecks per pood delivered at Baku; in 1839 the Government fixed the price at thirty-five at the pits, but in 1846 the Caspian Government Board received the permission of Prince Vorontzov, Viceroy of the Caucasus and ancestor of the present Viceroy, to raise the price to forty copecks and to forty-five copecks a year later. The effect of the increased price was to reduce the sale of crude at Baku, and to cause home as well as Persian consumers to secure oil of better quality from the Turcomans of Tcheleken at a cheaper price. The revenue declining, the Viceroy sanctioned in 1848 a reduction to forty copecks of the price for exported oil, retaining the forty-five copecks price for home consumed oil, the object being to weaken by this compromise the Tcheleken competition. This measure also failed to improve matters, and from 1850 to its final abolition in 1873, the Government stuck to the contract system. The contracts generally being for four years only, the contractors, of course, did not care to increase their output by the investment of large sums of money, but preferred to extract from the ground all they could get at the least expense possible, without troubling about improvements or questions of proper management.

Thus matters dragged on, the high price of the crude preventing its wider application till 1860, when a start was

made with the extraction of illuminating oil from the crude by the Transcaspian Company.

Reichenbach's successful experiments in 1830 in the extraction of photogen from peat, boghead and similar materials in Germany, drew the attention of enterprising Russians to the extensive deposit of kir, the asphalt-like hydrocarbon found in many parts of the Caucasus. In 1858 Messrs. Kokorev and Gubonin, trading as the Transcaspian Trading Company, erected works for the extraction of photogen from the local kir at Surakhani, close to the Temple of Fire Worshippers, in order that they might be able to use the natural gas as a fuel free of cost. These works were built according to plans furnished by Liebich, a German chemist, who sent his assistant to supervise the erection and starting of the works. It was soon found, however, that kir, which only contained from 15 per cent. or 20 per cent. of heavy oils, was not suited for the purpose it was intended for. Just as unsuccessful were two other works erected outside the Baku region at the same time and for the same purpose—the production of photogen, solar oils and paraffin scale. One of these, erected near Tver, was intended for the exploitation of the village peat deposits of the province of Tver; the other was erected by Witte and Company on the Holy Island (east of the Apscheron Peninsula) for the dry distillation of ozokerit, which yielded 68 per cent. of paraffin scale and 8 per cent. of oil. Both works were soon closed.

In 1859 petroleum sources were discovered in the United States. Oil was sold as an illuminant, not in its crude state, but distilled, and refined by chemical re-agents. The demand for petroleum distillate increased with incredible rapidity. As the output increased, the new products became cheaper, and this in a still greater

measure contributed to their popularity, enabling the illuminating materials extracted from oil to come into successful competition with photogen. Experiments carried out at the Kokorev-Gubonin works with crude petroleum as the raw material gave excellent results and led to a complete reconstruction of the refinery. The management was entrusted to Mr. Eichler, a well-known Moscow chemist, who succeeded in obtaining a light coloured product by the introduction of a new process of chemical refining. This was the origin of the first kerosene refinery near Baku. In 1863 they started to forward barrelled oil to the inland markets of Russia and succeeded in ousting American kerosene from centres to which the oil could be delivered at a reasonable cost, such as the Volga region. The example set by this firm was soon followed by others, and near the end of the sixties the refinery branch of the industry was firmly established in the Apscheron Peninsula.

The late Mr. V. Ragsine recognised the great service rendered to the industry by the Transcaspien Trading Company; thanks to the enterprise of Messrs. Kokorev and Gubonin, he says, the 1863-1873 decade marked the first appearance of vigorous life in the petroleum industry.

In 1863 Melikov erected the first refinery in Baku. About ten years after the erection of this refinery there were about twenty-three kerosene refineries in and near Baku. These were on a small scale, and, their total production being under 8,065 tons per annum, the Americans continued to supply the Russian markets with the bulk of the kerosene required.

Near the end of the sixties an agitation having for its object the abolition of the contract system in the exploitation of the oil fields of the Crown was started. The system

was blamed by men like Prof. Mendeleiev for the slow advance of the home petroleum industry. The Crown was not sufficiently benefited by the contract system, and it expected to draw a larger revenue from the Baku oil fields by changing it. In the half century which elapsed between 1821 and 1872 it only cleared from its oil properties £474,311, this sum for a considerable period also including the salt revenue, petroleum and salt being treated as one item in the contract tenders. For the final ten years of the contract system the Crown received less than it subsequently cleared in one year after the system had been abolished and the lands leased out by public auction, and, that too, quite apart from indirect revenue from the rapidly developing industry.

The extent to which the contract system checked the development of the oil fields is seen from the statistics of production. In 1829 there were only twenty-eight pits, while in 1872 there were 415 pits and two steam-drilled wells. In 1825 the production of crude amounted to 3,387 tons, in 1850 to 4,194 tons, in 1863 to 4,839 tons, and in 1872 to 22,500 tons. The contract system produced in forty years about 274,194 tons, while some 2,580,645 tons were obtained in the first ten years, and 29,032,258 tons in the second ten years following upon the abolition of the contract system. At the present time, thirty years after the petroleum industry was freed from this system, the production averages about 10,483,871 tons.

In 1867 a commission was appointed to prepare draft regulations relating to the petroleum industry and the excise on the photogen production. The regulations were confirmed on February 1st, 1872, and became operative on January 1st, 1873. The industry was declared free, and the petroliferous Crown properties were leased by public

auction for a single payment and for a yearly rental of ten roubles per dessiatine (5*s.* 8*d.* per acre) for the surface use of the plots; at the expiration of 24 years, this rental was to be increased to 100 roubles per dessiatine (56*s.* 8*d.* per acre). Some 1,240 dessiatines were put up to auction, including about 1,053 acres in the Government of Baku, these, again, only including 418 acres at Balakhani. All properties at which there were pits were sectioned into groups of twenty-seven acres each and valued according to the production of the pits at the time and the prices of the oil from £1 to a few hundred pounds per group. Although the total value of the properties was fixed at £55,200, new concerns, labouring under the impression that the plots put up to auction were the only petroliferous areas available, outbid one another and raised prices to incredibly high figures.

Thus, for groups valued at one rouble tens of thousands were offered and for those valued at £100 hundreds of thousands were offered. The three chief groups, valued at £24,400, fetched £169,800. Altogether the Crown obtained £298,000 for all the forty-eight offered. The chief buyers were Mirzoiev and Kokorev and Gubonin. Mirzoiev paid close on £122,000 for forty dessiatines at Balakhani and the last two £132,300 for sixty dessiatines. The Mirzoiev enterprise as well as the Kokorev and Gubonin firm, subsequently transformed into the Baku Oil Company, met with only slight success, and the striking of oil on other lands completely destroyed the plans of the promoters. Simultaneously with the abolition of the contract system, a kerosene excise arrangement was put into operation on a most imperfect basis. Refiners were charged according to the capacity of their stills, a system which, depending on the degree of perfection of the distilling

process, resulted in a most unequal taxation of the final product, amounting on the average from fifteen to twenty-five copecks per pood of kerosene. Owing to these excise anomalies the refining industry failed to develop as smoothly as the producing industry. The kerosene excise was most unevenly distributed amongst the different refiners. The excise revenue was very small. In 1873 it only amounted to £20,366, in 1874 to £28,022, in 1875 to £21,076, and in 1876 to £29,933. The Government, on a petition submitted by the petroleum producers (September 17th, 1877), temporarily abolished the tax on kerosene. No sooner was the excise abolished than the petroleum industry made rapid progress.

The consumption of kerosene increased. There was also an increase in exports, and prices dropped as the result of inland competition and an abundant production. The combination of these conditions, and especially the drop in prices (from 60-80 to 20-30 copecks per pood), which took place during ten years following the abolition of the excise, caused the Government, at the time on the look out for new sources of revenue, to re-impose the excise on kerosene, and in 1888 it levied a tax of forty copecks per pood on ordinary kerosene and thirty copecks per pood on the heavy grades (higher flash point), on condition, however, that there should be no tax on benzine, lubricating oils, crude oil, astatki, and all petroleum products exported. Near the end of 1892 the taxes were increased to sixty and fifty copecks per pood, and a few changes were made in connection with the classification of heavy illuminating oil paying the lower rates, but generally the impost remained as before. The re-imposition of the excise, although it slightly reduced the rate of expansion of the industry, could not, however, cause serious injury, because kerosene

had already secured a wide and expanding market at a time when prices were even higher than after the re-imposition of the tax.

Simultaneously with the imposition of the excise tax (1872), imported kerosene was subjected to an import duty of fifty-five copecks (paper money) per pood, and still greater protection was afforded the home industry in 1877 by stipulating for the payment of duties in gold currency. This measure was one of far-reaching importance, especially when viewed in connection with the rapid drop of prices which occurred in America as well as in Russia. Without Customs protection the home industry, then in the first stage of development, would have been crushed out of existence by American competition, and this would have been easy because the Americans had secured a firm footing on the Russian markets at a time when the home industry was in embryo. In the 1865-1875 period, the imports of American kerosene averaged from 24,194 tons to 40,323 tons per annum; between 1876 and 1879 about 32,258 tons per annum; between 1880 and 1882 about 16,129 tons per annum; while in 1883 the imports only amounted to 7,419 tons. Since then the imports have not only ceased, but there has been a steadily growing export of Russian oil to foreign markets. The high import duties imposed to encourage a home industry have served their purpose, and, when the industry was no longer in need of protection against outside competition, it was retained, firstly, with a view to preventing the import of oil into the frontier regions situated at a distance from the Caucasus, and, secondly, in order to protect the revenue derived by the Exchequer from home-produced kerosene.

The first attempt to drill with the aid of machinery was made by a Mr. Novossiltzev in the Kuban region during

the middle of the sixties. Having leased from the Kuban Cossacks extensive areas and secured several freehold plots, Novossiltzev commenced to prospect by means of trial wells. The result was the bringing in of the first spouter at Kudako, which induced Novossiltzev to build the Fanagori refinery ; but the extraordinary energy displayed in the production and treatment of petroleum did not meet with the success anticipated, largely owing to shortage of working capital. In the Baku region the Transcaspien Trading Company (now the Baku Oil Company) applied in 1866 to the Government for permission to start drilling work, but met with a refusal. It is quite probable that this refusal was prompted by the opinion of Abich, who had investigated the Apscheron Peninsula on behalf of the Government three years previously, and arrived at the conclusion that the drilling rig could not be of any benefit to the petroleum industry. The first to actually complete a well in 1871 was Mirzoiev, who was also the owner of the second well started in 1872. Drilling proceeded at a speed which surprised the natives. The advantages of the new method were soon evident, the first prolific spouter, which yielded a few million poods of oil in a very short period, having been brought in from the depth of 122 ft. At the end of 1873, there were seventeen steam-drilled wells ; in 1874, fifty ; in 1875, sixty-five ; and in 1876, 101, when the hand-dug pit became a thing of the past.

CHAPTER IV.

THE PHOTOGEN INDUSTRY IN THE CAUCASUS.

BARON TORNAU ARRIVES AT BAKU—THE GOVERNMENT GRANT IMPORTANT PRIVILEGES—FIRST WORKS NEAR THE ETERNAL FIRES—TORNAU-EICHLER EXPERIMENTS—SHIPOWNERS REFUSE TO CARRY SULPHURIC ACID—“PHOTONAPHTHIL” A FAILURE—PARAFFIN PLANT ERECTED ON HOLY ISLAND—FIRST REFINERY IN BAKU (1863)—ENGLISH CAUSTIC SODA SOLD AT BAKU—THE STRUGGLES OF MELIKOV—BATTLES WITH THE EXCISE—THE LUBRICATING OIL INDUSTRY—THE ORIGIN OF BLACK TOWN.

HALF-WAY through the fifties, when the photogen fever was at its height in Germany, Baron Tornau decided to start a photogen factory in Russia. He selected Baku, where he knew the natives mined a product resembling the bituminous materials from which photogen was being extracted in Germany. This product, locally known as kir, was obtainable for a trifle, and, what was more, the Eternal Fires, which he desired to use for fuel, were close at hand. At about the same time a sound enterprise, the Transcaspian Trading Company, was formed by Messrs. Kokorev and Gubonin in St. Petersburg to extend Russian trade with Persia and the Turcomans on the eastern shore of the Caspian.

The Government was most anxious to assist, and granted many important privileges. Baron Tornau submitted to the company his scheme for the erection of photogen works and for supplying Persia with illuminating oil. The scheme was taken up, and the first photogen works were erected on a thirty-two acre plot near the Temple of

Eternal Fires. The originators of the scheme never gave a thought to the possibility of extracting illuminating oil from petroleum, and kir only was to provide the raw material. Liebich, the famous chemist, furnished the plans and working drawings designed on the system adopted by the German makers of photogen from shale. This plant consisted of horizontal cast iron retorts, in which the raw material was submitted to a preliminary distillation, and of a second set of stills in which the distillates obtained were re-distilled. To supervise the building of the works, and especially the mounting of the plant and exploitation of the natural gas sources, Liebich sent Moldenhauer, his assistant, in 1858. Moldenhauer started with the erection of the works in the following year, but owing to the plant having to be ordered abroad, and the difficulties of transport, the works were not completed before 1860, while the first marketable product was not turned out before 1861. Moldenhauer had in the meantime been experimenting, and at the very outset—in 1859—showed that photogen from kir, although better than shale oil, was of a too heavy specific gravity, and, besides, that the yield did not exceed from fifteen to twenty per cent. of the raw material treated. His experiments, lasting the whole of 1859, never went beyond his laboratory, and kir photogen was never placed on the market in quantity. He then thought of experimenting with crude petroleum obtained from the Balakhani and other pits in quantities which were considered at that time to be extraordinary. The result exceeded his most sanguine anticipations. The distillate was perfectly clear, ready for immediate use, and, what was of even greater importance, the yield was much higher than from kir. Moldenhauer, after constructing gas holders for collecting the natural gas, returned to Germany in 1860.



TIFLIS, CAPITAL OF THE REBELLIOUS CAUCASUS.



THE FAMOUS GEORGIAN ROAD. IN THE HEART OF THE CAUCASUS.

(From Mr. A. W. Eastlake's unique collection of Russian photos)

In 1860 Eichler arrived at the Surakhani works. The company had almost disposed of its enterprise and was practically on the point of abandoning it when Eichler proposed to Baron Tornau, the manager of the company, to drop the production of photogen from kir and, taking advantage of Moldenhauer's laboratory experiments, extract illuminating oil from petroleum. Tornau gave Eichler a free hand in the matter of the raw material as long as he obtained a good and cheap oil. A short time previous to his departure, Moldenhauer, delighted with his petroleum photogen, which he considered would do without refining, filled it into tins which he soldered up, and sent a small quantity for sale at Tiflis, at eight roubles per pood (roughly 3s. 10d. per gallon). On arrival at Tiflis it was found that the oil which was clear when forwarded was gradually becoming darker and finally turned a dark brown. This led to the first scientific analysis of Caucasian illuminating oil. Returned to the works for investigation, the oil came into the hands of Eichler, Moldenhauer having returned to Germany. He found in the oil a high percentage of iron in the form of various combinations with organic acids, chiefly with formic, acetic and other homologues of the fatty series, and his analysis proved that unrefined photogen contained organic acids, which acted on iron, and must, therefore, be neutralised. Neutralising these acids, he obtained a better oil, and one which neither attacked iron, nor changed colour, but suffered from the drawback of slightly carbonising the wick, which indicated the presence of free alkali in the oil. This he eliminated by washing with a weak solution of hydrochloric acid.

He obtained a product which burned fairly well in the lamp, but was of yellow colour. While there was no competition, the colour did not matter much until 1863, when

the first shipment of American oil arrived in Russia. The American petroleum-photogen was a light grade, absolutely clear oil, burning perfectly in the lamp. The Surakhani product would no longer do, and Eichler had to find a better method of refining and decolorising his oil. After trying different chemicals he selected sulphuric acid of 60° Bè., which, besides destroying all coloring matter, also had the effect of eliminating the penetrating odour peculiar to unrefined illuminating oil. To procure the sulphuric acid he required was not an easy matter ; it was impossible to get it from Astrakhan, the shipowners refusing to carry such a dangerous cargo, and he was compelled to obtain his supply from England by way of Poti, on the Black Sea shore, and cart it 530 miles across the Caucasus. In consideration of the heavy expense this transport involved it was not surprising that the acid at the works never cost less than 10 roubles per pood (over £3 a cwt.). The soda he required he extracted on the spot from seaweeds. The resultant solution of caustic soda of 38° Bè. he used without any further dilution. The oil refined, first with strong sulphuric acid, and then with weak caustic soda, was once more washed with weak solution of sulphuric or hydrochloric acid and allowed to settle. The first small lot of photogen was sent to Tiflis ; the shipments to Russia proper only started in 1863, or, properly speaking, in 1864.

Illuminating oil from petroleum being at that time a new product, Moldenhauer and Eichler decided on giving it a name that would sufficiently distinguish it from photogen (meaning, in Greek, *Lightgiver*), the bitumen product. They adopted "photonaphthil," a combination of three Greek words meaning "Light of the petroleum substance." Under this designation they sent their oil to Russia, but for some time found a difficulty in placing it, the consumer

only knowing of the existence of photogen and kerosene (an American-coined word) and, being entirely ignorant of what "photonaphthil" might be, refused to buy it. The new designation never caught on.

Soon after the erection of the Surakhani works, Messrs. Witte & Company put up an extensive paraffin plant on Holy Island, facing the eastern extremity of the Apscheron Peninsula. The works extracted paraffin scale from ozokerit procured from Tcheleken. The stills yielded 68 per cent. of distillate consisting of 60 per cent. of scale, and 8 per cent. of a light brown illuminating oil. The liquid was first heated with steam to 60°C. and then mixed with 1 per cent. of sulphuric acid. Mixing was continued till the froth turned a perfect white, when burnt lime was added and the whole re-distilled. The first fractions collected represented a perfectly colourless liquid of 0.750-0.810 specific gravity and of a fairly agreeable ethereal odour. Near the end of the distillation the colour was deteriorating. The first ten to thirteen gallons were collected separately and used as a solvent in refining the scale.

The owners of the Surakhani and Holy Island works jealously guarded their secrets, but these leaked out, and the first refinery in Baku town was erected in 1863 by an unknown and uneducated Armenian, Djevat Melikov, a former employé at the Witte works. His proposal to erect a petroleum distilling plant met with universal ridicule, and friends and foes described him as a lunatic. Gradually, however, his perseverance carried the day, and he succeeded in forming a small company of three with a share capital of £30, with which, of course, he could not erect an extensive plant, but only mounted a still fitted with a cooler under the open sky. A jeering

crowd collected to see the primitive works, but a few hours afterwards, when they saw the pure and transparent photogen drawn off from the cooler, their doubts and ridicule ceased, and Melikov became the lion of those parts.

Another company, with a larger capital (£200), was immediately formed, and the management entrusted to Melikov. No sooner, however, had they learned, or thought they had learned, how to produce photogen than they found reasons why they should get rid of the inventor. Melikov then gave himself up with renewed energy to the extraction of scale from ozokerit. In this he failed, firstly, because there was no ice at Baku, and also because the business required much more capital than the scanty funds at his disposal. That Melikov was looked upon as a lunatic is not surprising. He did not look for gain, and he gave up his last penny without one thought of the future. He longed to see the materialisation of his ideas, and his end—poverty—was about the same as that of most inventors of his class. He induced Mirzoiev to take advantage of the Grosny oil sources and to erect a refinery for supplying the Northern Caucasus with illuminating oil. He erected the refinery, but was once more imposed upon and done out of his dues. This pioneer of Baku's refining industry died in abject poverty, while his partners and employers made fortunes in the production of illuminating oils.

Notwithstanding the simplicity of the method the photogen industry developed slowly. The reason was the existence of the contract system and the high price of crude. For this reason only a few refineries were built during the first half of the sixties. Working more or less in the dark, they generally tried to get hold of workmen from

the Surakhani works and from these they gleaned much valuable information. They soon ascertained that photogen must be refined with acid and alkali. The acid they obtained from Moscow, but of soda they had no definite conception and were led to try and replace it, some with sea water and some with ordinary salt water. By this means the product was not improved.

Mirzoiev, the contractor, was all-powerful, and although not a refiner himself, but only a buyer of refined, he fixed prices for crude and products at Nizhni Fair and would not tolerate competition. In order to secure a still firmer grip on the industry he started to build a large refinery. He bought a small photogen property from Grikurov; this consisted of a still taking a seventy-pood charge, and one which had cost Grikurov £70. He ordered ten new stills from Moscow, but these proved useless, because they were made of copper and soldered with tin. He ordered from abroad six more stills capable of taking a charge of fifty poods each, and at about the same time he commenced to build his Surakhani works at which he hoped to make use of the Eternal Fires.

A year or two later, Mr. Weiser, a former mechanic at the Witte works, erected a photogen refinery working upon an improved method. At this time English caustic soda, known in Baku as English potash, was delivered for the first time in Baku. This, properly speaking, marked the period when the more or less rational refining of photogen began. The secret of the refining methods soon became universally known, and in 1869 there were twenty-three refineries in existence. Of these twenty could hardly handle one hundred poods a day.

Two or three months after the abolition of the contract system the number of petroleum refineries increased at such

a rate that dwelling houses were converted into oil works. As these used crude as fuel and did not attempt to obtain perfect combustion, the whole town lay under a cover of soot and smoke. The residents protested against this nuisance; the local authorities prohibited the building of new refineries, and closed the existing ones, giving the refiners permission to erect new buildings on a special reservation about one and a half miles outside the town. Work was in full swing at the reservation during the spring of 1873, and in half a year eighty refineries were in operation.

Excellent prices were got for kerosene, and everyone in the business was expecting to make considerable profits. Under the influence of high prices, the output soon exceeded the demand. The erection of new refineries proceeded apace, and in a short time what is known as the Black Town, a huge conglomeration of refineries, workshops, and dwellings, was formed on this reservation just outside Baku.

The refineries were not slow to find out the weak point in the excise regulations. Excise was charged, not according to the quantity produced, but on the basis of the capacity of the still. For this reason their chief aim was to produce as much as possible per still irrespective of quality. Astatki and the acid and soda dregs were not utilised, and, as a matter of fact, were considered absolutely useless. The residuum was allowed to run into pits, where it was burned, while the dregs collected in pools in the public streets.

The part played by the excise authorities in the early development of the refining industry of Baku makes curious reading. The authorities, instead of encouraging the employment of improved apparatus and methods of



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PART OF THE BLACK TOWN REFINERY REGION.

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treatment, deliberately discouraged enterprise on the part of the more advanced producers. The owners of two works, one in Central and the other in South Russia, at which lubricating oil, soot, pitch-coke, and a heavy illuminating oil were produced by distilling residuum, succeeded in convincing the Inland Revenue that it would be unfair to impose a tax as they were only treating residuum, a product which had already paid the excise tax. By Special Rescript, the Central Russian works on November 3rd, 1872, were exempted from compliance with the photogen regulations of February 1st, 1872; the South Russian works were also exempt from the tax because they used open vats and not closed stills. Two Baku refiners, Weiser and Bagirov, the first a lubricating oil and the other an asphalt manufacturer, thought this rule would apply to them, but they found out to their cost that they were wrong. The Excise Department of Transcaucasia would not allow exemption from the tax, and the owners had to close their works.

Shortly after this Ragosine applied for permission to open a temporary refinery for testing a new process for obtaining illuminating and particularly lubricating oils from crude oil. His petition was submitted to the Emperor by the Minister of Finance. The result was the Rescript of November 6th, 1874, authorising the Minister to grant for the period of three years the right to carry out experimental work at new refineries, and to tax all the illuminating oil produced during the experiments at the rate of twenty-five copecks per pood.

About the middle of 1874, the manager of one of the new Baku refineries applied to the Excise Department of the Caucasus for exemption, but received a refusal. A similar fate befell an application made by the Baku Oil

Company. This company then erected a separate still in which it distilled its own residuum and paid the crude tax. Altogether the company paid the excise twenty-nine copecks for each pood of illuminating oil produced, and the treatment of residuum for lubricating oil taking more time than the crude treated for illuminating oil, the amount of the tax worked out at about forty copecks per pood of residuum. In other words for treating three poods of crude and obtaining a yield of one pood of illuminating oil and one pood of lubricating oil the company paid the excise sixty-nine copecks, while, according to the meaning of the law, the charge should on no account have exceeded twenty-five copecks.

Robert Nobel, also anxious to engage in the manufacture of lubricating oils, applied for permission to conduct experiments at his refinery. Receiving a refusal, and, to avoid constant trouble and friction with the officers of the Excise, he paid the full excise tax on one of his stills for six months in advance, and used this still for treating residuum, which had already paid the tax.

The attitude of the Excise Department in regard to preliminary tests became openly hostile when improvements in the construction of a still came into question. It looked on every improvement proposed as an attempt to circumvent the law, and did all it could to nip experimental work in the bud.

Dzhakeli brought from Marseilles a Martin still, fitted with a feed-heater, for extracting the more volatile products from crude. The excise insisted on this feed-heater being considered as a second still, and proposed that he should either pay the double tax or remove the auxiliary apparatus, and distil his crude by the usual method, *i.e.*, in a single still. The enterprising Dzhakeli acted upon the

second proposal, and produced the same grade of oil as other producers.

The history of the continuous distillation process is another object lesson in official stupidity. Under the conditions of that day time meant everything to the refiner. Much time had to be wasted and paid for, in the case of the ordinary (periodical) still, while the still and residuum were allowed to cool. They were taught that this was unavoidable by many destructive fires due to the rapid oxidation and spontaneous ignition of boiling hot residuum on exposure. All saw where the fault lay, but no one could think of a remedy until A. Tavrizov, one of the Baku refiners, patented (1875) a continuous distillation process, consisting in its essentials of an adaptation of the slightly modified alcohol rectification plant to the distillation of petroleum. The 1872 regulations contained no reference to continuous distillation, and on this ground only was his application for permission to mount his apparatus refused.

On the other hand it must be admitted that the refiners were partly to blame. The majority of the applications were put in by those who looked upon the production of lubricating oil as a means of circumventing the excise and, as a matter of fact, when the excise was abolished there were only three lubricating oil works, and none of these were at Baku. The lubricating oil industry at Baku does not really date further back than the beginning of the eighties.

In 1880 there were in the Apscheron Peninsula 195 refineries. In Baku proper there was only one, while 32 were scattered between the town and Black Town. Black Town numbered 118 refineries, most of them near the shore, while the other 44 were outside the urban boundaries

in the rural district of Baku, 39 extending along the shore east of Black Town, one being situated still further east, near Sultan Promontory, two at Surakhani, and two at Bibi-Eibat. These contained 505 stills capable of taking about 89,000 poods in one charge, and to treat a minimum of 204,000 poods and a maximum of 300,000 poods of crude per day.

CHAPTER V.

ROMANCE OF OIL FIELD FINANCE, EARLY (1872) AUCTIONS AND PRIMITIVE METHODS OF WORKING.

THE 1872 AUCTIONS—ATTEMPT TO OVERPOWER MIRZOIEV—DAYS OF WILD COMPETITION—LIST OF THE ORIGINAL OWNERS OF PROPERTIES AT BALAKHANI—THE XIX. GROUP AT BIBI-EIBAT SOLD BY TAGIEV TO THE RUSSIAN PETROLEUM AND LIQUID FUEL COMPANY, OF LONDON — BALAKHANI UNDER THE CONTRACT SYSTEM—MR. RAGOSINE'S IMPRESSIONS—A BUSY YEAR (1872) AT BALAKHANI—THE FIRST ENGINEERING WORKS AT THE OIL FIELDS—THE OLD SUBTERRANEAN LAKE THEORY—VERMISHEV SPOUTER AT BALAKHANI—CRUDE AT TWO COPECKS PER POOD—RAPID INCREASE OF PRODUCTION—SPOUTERS BROUGHT IN DAILY.

THERE is a wealth of romance in the finance of oil. We find this to be so if we trace the history of certain famous plots from the time when they were unproven and when their insignificant values were based on nothing more reliable than surface indications. At the auctions in the early days of the industry business feeling aggravated by race hatred led to wild speculation and organised attempts to crush rivals.

To make collusion between the bidders difficult, if not impossible, sealed tenders were invited by the Crown on December 7th, 14th, 21st, and 28th, 1872. The results were a surprise. Instead of the valuation price, £50,000, the Crown cleared over £298,000 for fifteen groups offered at Balakhani. Messrs. Gubonin and Kokorev went into the competition determined to outbid Mirzoiev, the former contractor, and deprive him of his best producing properties. At the first and second sales one group after another

was wrested from him, and it looked as if this powerful oil man—the owner of two extensive refineries and a large photogen trader—was going to be left without crude. At the third sale, when No. III. group, on which he had drilled a prolific well, was in the market he did not take any chances but put in a tender for £95,000 against the £11,456 valuation and £60,000 offered by Kokorev. The fierce competition between Mirzoiev and Kokorev led others to adopt similar tactics. Drawn into the vortex of wild competition, others put in prices which could not fail to considerably reduce their working capital, and, sure enough, during the crisis in the photogen industry in 1874 an absence of ready cash brought a number of them to the verge of ruin.

A survey commission sectioned the Government-owned oil-producing properties in the Apscheron Peninsula into twenty-seven-acre plots. These, to the number of forty-eight, were sub-sectioned into groups on account of there being on each property a number of hand dug pits from which oil had been extracted during the contract régime. At Balakhani seventeen groups were to be offered, but two, Nos. V. and XVI., were withdrawn on account of claims lodged by private owners. Considerable litigation resulted in just over half of No. V. group, the part on the left of the Mashtagi road, consisting of four plots in No. XVI. and each about 4,900 square feet, being adjudged Crown property. Half of No. V. group and the whole of the No. XVI. are now in the Saboonchi field. The petroliferous area of Balakhani covered some 842 acres, but only 460 acres were offered for sale. At first the Government proposed to allot the remaining 382 acres to the villagers of Balakhani who had no pasturage. Government experts and advisers, recognising the immense potentialities of these lands, on

which at least one spouter had been drilled, expressed opinions which led the authorities to distribute the plots amongst court favourites, famous soldiers and noblemen. Oil lands were practically given away as Royal gifts. In 1878 Lieut.-General Lazarev was granted twenty-seven acres (plot No. 6) and a few years later the Countess Gagarin became the fortunate possessor of thirteen and a half acres (plot No. 8). The greatest rush was for the fifteen groups at Balakhani. These came into the possession of the following six firms—

(1) I. M. Mirzoiev for £122,155 secured Nos. III., IX., X. and XI. (valuation £13,500).

(2) Kokorev and Gubonin (transformed in 1874 into the Baku Oil Co.) acquired for £132,333 possession of the Nos. I., II., IV., VI., VIII., and XV. (valuation £366,296).

(3) A. and M. Benkendorff and P. P. Muromtzev secured for £10,375 the Nos. XII. and XVII. (valuation £1,704).

(4) The Khalafi Company (Vermishev & Co). secured for £11,722 the No. XIV. (valuation £2,278).

(5) Lianozov secured for £2,491 the No. VII. (valuation £131).

(6) The Soutchastniki Company (the Partners' Company), started on August 19th, 1872, secured for £1,858 the No. XIII. (valuation £4).

The remaining thirty-one groups outside Balakhani went at comparatively low figures. No. XIX. group at Bibi-Eibat was secured by Tagiev and Sarkissov for £906 against the valuation price of £57. This group is now owned by the Russian Petroleum and Liquid Fuel Company, of London, which paid £600,000 for the property. Shortly after the purchase deed was signed this company had a spouter which in a month erupted close on 500,000 tons of oil and realised about half the price paid for the

property. The second (XX.) group was purchased by Zubalov and Dzhakely.

On December 28th, 1872, the final sale was held, and on January 1st, 1873, the groups were handed over to the owners, who started development work in real earnest.

Before the abolition of the contract system work at Balakhani was carried on in a most primitive manner. Mr. Ragosine has left a record of his impressions. On the left of the main road going from Baku to Mashtagi, on the northern shore of the Apscheron Peninsula, and opposite the village of Balakhani, there were a few shallow pits. The whistle of the steam engine had not been heard in the region, and there was absolutely nothing to indicate that the owners and their native workmen knew anything about improved methods of working. Everything was primitive. The oil was taken out of the pits in skin bags, which were drawn to the surface by horses working a pulley arrangement. Transport from the oil fields was also in skin bags suspended from two-wheeled carts of native construction, and having wheels 9 ft. high to enable them to move better over the sandy roads. Only on the fringe of the region did Mr. Ragosine see two lonely high derricks, and even in these, as if to bring them into harmony with the monotony of the scene, all work had been suspended. Further away, there stretched a bare, sandy plain, here and there relieved by low scrub-like growths of tiny vines. The oil pits were just as they had been left by the Persian rulers and the Baku Khans. The spirit of the industrial West had not disturbed them down to the end of 1872, when, Mr. Ragosine says, the long and burdensome rule of the contract system terminated. A few months after this engines were erected in the oil fields, a small forest of derricks pointed skywards, and boiler

whistles protested in shrill tones against the incongruity of the hand-dug pit in the development of a modern industry.

Balakhani was the chief centre of activity. No sooner were the rich resources and immense possibilities of this region demonstrated by the bringing in of one spouter* after another, every one from a shallow depth, than the Crown started to carry out quite a liberal land distribution programme. A total of 254 acres was disposed of in this manner. In addition large areas of communal land at Balakhani and Bibi-Eibat, subsequently claimed by the Government, were leased to producers by the communal

* In the case of a spouter (called a gusher in America), if it is a powerful one, the oil bursts upwards through the tubing, frequently sends the boring tools and workmen flying in all directions, shatters the derrick, and raises itself in a black, unbroken mass. Dancing in the sun it shoots out oil sprays in fantastic shapes, and gives forth flashes of rainbow colours as it falls away and swirls along the ditches into the reservoirs. Oil does not come from a well like water from a fountain. It is thrown out with a three-fold power. A peculiarity of an oil fountain is the manner in which it radiates. This is due to the component parts differing in density and power to amalgamate. Rushing from the well these take up their position in the mass of liquid according to their respective gravities, and the gas, expanding, breaks up the column of oil. In a water fountain the rush comes intermittently; in an oil fountain it comes periodically. In Texas, where the spouters are not so powerful as the famous wells of Baku, they work a clever system of valves, and producers are compelled to lose as little time as possible in getting their wells under control. In the boom days (1901) I saw many wells uncapped and allowed to flow simultaneously and at different angles for the amusement of crowds of shareholders who, headed by brass bands, marched in processional order on to the oil field at Spindle Top. At Baku, Boryslaw (Galicia) and other oil fields oil men treat the birth of a spouter as a more serious business. Some of the most famous of the wild wells of Baku have, as I have described in this work, wrought such terrible havoc in the fields that no unnecessary risks are taken, while everything possible is done to prevent destruction of property and loss of life.

authorities—an act which eventually led to serious disputes with the Crown.

In that year (1873) there were no engineering shops. Damaged tools had to be taken to the works of the Baku Port authorities and the Caucasus and Mercury Steamship Company. No sooner was the contract régime abolished than numerous engineering shops were erected, but work was not started without considerable difficulty, much of it of a kind that was not expected. At Baku there was not only a lack of experienced oil drillers, but the ordinary artisan was a *rara avis*. Still, despite these difficulties, derrick after derrick was built, and Balakhani was started on its career as one of the world's greatest oil fields. As the production increased and the price of oil went up to forty-five copecks per pood the fever of speculation raged more violently than ever, while the expert theorists of the day, and several well-known British travellers who were not experts, unanimously put forward the opinion that beneath Balakhani there was an inexhaustible subterranean lake of oil—a theory, by the way, which has been upset by the research work of the foremost oil field geologists of the present time.

At the end of February, the price fell below forty-five copecks per pood and suddenly dropped to thirty copecks, when the leading producers, alarmed at the sensational decline, held a meeting to discuss the best steps to be taken to keep prices at a reasonable level. Those who attended the meeting did not uphold their own decisions, and, a feeling of mistrust becoming general, they rushed into the market and attempted to undersell each other.

In this way matters dragged on till the end of June, 1873, when the famous Vermishev spouter came into



SAPOONCHI LAKE, WITH THE OIL FIELD OF SAPOONCHI IN THE DISTANCE.

action on the XIV. group, the property of the Khalafi Company. When it burst forth the oil flowed in rivers over the entire field, and the news of the strike created quite a sensation at St. Petersburg and Moscow. Above the well mud and sand formed a cone-shaped mound, down the slopes of which rushed rivers of oil. No adequate tankage having been provided, vast quantities of oil were lost. This loss went on for nearly four months, when the well, becoming a periodical spouter, was got under control.

Mr. Arthur Arnold, M.P., who visited Baku in 1875, has put it on record that the stalk of this spouter, then two years old, was nine feet in diameter and the height not less than forty feet. The immediate result of the unexpectedly large yield of the well was a glut of oil and an absence of buyers.

Within eight months of the abolition of the contract system the price of crude had dropped to two copecks a pood. If we ignore the exceptionally high prices demanded during part of August, this year, the price has never gone up to forty-five copecks again. At first it was thought that further drilling work would have to be abandoned, but it was eventually found that even the low price of two copecks left the producer a margin of profit.

A pumper brought in by the Baku Oil Company (Kokorev and Gubonin) on No. VIII. group yielded 10,000 poods per day for two years, the output eventually diminishing to sixty to eighty tons per day, at which it stood far into the eighties. It was known as the Kormilitza (Wet-Nurse) well. Visitors who saw it in 1886 considered it a reliable producer.

The Khalafi Company had another spouter in 1874 from a nine-inch well. Coming in on July 27th, it continued

playing until the end of the year, when it became an intermittent spouter for six months, and finished its career as a pumper. At the start every effort to stop the flow was a failure, and a huge quantity of oil ran to waste.

As regards the private lands in the vicinity of the proven Balakhani properties, they had not been prospected, nor were there any pits to assist the judgment of enterprising producers in the important matter of where to drill. The first well on private ground was drilled to the right of the Mashtagi road, almost facing No. XV. group. It was soon surrounded by three others; all were drilling on the off chance of striking oil, and work went on in a half-hearted fashion on account of poverty of finance and the uncertainty of success. During 1874, three more wells were started, but as oil was not struck they were abandoned in 1875.

In the meantime, at Balakhani, where development work was in the hands of men who were certain of success, and had ample means for carrying on exploitation work, the number of wells and production went on increasing rapidly, just exactly at what rate is shown in the following table:—

				No. of Wells.			Production in poods.
1870	...	...	...	—	...	...	1,482,100
1871	...	...	...	—	...	...	1,165,285
1872	...	...	...	2	...	...	1,395,114
1873	...	...	...	9	...	...	3,903,886
1874	...	...	...	19	...	...	4,702,343
1875	...	...	...	28	...	...	5,353,043

Drilling work was energetically carried on at Balakhani, and in October, 1875, another powerful spouter came into play on the Soutchastniki Company's property (No. XIII. group). This spouter again caused a slump in oil prices, and other producers stopped drilling.

In 1874, the well, which was 196 feet deep, and had been

giving 2,000 poods a day, began to give a reduced output. Burmeister, the driller in charge of the property, began to bore deeper in search of a new oil stratum. At 315 feet he lost oil, but discovered huge quantities of gas. At 280 feet he reached a bed of rock, so very hard that he had to put eight men on to drill through it, and these only managed a few inches a day. Suddenly, on October 26th, the boring tool broke through the roof of the subterranean reservoir, and only one man was needed instead of eight. To ascertain the cause of the change, the tool was withdrawn, with the result that a small quantity of oil was thrown out of the well. This eruption ceased after a few minutes; then a strange silence was followed by the ominous roar of gas accompanied by subterranean explosions and a perceptible trembling of the earth near the well. Oil and gas spouted at intervals. A precautionary cap of half-inch boiler plate was fixed over the mouth of the tube; but that night the oil broke through it, and shot upwards to a height of 40 feet. Next day the flow was at the rate of 150,000 poods for the twenty-four hours. Four large lakes of oil were formed before the spouter was got under control on November 23rd. The oil either soaked into the ground or evaporated. One of the lakes was fired to clear the ground for new wells, and the sky at Baku was lit up every night for nearly a week by the great glare of the oil field conflagration. No one put any value on the oil; everyone knew that if there was a demand they could find as much oil as they wanted. Spouters were brought in daily, each one surpassing its predecessor in grandeur. Not a single producer had provided himself with storage facilities, or with means for regulating the flow of the oil, which streamed all over the region, soaking into the calcareous sand soil and destroying the scattered patches of vegetation on the

waste lands of the Balakhani and Saboonchi oil fields. The whole surface of the field was saturated with oil, and American drillers, familiar with the small wells of Pennsylvania, were amazed at the marvellous and overwhelming production of the spouters at Balakhani. The inevitable result was a glut of oil and a slump in prices, the market being further affected by the fact that the refining industry was passing through a crisis. The depression was so acute that only those producers who were also owners of refineries, found it possible to work their wells.

On the private lands at Saboonchi drilling work continued in 1875, but only on a small scale. Land was not expensive; a freehold acre could be bought at from £270 to £400, and land somewhat further away near Ramani and Zabrat could be purchased for £135. A successful well at Saboonchi, brought in at a depth of 70 ft. to 80 ft. and yielding a better quantity of oil than the ones at Balakhani, created a land boom and led to the formation of a multitude of companies. In a small area of a few thousand square feet one derrick after another was erected, and the famous Shaitan (Devil's) Bazaar was established. The satanic description was hit upon by those who saw the crowds of oil-stained workers toiling night and day in the small colony. The producers, men of limited means, combined and formed a number of small companies which attempted to secure properties, not by the dessiatine (one dessiatine = 2.7 acres), but by the saghen (one saghen = 7 ft.). A square saghen was at the start obtainable for five roubles (about 10½*d.* per square foot), but it soon fetched double the price, and within two years the figure increased from £270 to £4,400 per acre. Plots were sold by the square saghen for ten and fifteen roubles, for a period generally running between ten to twelve

years, the sellers, in addition, stipulating for a fixed share of the production. The subdivision of plots was carried to extremes, and properties were no longer bought by hundreds of saghens but by tens. On some properties a two-wheeled arba could not be turned round, and the proverbial cat could not be swung amongst the derricks. After the subdivision of plots came the subdivision of shares and profit-sharing certificates.

The late Mr. Ragosine (a pioneer of the Russian refining industry, the first to persuade foreign consumers to take up Russian lubricating oil, an engineer and chemist by profession, and one of the most able of the petroleum pamphleteers of his day) used to tell the story of a company consisting of ten men which bought a plot of 7,350 square feet at $5\frac{1}{2}d.$ per square foot. When they struck oil one of the partners sold a seventh of his share interest to a new company of seven persons, while one of these disposed of one-third of his share to a third company in which there were four persons.

This partition of properties does not appear so very surprising when one remembers the profits which were made by these early producers. Fortunes were quickly earned; every producer made money, and at that time not a single case of failure in the petroleum industry was recorded. Here is a typical case. The Soutchastniki Company was constituted on August 19th, 1872, with a share capital of £4,600, each of the twenty-three partners contributing £200. At the December sales the company bought the XIII. group, valued at about £4, for £1,858. The balance was partly used in buying other properties and partly in acquiring an oil field inventory. Starting work at the beginning of 1873, the company was able out of the profits made in the first five years to increase the original capital

by £5,412, so that in 1878 the capital amounted to about £10,000. In 1877 the company produced 1,592,569 poods, and made an absolute profit of £7,868, £342 on each original share, or 171 per cent. In 1878, when the expenditure was £400 less than in the preceding year, the company produced 2,083,649 poods, but prices being lower the profits only amounted to £6,531, representing 2,840 roubles per share, or 142 per cent.

The striking of oil on free lands, and the bringing in of the first spouter in the middle of 1873, brought about an unprecedented drop in the price of crude. Prices declined from 45 copecks to 2-3 copecks per pood. Such a sudden fall in the value of crude upset the estimates of the producers. The new producing enterprises were in need of hard cash for the erection of refineries, while on the other hand their resources had been seriously strained by the payment of about £300,000 to the Crown at the auction. In the absence of a properly organised credit, the further development and extension of the industry was retarded in spite of the steadily increasing demand for petroleum products. These conditions had a most depressing effect on the industry, and the producing branch found itself in the throes of its first industrial crisis.

CHAPTER VI.

SOME FAMOUS SPOUTERS (1876—1880).

THE SOUTCHASTNIKI COMPANY AND ITS RECORD OF SPOUTERS—
SHAITAN BAZAAR—RAMANI AND ZABRAT ESTATES—EXTENSION OF
THE FIELD—A WELL WHICH GAVE THREE MILLION POODS—HOW
A GARDEN BECAME AN OIL FIELD—OIL MEN SCRAMBLE TO GET
INTO THE GOLDEN BAZAAR—THE ARARAT AND SUN WELLS;
TOGETHER THEY PRODUCE TWENTY-FOUR MILLION POODS—
BINAGADI AND THE EXCISE—DRILLING AT SURAKHANI A FAILURE
—WHITE OIL—EARLY EXCISE ANOMALIES—OPENING OF THE
TRANSCAUCASIAN RAILWAY.

IN 1876 the Soutchastniki Company, famous for its record of spouters, struck oil in a 6½ ft. diameter and 280 ft. deep well. Directly the oil source was reached the oil burst forth with terrific force. The production was about 70,000 poods per day, or 6,000,000 poods during the ninety days it was not under control. In this well, like others drilled during the first few years, the casing had been lowered into position without anything being done to strengthen it at the top, and this made its capping a matter of impossibility. Directly wells of this description were capped the oil burst through the sides of the casing.

Lenz,* an expert driller, dug down 25 ft. round the casing and packed the space between it and the solid

* In 1869 Lenz, then chief engineer of the Caucasus and Mercury Steamship Company, and now a boring contractor at Baku, was sent to this country to see Aydon and Dorsett on the subject of their liquid fuel burners. On his return he invented a burner, which was widely adopted in Russia. When his apparatus became a success, he left the company and started as an engineer and contract driller.

ground with cement, well puddled clay, stones and other rubble, all rammed down to resist the pressure. An iron cap was then fitted over the top of the well. No oil was sold, there being no demand, and it was allowed to collect in a natural lake, where it remained for ten years, when it was shown to some of those who attended the third conference of the Baku Petroleum Producers' Association.

In the following year (1877) Orbelov Brothers brought in a monster spouter at Shaitan Bazaar. The well was only 210 ft. deep and the pipe $10\frac{1}{2}$ in. diameter. The start was tame, the well being easily capped, but while the cap arrangement was being made safer the pressure shattered it, and the oil burst forth with a fury which nothing could check. In thirty minutes a tank was filled to the brim and the oil flowed all over the place, forming one lake after another. Some 9,000,000 poods went to waste before the spouter was got under control. The flow occasionally amounted to about 250,000 poods per day.

A less sensational but more profitable strike was made by Mirzoiev on the No. IX. group in 1877. Oil had been struck in the previous year. The following spring in deepening the well to 240 ft. the oil commenced to spout at the rate of 18,000 poods per day. After a while it was got under control, and for years was one of the steadiest producers in the field.

Amongst the 1878 spouters the Caspian Company brought one in from a depth of 462 ft.; it yielded close on 40,000 poods per day, and a total of over 2,000,000 poods, of which over half went for fuel, while the remainder ran to waste.

Of great importance in the development of the industry was the drilling of wells at the Ramani and Zabrat

estates. The result was an extension of proven territory. No sooner had Boitchevski's first well near Ramani proved a spouter, yielding an excellent grade of crude, than the merits of the region were recognised and the surrounding properties quickly taken up. The land round the spouter was soon covered with derricks, while some were erected in the Ramani gardens. These strikes did not lead to the creation of a second Shaitan Bazaar, because one prolific spouter after another was being brought in on the Zabrat estate, north of Shaitan Bazaar.

East of No. V. group the first well was drilled by Mr. Kleigels, an engineer, on the property of the Zykhs Petroleum Company. Drilling about 450 ft. without striking oil, he abandoned work, and the locality was reported to be unpromising. This failed to deter Mr. Burmeister (the Colonel Lucas of Baku) from deepening a well on the adjacent freehold property of the First Saboonchi Company (Mnatzakanov and Company). His perseverance was rewarded by the bringing in of a prolific spouter at 294 ft. The well, completed with a 10 in. diameter pipe, threw out water and gas during the first month; huge quantities of sand followed, and finally oil arrived with a rush which shot the heavy cap like a cannon ball from the mouth of the well. The eruption continued uninterruptedly for nearly four months, the production being at an average rate of 20,000 poods per day, or 3,000,000 poods altogether. Of this 500,000 poods were sold at half-a-copeck per pood (about 8*d.* a ton); 150,000 poods were bought by the Caspian Company for fuel for 800 roubles, and the remainder was intentionally destroyed by fire or allowed to sink into the ground. The casing tubes, which had cost £500, were worn into shreds by the friction of the sand-charged oil. Adjacent plots were

quickly taken up at high figures, and derricks appeared like mushrooms after rain. The transformation was complete; a garden had become an oil field. Another centre, the Golden Bazaar, leaped into prominence. Its subterranean oil sources appeared to be inexhaustible. During the first six months of 1878 this comparatively small area was credited with over twenty-five spouters. The output of Golden Bazaar increased at a surprising rate, while the sub-division of partners' shares and plot leases ran into microscopic fractions. The Baku oil men of that day scrambled to get into Golden Bazaar, but soon found themselves in difficulties as a result of the 1878 crisis, and were forced to stop work and wait for better times.

At Golden Bazaar a still more prolific spouter was brought in at the end of 1879 on group No. V. partly owned by the Ararat Company. On reaching 280 ft. the oil stratum with a 10½ in. pipe, the boring tools were withdrawn, but, the well refusing to spout, drilling work was resumed, with the result that no sooner had the well been deepened 15 in. than spouting commenced. The rods were extracted with considerable difficulty and the well capped, but the pressure proved too much for the casing and the oil shot through the holes in sufficient quantity to supply the requirements of the company. The total yield was about 9,000,000 poods, of which 1,000,000 were given to a producer as compensation for damage done by the oil which flooded his property; about 2,000,000 poods were sold at a half copeck per pood, and the remainder was allowed to run to waste into Zabrat Lake.

The Sun Company (merged in 1893 into the firm of Melikov Bros.) working another section of No. V. group,

undeterred by the possibility of the Ararat Company's spouter having drained the surrounding oil sources, commenced to drill a 12-in. well. Early in the following year oil sand was passed through, then clay, and afterwards quicksand. There being indications that they were approaching the oil stratum which fed the Ararat Company's spouter, work was stopped, and the head of the casing strengthened down to 20 ft. with tightly-packed concrete. After continuing for eight days and nights, the drillers struck oil. The effect on the Ararat well was surprising. No sooner had the Sun Company reached the containing layer than the Ararat spouter ceased. When the Sun well was capped, it came again into play. The position, commercially, was obviously an interesting one. An attempt to amalgamate the concerns failed, and the wells were worked in competition for two months, during which period the Sun Company disposed of 4,800,000 poods at two copecks per pood. In the third month the Sun well blew off its cap, got beyond control, became wild in fact, and 2,000,000 poods of oil flowed into Zabrat Lake. Both wells ceased to spout. The two together had thrown up 24,000,000 poods of oil. As bailers they maintained a daily yield of over 5,000 poods each, and lasted far into the eighties.

Drilling work was also proceeded with at Binagadi, Surakhani, Bibi-Eibat, Ramani, and elsewhere, but the results were not everywhere the same. Binagadi started well; there was not a single dry hole. Unfortunately, the oil being of high specific gravity and of considerably thicker consistency than Balakhani crude, it did not meet the requirements of the refiners. The oil had no practical value, because, while containing a smaller percentage of illuminating oil, the distilling process occupied more time.

The disadvantage of this will be seen when it is remembered that the Excise did not tax the refiner at a fixed rate per pood of the output, but by the capacity of each still, at so much per hour. Although officially fixed at twenty-five copecks per pood, the tax paid by the refiner varied from eight to forty copecks per pood of distillate. This was one of the chief reasons why drilling work was abandoned at Binagadi. At that time the producers could find no suitable application for a heavy crude oil. Some tried to substitute it for residuum, which was just beginning to be used as a fuel. In this they failed, chiefly, because the crude could not compete with residuum on account of the cost of cartage (five copecks per pood) to Baku, while the refineries were only too glad to get rid of their residuum at any price.

Drilling at Surakhani proved a complete failure. In this case the cause of failure was the low gravity of the crude. A peculiar grade of crude, known as white oil, was struck in all the wells. The crude was almost translucent and of lower specific gravity than kerosene, and it contained a very small percentage of fractions suitable for use as illuminating oil, while the other fractions were of a too low flash point to be safely used in ordinary lamps. An attempt was made to substitute it for turps in the mixing of paints, but the results were unsatisfactory, and drilling at Surakhani came to an end.

At Bibi-Eibat there were only two groups, the XIX. (British since 1896) and XX., in development. In its physical properties, the oil produced at these was of a grade midway between Surakhani and Binagadi crudes, but much superior to Balakhani crude. It was of .850 specific gravity and yielded about 60 per cent. of illuminating oil. While the excise was reckoned by the capacity

of a still, Bibi-Eibat crude was double the price of Balakhani crude. The owners of both groups had erected refineries on their properties. In the matter of the disposal of their products, these were most favourably situated. Balakhani producers had to pay five copecks per pood for delivery to the refineries, and the refiners again had to bear the expense of delivery to the Baku wharves. These charges had not to be borne by the two Bibi-Eibat producers. There being no private properties near the Government groups, except a few communal lands of questionable title, producers in general were not over keen on starting work at Bibi-Eibat. Col. Burmeister drilled on a leasehold property; the well, a freak,* commenced to spout from 560 ft., not oil, but hot water. No better results attended the efforts of other operators.

* When in Baku recently I saw (on the Saboonchi property of the Caspian Company, I think) a freak hot water well. When I entered the derrick, from which all the machinery had been removed, the water was welling up over the top of the casing and squirting through the rivet holes. Half-a-dozen workmen were squatting and washing in the heavy cascade of pure white hot water. This great well flows clean water, although it is in the centre of a cluster of oil wells.

CHAPTER VII.

TRANSPORT AND DRILLING IMPROVEMENTS (1872—1880).

EXIT, THE HAND-DUG—THE AMERICAN ROPE SYSTEM IN RUSSIA—HORSE AND CAMEL *v.* PIPE LINE—FIRST PIPE LINE LAID BY NOBELS—HOSTILITY OF THE NATIVES—FOLLOWERS OF NOBEL—FIRST OIL FIELD RAILWAY—THE FIRST BULK OIL-CARRIER ON THE CASPIAN—NOBELS' FIRST TANK STEAMER—THE INDUSTRY BADLY ORGANISED—THE COMPETITION WITH AMERICAN ILLUMINATING OIL—ST. PETERSBURG AND PETROLEUM TAXATION—THE OUTLOOK IN 1880.

NUMEROUS improvements were introduced during the first eight years, between the time of the abolition of the contract system and the end of 1880. The chief feature of this period was the rapid supersession of the primitive hand-dug by the steam-drilled well. In 1872, the year before the new era, there were only two wells, and a few hundred (415, including many abandoned ones) hand dug. The advance of the steam-drilled well is best seen from the following table :—

					Steam-drilled.			Hand dug.
1873	...	...	...	...	17	...	...	158
1874	...	...	...	...	50	...	...	185
1875	...	...	...	...	65	...	...	170
1876	...	...	...	...	101	...	...	62
1878	...	...	...	...	301	...	...	—

When Nobels took up the producing business they decided to improve upon the method of drilling. They brought over six American drillers to try the rope system. This system did not quite meet requirements at Baku, but

the Nobels introduced certain modifications with the result that they produced a composite system which quickly came into general use and retains its popularity up to the present time.

The next difficulty producers had to face was the delivery of the oil from the wells to the refineries, and its subsequent carriage in the crude or refined state to the consumer. Originally the crude and its products were transported in boordukes (goat or ram skin bags holding from two to three poods of oil) by horse or camel. Whole caravans of camels loaded with these bags used to leave Baku for distant parts of Transcaucasia and Persia. During the seventies these bags were replaced by oval shaped barrels of four poods capacity, each camel carrying two slung across its back. Where the distance was not great, arbas (local carts with two 6-7 ft. high wheels rigidly fixed to the axle) were used. They easily get over the ground, and an average horse can draw from twenty to twenty-five poods of oil. The barrel was not loaded on top of the arba, but was suspended by a rope beneath the bottom of the vehicle. While this mode of transport is still in existence, conveyance in skin bags was entirely superseded by the pipe lines and railways more than twenty-five years ago.

Mr. Arthur Arnold (1875) gives an interesting account in his "Through Persia by Caravan," of what the system was then. "All day long," he says, "petroleum rolls into Baku in carts of the most curious pattern imaginable. A Neapolitan single-horse, two-wheeled carriage for fifteen people is unique, but it is commonplace in comparison with an oil cart of Baku. Few men would have the courage to import a Baku oil cart and drive it even for a very high wager through Regent Street or Pall Mall.

Where is the man who dare to pose himself there, perched and caged in a little rail cart big enough to hold one barrel of petroleum, and lifted so high on wheels, 7 ft. diameter that another tub can be slung beneath the axle, the whole thing being painted with all the colours of the rainbow, and creaking loudly as it is drawn by a diminutive horse, the back of which is hardly up to a level with the axle? Yet the producers say that already they pay collectively not much less than £100,000 a year for the cartage of oil in carriages of this sort."

Previous to the opening of the first pipe line, and of the oil field railway, there were some 10,000 oil-carrying arbas, which frequently made two journeys in both directions a day. In bad weather, however, the drivers were not anxious to work, the roads turning at a time of rain into mud pools, rendering traffic between the town and the oil wells almost impossible, even on horseback. The refiners were entirely dependent on the state of the weather, which frequently spelt considerable loss to them, especially under the excise régime, when it frequently happened that a refiner, after having paid the excise for six days in advance, had to keep his stills idle. In addition, the arba drivers frequently struck for higher pay, and gradually forced prices for delivery up to from five to eight copecks per pood. These conditions prevailed up to 1875, the refiners feeling the burden and complaining, but doing nothing to put a stop to the impositions until the Nobels made their appearance on the scene as refinery owners. To diminish the expense and ensure a larger and more rapid supply, the Nobels tried to persuade the other firms to lay down a joint pipe line. Jealousy and want of enterprise, characteristics which have frequently dominated common sense in those parts, caused the other firms to refuse to participate

in the scheme, and, as an alternative, they applied in 1877 to the Government for permission to build, at their own expense and risk, a railway connecting the oil fields with the refinery region. Although supported by the local administration, their petition was pigeon-holed by the higher authorities. In the following year, however, the Government commenced to build the railway, which was opened in April, 1879. The terminus was at Saboonchi Lake, filled up for the purpose, and from there one branch was constructed to Surakhani, and a second along the XII. group to Balakhani. The other terminus was made between Baku and Black Town. Oil was either carried in barrels or in bulk in tank waggons. At the request of a producer the railway management laid down a pipe line between his property and the Saboonchi terminus. As the station was lower than the property, the oil flowed by gravity, and the pumping central being above the permanent way, the oil also flowed into the tank cars by gravity.

The Nobels had in 1877 commenced to lay down their pipe line, completed at a cost of £10,000, which they recovered the first year the line was working. In view of the magnitude of this branch of the industry to-day, a brief description of this pioneer pipe line will be of interest. The central station, with iron tanks capable of storing 108,000 poods of crude, were erected at Balakhani, near the XV. group, at a level 210 ft. above the Black Town station. From the oil field central the oil was forced with the aid of a twenty-seven-horse-power steam pump through the 5-in. pipes at a velocity of $3\frac{1}{2}$ ft. per second. The maximum capacity of the line was 80,000 poods per day. The delivery of the oil to the central tanks at Balakhani was effected with the aid of smaller pumps mounted at

the properties. At the central station the crude was stored in iron tanks. From the trunk, branch lines were laid to some of the refineries, the owners of which were not slow to recognise the advantages of the new method of transport. The crude was delivered to these with the aid of the large Balakhani pump. For some years the refiners paid the Nobels 5 copecks per pood of crude piped a distance of $6\frac{1}{4}$ miles. A few years later the pipe charge declined to $1\frac{1}{2}$ copecks per pood. The advent of the first pipe line spelt ruin to the arba drivers, and Nobels had to protect their first line by appointing guards and erecting sentry boxes every few hundred yards. Infuriated Tartars, whose lucrative business they had destroyed, did damage to the lines. No sooner had Nobels completed their pipe line than the Baku Oil Company followed suit, and connected its XV. group with the Surakhani refinery, and the latter with the Zykh Promontory, where it had constructed a jetty. The total length of this pipe line was from nine to eleven miles.

Towards the end of 1878, a start was made with the laying down of three new lines. Mirzoiev laid a nine mile 4-in. pipe line, capable of handling 50,000 poods of crude per day, between the X. group and his Baku refinery, and Lianozov from his No. VII. group, a nine and three-quarter mile 3-in. pipe line, of 25,000 poods capacity, to Black Town. The third, laid by the Caspian Company, was not a continuous one. From the wells the oil was pumped to the Saboonchi railway station, from where it was carried in tank cars to the village of Kapsili, and delivered by pipe line to the refinery of the company close by. These pipe lines were sixty miles in length.

The transport of oil across the Caspian Sea improved during the second year of the new era. Up till then the

shipments consisted entirely of barrelled oil. Barrels holding 25 poods, and costing at Baku from ten to twelve roubles, were used, the empty barrel only realising in Russia three roubles. Thus, when residuum was as low as five copecks a pood at Baku, it could not be delivered at Nizhni for less than eighty-three copecks, the price working out as follows:—

				Roubles.	Copecks.
25 poods of residuum at Baku	...	...	...	1	25
Loss on barrel	...	...	...	9	0
Freight to Nizhni and leakage at	42				
copecks per pood	...	...	...	10	50
				<hr/>	
				20	75

or, roughly, 80 copecks per pood, or 4 $\frac{7}{8}$ d. per gallon.

Expensive barrels and freights stood in the way of successful competition with imported American oil, and, as a matter of fact, American illuminating continued to be imported into Russia in quantities exceeding the Russian supply for a few years after the abolition of the excise tax on the refining industry. The earliest attempts to transport oil in bulk across the Caspian were made in 1874 by Artimiev, an Astrakhan trader, and Messrs. Ragosine and Shippov. A feature of these bulk oil-carrying vessels was that the oil was loaded straight into the wooden vessels, the pressure of the water preventing leakage through the hull. The level of the oil in the vessel had, of course, to be kept below the water line. They were built so that the lower deck was just on the water line. Additional iron tanks were arranged on deck, and the vessels also carried barrelled oil. The introduction of transport in bulk brought Volga prices down to forty and even thirty copecks a pood.

When Nobels finished their pipe line they turned their

attention to sea transport, and, failing to induce the Caucasus and Mercury Company to start a tank steamer service on the Caspian, they built one themselves and started to run it in 1879.

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During the period under review the demand did not keep pace with the supply ; some of the producers were compelled to stop work, and a period of depression followed. If the industry had been even slightly organised the producers would not have had to face a petroleum crisis. The new era was entered upon without the slightest attention to the important question of demand. The bulk of the output was used in the production of photogen, and if for any reason the refineries had been closed down the petroleum industry would have perished. This nearly happened in 1874 and 1875 when the refineries were in a bad way. The kerosene supply exceeded the demand owing to there being too many competing refineries which failed to consume all the crude produced. Prices improved in 1876, and the producing industry proceeded on the usual lines till 1878, when it had to face the third crisis during the days of its juvenility.

Till the end of 1883, when traffic was opened on the Transcaucasian between Baku and Batoum, the monthly production of the oil fields was unequally distributed during the year. This was due to the industry depending on a single route—the Caspian Sea—for the export of its products. Transport by sea at that time only being practicable from March to October, the output generally increased during the intervening period. During the winter months only a few refiners, those provided with storage facilities, continued to work ; the others stopped. The difference was not so great under the contract régime, the output

being so very small. In 1870, when Balakhani produced 1,482,100 poods, the monthly returns were as follows:—

	Poods.	Per cent.		Poods.	Per cent.
January ...	91,462	... 6·17	July ...	150,480	... 10·18
February ...	100,648	... 6·79	August ...	149,550	... 10·10
March ...	120,226	... 8·11	Sept. ...	123,043	... 8·30
April ...	120,501	... 8·12	Oct. ...	133,569	... 8·99
May ...	146,483	... 9·62	Nov. ...	127,178	... 8·60
June ...	110,425	... 7·45	Dec. ...	112,190	... 7·57

The difference became more accentuated with the inauguration of the new era of unfettered development. Monthly returns for the period are not available, but taking into consideration that the producing industry entirely depended on the working of the refineries, we can roughly arrive at the respective equivalents if we base our calculations on the excise returns of that period. For the 1873-1877 period these, according to Mr. S. Gulishambarov were equal to an average crude oil production of 5·20 per cent., January; 5·70 per cent., February; 7·70 per cent., March; 8·20 per cent., April; 9·40 per cent., May; 11·80 per cent., June; 11 per cent., July; 12·30 per cent., August; 11·30 per cent., September; 8 per cent., October; 4·50 per cent., November; 5 per cent., December.

The manner in which American imports of illuminating oil into Russia were affected by the growth of the home industry is clearly shown in the following table:—

	Imported from America.	Produced at Baku. In poods.	Quantity used in Russia.
1871 ...	1,720,418	380,000	2,100,418
1872 ...	1,790,334	40,000	2,190,334
1873 ...	2,701,093	832,800	3,533,893
1874 ...	2,524,160	1,336,675	3,860,835
1875 ...	2,653,126	1,990,045	4,643,171
1876 ...	2,662,486	3,145,075	5,807,561
1877 ...	1,701,502	4,594,766	6,296,268

	Imported from America.	Produced at Baku. In poods.	Quantity used in Russia.
1878 ...	1,989,034	... 6,255,910	... 8,244,944
1879 ...	1,711,811	... 6,963,658	... 8,675,469
1880 ...	1,445,558	... 7,858,750	... 9,304,308
Total	20,899,542	33,757,679	54,657,201

* * * *

There must have been some able, even brilliant, oil men at Baku. They surmounted incredible difficulties, broke away from the established traditions of the business, and placed the industry on a sounder footing. The unexpected abolition of the contract system found them unprepared; but, notwithstanding this fact, and although many of them had not a reliable market for their production in prospect, even at the time when the price of oil fell from forty-five to two copecks per pood, they energetically started to develop their properties, until, in the third year (1875), they had a production which exceeded that of the period (1832-1850) when the oil fields were worked by the Government. In the following year the production amounted to 11,000,000 poods, and in 1877 to 15,000,000 poods. In September, 1877, enterprise was encouraged by the abolition of the tax levied on the refining branch of the industry. In 1875 producers and refiners were complaining that it was impossible to properly develop the industry while they were tied down by the excise tax on the photogen industry. One Government commission after another was appointed, but with no more satisfactory result than the making of slight changes in the fixing of the tax. The men on the commission were without experience in the production or refining of oil, and when their reports came before the experienced members of the Caucasian Branch of the Russian Imperial Technical Society they were severely

criticised. These reports were submitted to the headquarters of the society in St. Petersburg. The St. Petersburg Society appointed a special commission, which agreed with the Caucasian Branch that the excise tax must be abolished. When all reports, official and unofficial, had reached the Minister of Finance, he despatched Professor Mendeleiev to investigate the American industry, and ordered Professor Lisenko to look into matters in the Caucasian oil region. These experts submitted reports favourable to the abolition of the tax on the petroleum industry. Professor Mendeleiev quoted American precedents. He advocated the cancellation and improvement of parts of the petroleum regulations relating to safeguards against fires, and the storage and transport of oil; the thorough investigation of Caucasian oils with a view to extracting lubricating oils; the consumption of oil and astatki as fuel; the extraction of the more valuable products from the oil; the fuller investigation of the geological conditions of the oil fields; and, finally, the collection of complete and up-to-date statistics and the publication of monthly reports on the petroleum industries of the Caucasus as well as of America.

The Viceroy of the Caucasus also thought that the abolition of the tax would be a useful and desirable step. The Minister of Finance, concurring in the opinion of the Grand Duke, submitted a favourable report to the Imperial Council, and the opinion of this authority, meeting with the Emperor's approval on July 5th, 1877, the tax was abolished on September 1st of the same year. (The total revenue of the Crown from the excise tax in Baku between 1873 and 1877 amounted to £120,000.) From that day the industry in all its branches advanced by leaps and bounds in spite of frequent labour upheavals and market

troubles. In 1878 the output increased to 20,000,000 poods, in 1879 to 24,000,000 poods, and in 1880 to close on 25,000,000 poods. The exports during the period under review were :

1873	...	...	...	...	832,800 poods.
1874	...	...	...	...	1,336,675 "
1875	...	...	...	...	1,990,041 "
1876	...	...	...	...	3,145,075 "
1877	...	...	...	...	4,594,766 "
1878	...	...	...	...	6,255,910 "
1879	...	...	...	...	7,814,521 "
1880	...	...	...	...	15,200,000 "

These refer to exports by sea, because at that time only small quantities left Baku by land for Transcaucasia and Persia.

Had the demand been anything like equal to the possibilities of the oil fields the production could in 1879 have been brought up to over 60,000,000 poods, an output only obtained four years later in 1883. There were, at the beginning of 1879, twenty-eight producing wells, which, excluding the two prolific spouters, yielded on an average 3,000 poods per day each. At the Saboonchi-Ramani-Zabrat properties there were forty-three producers with an average daily yield of 2,500 poods each, and at Bibi-Eibat, Surakhani, &c., twenty-eight producers, with an average daily yield of 383 poods, or a total of ninety-nine wells capable of producing 900,000 poods per day. Therefore, had the Baku oil fields been worked 300 days only during the year, and not as in America, day and night all the year round, Balakhani could have produced in that year 25,200,000 poods, Saboonchi-Ramani-Zabrat 32,250,000 poods, and the other regions 3,217,000 poods, or a total of 60,657,000 poods, had there been an adequate demand

for Russian oil, and the means for delivering it in the country or abroad. In 1873 America produced about 76,677,000 poods (9,893,786 barrels) and in 1879 had increased this output to 155,335,000 poods (19,914,146 barrels).

CHAPTER VIII.

THE NOBELS AND RUSSIAN OIL.

THE START TWENTY-FIVE YEARS AGO—REMARKABLE FIGURES—FIRST IN THE WORLD FOR PRODUCTION—EMMANUEL NOBEL, THE FATHER, HIS WORK, INVENTIONS, AND FAILURE IN RUSSIA—ALFRED, THE INVENTOR OF GUNS AND DYNAMITE—HIS FAMOUS PEACE PRIZE—ROBERT NOBEL'S FIRST JOURNEY TO BAKU—A SMALL REFINERY PURCHASED—FIRST PIPE LINE—PIONEERS OF DEEP DRILLING AT BALAKHANI.

THE largest and most important concern at Baku is that of Nobel Brothers, a world-famous name—famous for its present wealth and vast industrial possessions, but most of all, for the manner in which the two Swedes, Robert and Ludwig, revolutionised every branch of the Russian oil industry as well as for the scientific and military discoveries of Alfred Nobel, the world-famous philanthropist and founder of the Nobel peace and other prizes.

During a quarter of a century they have drilled some five hundred wells of an aggregate depth of more than 100 miles, and from these they have extracted from 19,000,000 to 20,000,000 tons of oil. The average in recent years has been just over 1,000,000 tons, or about one-tenth of the total production of Baku, but in one or two years they have had a production of 1,500,000 tons. They have five refineries and six auxiliary plants at which they produce their own sulphuric acid and soda. The refineries have produced over 20,000,000 tons of petroleum products during twenty-five years.

Last year they paid away £950,000 to railways for

freights, over £6,000 to foreign shipowners, over £295,000 to Caspian shipowners, close on £16,000 to Black Sea shipowners, over £335,000 to Volga shipowners, and £125,000 on the Don and Oko rivers, making a total of over £1,072,000. They paid £1,100,000 in excise. They also applied £142,279 to amortisation, and £43,873 to the redemption of debentures. After allocating large amounts to other purposes, including bonuses aggregating close on £60,000 to the board and employés, they distributed £150,000, or a ten per cent. dividend, amongst the shareholders.

There are at the oil fields of this company 3,800 employés, of which number one hundred are in the offices. At the Baku refineries and workshops there are 3,615, including 110 at the offices. The crews on the Caspian, Volga, and other river fleets number 2,300, including 250 officers. Altogether the company employ 12,135 hands, and pay over £500,000 in salaries and regular wages. For production this company stands first in the world, and is only second to the Standard in the refining and distributing branches of the petroleum industry.

* * * *

Emmanuel Nobel, father of the founders, was born on March 24th, 1801, in Hevel, Sweden. Trained as an architect, he became a teacher of drawing and geometry, and was a founder of the Technological Institute at Stockholm. He submitted to the Government of his country a new design for soldier's rubber knapsacks, convertible into supports for pontoons in military bridge-making work, and a quick-firing rifle of his own make. He invented a submarine mine, which, in 1837, was tested on the Okhta, with the result that the Russian Government paid him £2,500 on condition that he undertook to remain in Russia

and erect works for the manufacture of mines. Together with General Ogarev he erected a small machine shop, but, getting a large order from the Government for submarine mines, he (in 1846) found it advisable to erect more extensive works at St. Petersburg. He equipped the Cronstadt workshops with machinery and lathes, and supplied the first central water-heating plant—a Nobel invention. On the outbreak of the Crimean war he was entrusted with the work of protecting the Cronstadt and Sveaborg fortresses by mines against attacks by fleets of the allies. This he accomplished with the assistance of his son Robert. During the second year of the war Emmanuel obtained a Government order for the construction of marine engines for the navy, and the *Vola* and *Gangut*, in the Baltic, and the two-decker *Retvizan*, in the Mediterranean, were amongst the vessels equipped by the Nobels. Mr. N. I. Puttilov, securing a Government contract for the construction of a hundred gunboats, fourteen corvettes, and six clippers, he applied for assistance to the Nobels, and managed in one year to deliver all the engines and boilers for the *Vol*, *Volk*, and *Vepr*.

Having made his works one of the leading enterprises of the kind in Russia, Emmanuel found himself without private means and a legacy of debt. Owing to a change in the Government, orders for the navy were placed abroad. He tried to get along on private orders, constructing fifty Volga steamers for the Kavkaz and Mercury, Samolet, and other companies, building the first engines for screw steamers, then being introduced for the first time, and inaugurating steamboat communication between St. Petersburg and the islands and Schlüsselburg. Speaking in a general way, Emmanuel closely followed the engineering progress in the West, and took an active part in solving

scientific and engineering problems by his independent practical work. Thus, for instance, he worked a great deal on the improvement of the crank engine and its application to the propulsion of small vessels. Many parts of the outfit of the works, including a five-ton steam hammer, were constructed on the spot, while every article turned out excelled both from the engineering point of view as well as in the matter of perfect finish.

The business side of the enterprises got into a bad way, and eventually he was compelled to suspend work and declare himself insolvent. Having lost all his funds, he returned to Sweden, where he resumed the study of explosives, and started, together with his sons, a small factory for the manufacture of blasting materials. He died in 1872, leaving his family almost penniless.

Emmanuel Nobel had four sons. Emil, the youngest, died at the age of twenty-eight. Alfred became a famous engineer and inventor; Robert was the first to draw the attention of the Nobel family to trade openings at Baku, and Ludwig was the famous pioneer of the Russian petroleum industry. Alfred, born on October 21st, 1833, and educated in St. Petersburg, evinced a special liking for chemistry. After carefully studying the subject under the direct guidance of Zinin, the famous Russian academician, he worked in foreign laboratories and did a great deal of successful work in applied chemistry. He was granted the title of Doctor of Chemistry *honoris causa*. He was one of the most prolific inventors. The invention which made his name a household word in every country related to the manufacture of dynamite and smokeless powders. Interesting himself in the industrial application of nitro-glycerine, invented in 1845 by Sobrero, Alfred, with his father and brothers, constructed at Krummel (near Hamburg) the first

works for the manufacture of this explosive. It soon became evident that the transport of nitro-glycerine was too dangerous on account of its fluidity and liability to spontaneous ignition from jolting. Catastrophes due to the explosion of nitro-glycerine during transport becoming frequent, its import was prohibited by nearly all Governments. Persevering, Alfred grasped the idea of solidifying nitro-glycerine, and, using sand for this purpose, he obtained a compound which could only be exploded by means of a special capsule. Dynamite quickly obtained universal application for blasting in mines and quarries, and numerous works for its manufacture were soon established in every part of the world.

He next invented explosive gelatin, a kind of gelatinised dynamite. These Nobel explosives have played an important part in the mining and engineering trades of the world. It was with the aid of Mr. Nobel's inventions that the St. Gothard tunnel was completed three years in advance of the estimated period, and an economy of about £750,000 was effected. Another invention by Alfred Nobel was smokeless powder, used for military purposes in Italy, Germany, England, and other countries. When the Russian company was formed in 1879, Alfred was induced by his brothers to become one of the founders. Although he did not take an active part in the management, he rendered invaluable assistance with his capital and his advice as an authority on applied chemistry on various technical points connected with the treatment of oil. He died on December 7th, 1896.

Almost his whole fortune (£2,000,000 in Consols and secured stocks) was willed away for the formation of the fund through the medium of which premiums are annually distributed amongst those who render the greatest service



THE LATE
MR. LUDWIG NOBEL.

In his day the Oil King
of the Caucasus.



MR. G. M. LIANOSOV.

The *doyen* of Baku oil men, arbitrator
in many disputes, and one of the most
generous of philanthropists.

to the human race. The interest goes in five equal parts, thus—the first for the most important discovery in physics, the second in chemistry, the third in physiology and medicine, the fourth for the best literary work of idealistic description, and the fifth to the man who renders the most signal service in bringing the nations together as evidenced by the abolition or reduction of militarism and the establishment of congresses for the propagation of the principles of international peace. The premiums for physics and chemistry are adjudged by the Swedish Academy of Science; for physiology and medicine by the Caroline Academy of Medicine and Surgery at Stockholm; for literature by the Literary Academy at Stockholm; and for services in the interests of peace by a committee of five elected by the Storting of Norway. The prizes are given entirely on merit, without reference to nationality or sex.

Robert Nobel was born on August 4th, 1829, in Stockholm, where he received his education. When his father returned to Sweden, Robert also left Russia, but in 1860 he returned and erected a nitro-glycerine factory in Finland. When the manufacture of this explosive was prohibited by the Senate of Finland on account of the frequent accidents, Robert once more returned to Sweden, where he occupied important positions at the nitro-glycerine works of his father and brother. At the invitation of his brother Ludwig he returned to St. Petersburg in 1870. Ludwig, securing a contract for the manufacture of rifles at the Izhev, the question arose as to whether it would be practicable to replace imported nutwood in the manufacture of rifle stocks by a home-grown variety only obtainable in quantity in the Caucasus. This necessitated forest exploitation, the building of special saw-mills, the organisation of

a convenient and cheap water transport, and the erection of drying plants and stores. The carrying out of the scheme in Transcaucasia was entrusted to Robert. His journey to the Caucasus bore fruit in another direction. Failing to develop the timber scheme, he returned to St. Petersburg in 1873, when he drew attention to the importance of the petroleum industry, which had attracted his attention as he passed through Baku on his way to Persia. Being anxious to get into oil, he succeeded in interesting his brother Ludwig and in prevailing on him to assist in the promotion of a small petroleum enterprise. He returned to the Caucasus, where, during 1875 and 1876, he did all the pioneering work.

He believed in the great possibilities and future of the petroleum industry, but this did not prevent him from seeing the weak points of the Baku methods. In 1875 he acquired from the Tiflis Company a small refinery in Black Town, for which he paid a modest £1,000. Reconstructing this, he introduced improvements in the treatment of oil. Just previous to the acquisition of the refinery, he had secured a few oil properties at which he had started to drill.

As soon as Robert began to refine the crude from Balakhani he recognised that the practice of carrying oil in barrels was slow, wasteful and expensive. The other firms refused to co-operate in a pipe-line project, and Ludwig had to be applied to. For £10,000 a pipe was laid down from Balakhani to the Black Town, and the fact that it paid expenses the first year gave Robert and Ludwig a widespread reputation, and encouraged other firms to do the same. In this way they laid the foundation of modern activity and enterprise at Baku.

Thousands of barrelled-oil carriers, said at that time to

be earning about £150,000 a year, found their occupation gone. So great was the feeling against the Nobels that the pipe line was cut, and numerous watch-houses had to be built for its protection. To-day the Nobel line lies amongst a score of others. If the Baku-Saboonchi train stops near the pipes, you can hear the irregular beat and throb of the swirling oil as it passes along to the refineries.

The Nobels were the pioneers of deep drilling. They secured their own oil plots, imported Pennsylvanian drillers, whose methods were not successful, and invented a composite drilling rig, which has been the model for all subsequent systems that have done good work in the Baku fields. Their oil fields, like their refinery, gradually became the greatest in Baku; no company can claim to have done more to develop the oil-carrying trade on the Caspian Sea; they have drilled for oil on Holy and Tcheleken Islands, started the new field at Berekei, and sent their drillers to some of the most promising regions in the hills; and they have not only worked in friendly union with Anglo-Russian refining and producing companies, but they have, acting with Rothschild, given this country the greatest Russian oil-distributing concern it possesses—the Consolidated Petroleum Company, Ltd.

The history of the Nobel family, written fully, would have an interest for all who admire the triumphs of genius in trade, associated with perfect honour and integrity. Marvin wrote about millionaires at a time (1887) when there were fewer in oil than there are to-day. What he said is worth quoting:

“Giants in their own narrow money-grubbing domain, they are insignificant, and too often contemptible, out of it. Men enriched by shoddy, by patent pills, by sharp practice

on the Stock Exchange, and other modes of spoiling the public, are not worthy of much notice, and the less literature has to say about them the better. But there are millionaires and millionaires."

All of which is true to-day, in oil and out of it. As Marvin says, no shoddy feature is to be found in Ludwig Nobel's career. The success of the company is due to the genius that planned a vast transport organisation, the engineering skill that carried it into effect, and the integrity that raised the quality of the product transported from a debased and despised condition, crushed by foreign superiority, to a position fit to compete in turn with that superiority and overcome it. Obviously only a man of rare and remarkable talents could have done what Ludwig Nobel achieved, and we are Anglo-Saxon enough to say that the written eulogies of the Nobels are none the less deserved because they were Swedes working in a country where many of our enterprises have been such disastrous failures that they have brought British methods and ability perilously near to disrepute.

Here is a story which bears on my reference to the nationality of the Nobels. A visitor, after having been courteously shown over the works of Nobel, said to the manager :

"Your organisation is splendid ; it is perfect ; but there is one thing that provokes my regret—what a pity it is not Russian."

"Russian or Swede, what does it matter" (was the characteristic reply), "so long as Russia gets good, cheap oil? You say the Baku firms dislike us. We cannot help that ; but if you can find in Baku any man who can prove

we are dishonest, cheat, adulterate, or refuse to redress substantial grievances, we will face an enquiry in your presence, and, if guilty, make amends."

To-day the great founders have been gathered to their fathers, but the company lives, worked by men who, employing genius and honesty, keep it in premier position, and make it the popular leader in all movements for the improvement, and, in the present crisis, for the reconstruction of the industry at Baku.

CHAPTER IX.

THE GREAT SPOUTERS OF 1881—1890.

GOLDEN AND SHAITAN BAZAARS TO THE FRONT—A GLUT OF OIL—NOBEL'S FIRST SPOUTER—ERUPTION OF GAS STOPS WORK AT BALAKHANI—OIL FIELD SURPRISES—ADVANTAGES OF A SOUND ORGANISATION—A SPOUTER ON EXHIBITION—THE DROOZHBA CATASTROPHE—OWNERS GO BANKRUPT—GOVERNMENT INTERVENES—THE IMPRESSIONS OF PROFESSOR ENGLER AND COLONEL STEWART—FIRST PROLIFIC SPOUTERS OF BIBI-EIBAT—BALAKHANI SENSATION—THE MINING COMPANY'S SPOUTER—WELL GUARDED BY COSSACKS.

IN the next period, 1881-1890, the record for spouters was maintained. The most prolific producers were brought in during 1883, 1886, and 1887.

The Mnatzakanov well (plot 9, Saboonchi), beginning in 1881 to exhibit indications of the exhaustion of the 294 ft. stratum, was deepened to 434 ft., where oil was again struck. Although the upper end of the casing had been thoroughly strengthened and a strong cap fixed, the pressure was too enormous to be resisted for any length of time, and the sand-charged oil broke through. From September 13th to November 1st 800,000 poods were sold for 18,000 roubles (£1,800). The well was then got under control, and in the following year, from February 19th to the close of navigation, yielded 4,500,000 poods, which realised 86,000 roubles (£8,600). In the winter the flow declined, but only to restart with redoubled fury in February, 1884. The loss of oil was insignificant, the owner having provided adequate storage. The oil was

up to April, 1882, of '876 specific gravity, which in the subsequent period increased to '881.

In this year Krasilnikov brought in two spouters. The drilling of one in Group XVI. at Shaitan Bazaar was started as early as 1877, but, for obvious reasons, Krasilnikov did not hurry it on to a completion. Work was continued at intervals till 1881, when, at a depth of 278 ft., sand shot up the tube and oil followed at the rate of 35,000 poods a day, the gravity being between '850 and '851. It took eleven days to fix a cap, and in that time 200,000 poods ran to waste. Once under control, it gave an abundant supply for fifteen months. The second spouter, also at Saboonchi, was from the depth of 504 ft. The daily run amounted to 20,000 poods, and the total flow to from 10,000,000 to 12,000,000 poods. Only a third was sold as fuel and the remainder was turned into Saboonchi Lake. On September 3rd the spouter caught fire, and flared with terrific fury for ten days. When the flames were subdued spouting recommenced.

Another phenomenal spouter at Shaitan Bazaar was No. 2 well of Orbelov Brothers. Drilled by manual labour, it was started in 1877 and completed in 1881, with a $10\frac{1}{2}$ ft. diameter in the 490 ft. oil stratum. In a week it gave 1,000,000 poods. The column of oil was over 200 ft. high, and a strong wind carried the spray 500 yards to the offices of the Baku Oil Company, the manager of which lodged a complaint against the Orbelovs on the ground that his property was in serious danger of catching fire. The oil flowed into a marshy hollow, where it was set on fire. When the spouter ceased playing the casing was found to have been ruined, and the well was abandoned.

Balakhani also had its spouter in 1881. Lianozov Brothers brought this in at No. 9 well, Group VII. (taken over by

the Russian Oil Company in 1896). The oil was struck at 329 ft., with a 12 in. pipe. The spouter played for three months, and threw up 1,800,000 poods, the greater part of which went into reservoirs.

In 1882 the No. 8 well of the Soutchastniki Company was brought in a spouter from 476 ft. with a 10 in. diameter. A cap could not be fixed before the sixth day. The flow, which lasted twenty days, produced 2,000,000 poods, of which 400,000 poods were sold and 1,300,000 poods lost. The well proved one of the most productive at Balakhani.

Hitherto notoriously unlucky in the matter of strikes, Nobels brought in a spouter (No. 25 well) when it was least wanted. During the summer (1881) it started to spout sand over 200 ft. high, and on the source being tapped at 582 ft., the sudden outburst of the oil carried away a ton of boring gear. When the engineers cleared the tube of sand the oil spouted so furiously that, not being prepared for a spouter, and the market being weak, they fixed a cap and kept the oil in reserve, just as they have frequently done in recent years when engaged in pioneering work in new fields.

The same year the Mining Company (acquired by Mantascheff in 1896) had a spouter from 450 ft. In September it spouted 100,000 poods in twelve days; in December, 300,000 poods in six days, and early in January, 1883, 100,000 poods in two and a half days. Of the total yield, 500,000 poods, only 160,000 poods were sold, at $\frac{3}{4}$ -copeck per pood (about 11*d.* the ton).

The Baku Oil Company struck oil about the same time, at 305 ft. with a 12 in. diameter. Two million poods came to the surface, and most of it was sold at 3*s.* 8*d.* per ton.

The year 1883 was remarkable for spouters. Lianozov

had two producers on his property, Group VII. The first spouter was at No. 15, where work was started in November, 1882, and completed in May, 1883, with a 12-in. pipe. At 420 ft. there was a terrific gas blow out, repeated at 490 ft., the oil each time mounting to the surface, but disappearing when the cap was pushed over the mouth of the well. The third time, when the drill was down 546 ft., the gas explosion was terrific, the zhelonka (bailer) shooting up through the top of the derrick. Afterwards dry sand spouted with terrific force to a height of from 350 ft. to 400 ft. Rocks were hurled out of sight; the windows of the neighbouring engine sheds were smashed, and the iron roof of a boiler-house collapsed beneath the weight of falling stones. This "sand volcano" lasted forty-five minutes, and was succeeded by a blow out of gas, which poisoned the atmosphere at Balakhani the rest of the day, very much in the same way that gas has since driven the workmen off some of the oil fields of Texas. After considerable trouble the cap was pushed into position. The pressure of the oil and gas was shortly afterwards relieved by a second 10 in. well, which, 16 ft. deeper, struck the stratum feeding the No. 15 well, and provided another outlet for the imprisoned gas. Both wells were full of oil, and spouted whenever the caps were removed. The owner benefited little by his success owing to the market being slack.

The Nazaret spouter (No. 32, Saboonchi) was a striking example of the uncertainties attending oil well boring. The well was commenced by Abayantz and Company in 1879, only manual power being used, and by the end of 1891 581 ft. had been reached without any indications of oil. Despairing of success, the owners left the well untouched for a couple of years, when they leased it to

Nazaret, the head of a private company, consisting of Tumaieff and several other Armenians, on condition that he was to drill at his own expense and allow Abayantz and Company half the profits if he struck oil. Nazaret, drilling seven feet deeper, touched a reservoir and the sand began to spout. The tube was a 10 in. one, diminishing to $7\frac{1}{2}$ in. in diameter, and soon became clogged. After a fortnight spent in digging away the sand shoal at the mouth of the tube, he effected a clearance and oil spouted freely. About 800,000 poods were ejected, of which a great deal was sold for fuel. The casing, however, was ruined, and the well abandoned.

A larger spouter was brought in by Mirzoiev, from his No. 14 well completed with a 14 in. diameter. Oil was reached at 441 ft., and spouted from 5,000 to 10,000 poods a day, increasing to 100,000 poods, but falling back again to 10,000 poods. Altogether it produced during the summer 2,500,000 poods, of which 1,500,000 poods were delivered at Mirzoiev's Baku refinery and the rest stored in a lake, from which it was sold for fuel.

A remarkable spouter in the vicinity of the famous Droozhba well was Nobel's No. 9. From 642 ft. it threw up in a month 7,500,000 poods of oil. The column rose to a height of 200 ft., the oil and sand covering the ground within a radius of 200 ft. of the derrick. Never was the advantage of a thorough organisation better demonstrated than in connection with this spouter. It repaid Nobels for many failures. Every precaution had been taken to deal successfully with an abundant supply. Only 250,000 poods were lost out of the 7,500,000 erupted, and of the latter 5,000,000 poods were immediately forwarded to the refinery and converted into kerosene and other products, while the remainder went into the reservoirs. All attempts to get

control of the well failed, and it remained "untamed" for six weeks, until, in fact, the initial force of the eruption had naturally subsided. In the face of incredible difficulties a platform was erected over the well and a mast driven down the bore hole by means of a battering ram. Even then the well maintained a flow of over 4,000 poods per hour.

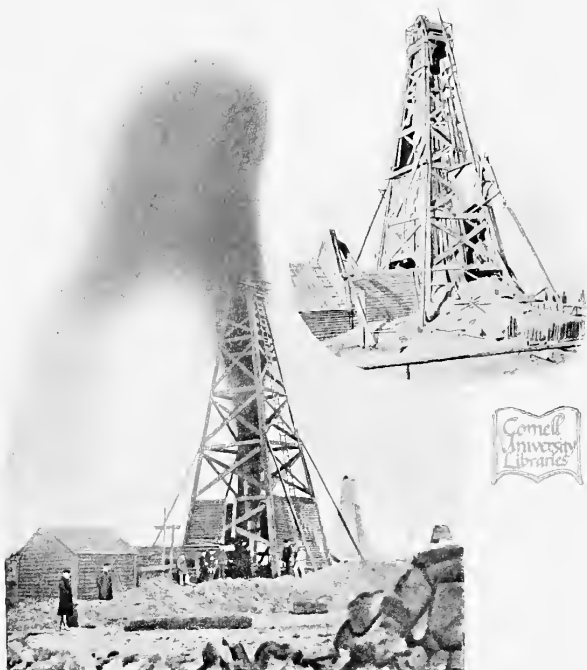
Some time after the Droozhba calamity, Admiral Shestakov, the Minister of Marine, visited Baku, and Nobels decided to show him a "wild" spouter. When he arrived the covering of No. 9 was removed, and the heavy boiler plate over the mouth of the bore hole pushed aside, when, with a terrific roar, the oil cleft the air, with a hissing sound, to a height of 200 ft. The derrick, trembling and tottering, looked very much like collapsing, but in less than ten minutes His Excellency indicated that he had seen enough, and the performance came to an end when the drillers pushed the cap over the well without the slightest trouble.

In those days gagged wells were one of the great sights of the Caucasus. Marvin was shown a deserted derrick in which, he was told, a cap kept down with the grip of a vice millions of poods of oil in its source 600 ft. to 700 ft. beneath the surface. The first caps, 3 in. boiler plates, were completely worn into shreds by the irresistible grinding action of the sand-charged blast. It was this circumstance which led to the invention of a special cap fitted with sliding valves, which is capable of holding the most powerful of spouters in check if it can only be fitted on the head of the casing in time. On removing the slide of the cap there is a furious blow out, followed by the projection of oil to a considerable height, but this is easily suppressed by gradually pushing the slide across the mouth of the well.

Another Nobel spouter, No. 25, produced nearly 500,000 poods of oil daily from a depth of 582 ft., the gauge recording a pressure of about 200 pounds to the square inch. The flow eventually declined to 250,000 poods per day at the beginning of the following year.

However, the sensation of the year, a well whose fame spread to every part of the world, although it brought nothing but mortification and ruin to its owners, was the Droozhba spouter, named after its owners, the Droozhba (Friendship) Company. The calamity which befell the company was largely due to an accident. The head of the casing had been well strengthened, and a cap fixed in good time when oil was struck at 574 ft. The pressure, as in the case of Nobel's No. 9, was over thirteen atmospheres as compared with the maximum of four atmospheres recorded on previous occasions. Still, it was kept down by the casing and cap. It was only while the cap was being improved and strengthened under the supervision of Garsoiev, the drilling engineer in charge of the well, that the chained giant broke loose, blew off the cap, and shot 300 ft. into the air. There was no human possibility of regaining control of the spouter, and in a few minutes the sand-charged oil—a liquid grinder penetrating in time the thickest iron plate—had ground to pulp the huge beams on the top of the derrick, and caused havoc and destruction over a wide area.

Starting on August 19th, the flow continued unchecked till December 10th. It started with a flow variously estimated at between 400,000 and 500,000 poods per day, and, according to an avowedly low estimate, made by the owner of adjacent properties, threw up in the 114 days it was in action 13,640,000 poods or 220,000 tons. Some even estimate the waste at 30,000,000 poods.



ON THE RIGHT IS A DERRICK DESTROYED BY A SPOUTER. THE OTHER PHOTO SHOWS A SPOUTING WELL IN ACTION.

“ In Pennsylvania that spouter would have made its owner’s fortune ; there’s £5,000 worth of oil flowing out of the well every day ; and yet it has made the owner a bankrupt ! ” said an American petroleum engineer. Mr. Marvin, who recorded the exclamation, added his own opinion. “ Out of the well,” he wrote, “ the oil was flying the height of the Great Geyser in Iceland, with a roar that could be heard several miles round. The fountain was a splendid spectacle—it was the largest Baku had witnessed till then. When the first blow out occurred, the oil had knocked off the roof and part of the sides of the derrick, but there was a beam left at the top, against which the oil broke with a roar in its upward course, and which served in a measure to check its velocity. The derrick itself was 70 ft. high, and the oil and the sand, after bursting through the roof and sides, flowed fully three times higher, forming a greyish-black fountain, the column clearly defined on the southern side, but merging into a cloud of spray thirty yards broad on the other. A strong southerly wind enabled us to approach within a few yards of the crater on the former side and to look down into the sandy basin formed round about the bottom of the derrick, where the oil was bubbling and seething round the stalk of the oil shoot like a geyser. The diameter of the tube up which the oil was rushing was 10 inches. On issuing from this, the fountain formed a clearly defined stem about 18 in. thick, and shot up to the top of the derrick, where in striking against the beam, which was already worn half through by the friction, it broadened out a little. Thence continuing its course more than 200 ft. high, it curled over and fell in a dense cloud to the ground on the north side, forming a sand bank, over which the olive-coloured oil ran in innumerable channels

towards the lakes of oil that had formed on the surrounding properties. Now and again the sand flowing up with the oil would obstruct the pipe, or a stone would clog the course; then the column would sink for a few seconds lower than 200 ft., to rise directly afterwards with a burst and a roar to 200 ft. Throughout the previous day a north wind had been blowing, causing the oil and sand to fall in a contrary direction from that pursued while we were there. Some idea of the mass of matter thrown up from the well could be formed by a glance at the damage done on the south side in twenty-four hours—a vast shoal of sand having been formed, which had buried to the roof some stores and shops, and had blocked to the height of 6 ft. or 7 ft. all the neighbouring derricks within a distance of 50 yards. Some of the sand and oil had been carried by the wind nearly 100 yards from the spouter—the sand-drenched roofs of the adjacent buildings showing how far the cloud of matter had extended. From this outer boundary, where the oil lay an inch or so deep on the ground, the sand shoal rose gradually, until near the rim of the crater it was about 20 ft. deep, the surface being hard and soddened, and intersected with small channels along which the oil was draining off to the lakes. On the opposite side a new shoal was forming, and we could see the sand as it fell drifting round the neighbouring derricks and burying all the outhouses in the way. Here and there gangs of men were at work with wooden spades, digging and clearing channels round about the mouth of the well, to enable the oil to flow away. Their task was no easy or agreeable one. Upon their heads and shoulders oil and sand never ceased to fall, and they had to be careful to avoid being drawn into, and engulfed in the vortex round the base of the crater. Luckily no stones

of any size were being thrown up with the oil. Sometimes blocks weighing several pounds are hurled up from the depths below, and then it becomes a dangerous matter to approach a spouter. Standing on the top of the sand shoal, one could see where the oil, after flowing through a score of channels from the ooze, formed in the distance on lower ground a whole series of oil lakes, some broad enough and deep enough to row a boat in. Beyond this, the oil could be seen flowing away in a broad channel towards the sea."

This magnificent spouter made its owner bankrupt; in America this well would have made its owner a millionaire. The spouter belonged to a small Armenian company, with only sufficient ground on which to erect the derrick, and not enough to spare for the making of reservoirs. The oil flowed on to other properties, and the amount caught and saved upon the waste lands was sold at a price which failed to meet the claims for compensation put in by those whose houses and shops were engulfed in the sea of oil. Others suffered damage by having to stop work owing to the large quantities of sand thrown up from the well. Had the Droozhba Company owned plenty of land round about their well and been able to store the oil, they would not have been so badly off, but their well happened to be in the midst of several hundred other properties covering the Balakhani plateau, and the damage which it did ruined them.

As a result of this prodigious outflow crude lost its value for the moment. One refiner filled his tanks with 700,000 poods of oil for £30. No one would give more than $\frac{1}{4}$ copeck per pood (4*d.* the ton) for what had previously fetched 2 or 3 copecks. Thousands of tons were burned

outside the district to get rid of it ; thousands more were diverted into the Caspian ; huge lakes of oil were formed near the well ; and on one occasion the liquid suddenly flowed into an engine house, and, but for the prompt action of the engineer in extinguishing his furnace fires, the whole locality would have been in flames.

All efforts to stop the spouter were abortive, and the damage to property went on unchecked, all buildings in the vicinity being buried by the sand thrown up with the oil. The indignation in Russia at the waste of oil was unbounded ; at Baku the well owners came together to discuss the best means of checking the career of the spouter. Finally, the Government at St. Petersburg was appealed to, and two engineers were sent out to Baku. On the 10th of December the spouter suddenly stopped of its own accord (the pipe plugged), but after three hours it burst out afresh with even greater violence. A 3-in. boiler plate was fixed on the mouth, but this was soon worn to shreds and burst. At last, on the 29th of December, Zorge, a well owner, performed the creditable feat of capping it, and, in spite of a powerful movement of oil at the mouth of the tube, the well was kept under control the whole winter. When the outburst was stopped, a great disturbance took place in Nobel's No. 14, showing the connection of both wells with the same oil bed.

For want of adequate capital and facilities the Droozhba Company let a million slip through their fingers and went bankrupt, while Yaribov, the engineer who drilled the well, died of a broken heart.

Professor Engler, who visited Baku at the beginning of 1886, when he was accompanied by Dr. Max Böhm and Dr. R. Jürgensen, mentions the existence of eleven spouters at that time. Of these, five Nobel wells were capable

of producing 160,000 poods per day, but their refinery, although the largest at the time, not being capable of handling the production, and the oil becoming useless for kerosene treatment owing to exposure, only 60,000 poods a day were withdrawn with a bailer to prevent the formation of a plug. Another well, the Avakov spouter, was flowing at the rate of 100,000 poods (about 1,600 tons) per day. The Baku Oil Company's Kormilitza well was still good for from 3,700 to 5,000 poods a day.

In the same year Palashkovski and Bunge (the Batoum Oil Company) had a spouter flowing for many days, to the disgust of its owners, at the rate of 100,000 poods per day, the pipe line to the White Town refinery of the company only being capable of dealing with 40,000 poods. When they regained control of the well (No. 11) it was bailed to prevent choking, and, of course, others from drawing on the supply.

Colonel Stewart refers to the strange fact that, whenever the Avakov spouter came into play the Palashkovski well followed suit ten minutes later, while the No. 12 Nobel well not to be outdone, began ten minutes after the second one—a fact which clearly showed that they were all drawing from the same containing layers. A gale from the north-east, or even a northerly wind, was supposed to have the effect of increasing the supply of oil and spouting tendencies of these early wells. These keen observers also came to the conclusion that Baku spouters were of no earthly benefit to the small producer at a time when there was only a limited home demand and inadequate transport facilities. Fears were expressed as to the lasting nature of the oil sources, some even going the length of predicting that these would be exhausted within the next four or five years. There existed at the end of 1885 a total of

334 wells, of which 142 were producing, 40 exhausted, 57 idle owing to damaged casing, 13 owing to drilling accidents, 73 drilling, and 19 ready for drilling. Spouters like those of the preceding years, it was thought, would never be seen again ; but it was not long before all pessimistic predictions were shown to be wrong. The surprise came from a fresh quarter—Bibi-Eibat. Development work at the two properties, groups XIX. and XX., was proceeding slowly. Tagiev had a copious supply from his wells, the deepest not exceeding 679 feet. Zubalov had three wells near Tagiev's refinery. None of his wells could compare in production with those of his neighbour ; as a matter of fact, one well had even failed to strike oil at 770 feet.

While Balakhani and Saboonchi continued to yield a crop of prolific spouters, Bibi-Eibat excited little interest. It had been thought that the Droozhba well, with its daily flow of 200,000 poods, would never be equalled, until a Bibi-Eibat well, completed with a 10 in. bore, commenced to throw up from 600,000 to 700,000 poods a day, or more than all the 25,000 wells of America, and the thousands of other wells in Galicia, Roumania, Burmah, and other countries together. The well, started in 1884, never yielded at its best more than 4,000 poods, which at that time was not considered extraordinary. The yield subsiding, deepening work was started. The next oil bed was struck at 714 ft. on September 27th, 1896, when the oil began to spout with a record amount of power, drove upwards to a height of 224 ft., and gave a production at the rate of 30,000 poods per hour.

“From the town,” wrote the *Bakinskiya Izvestiya*, “the fountain had the appearance of a colossal pillar of smoke, from the crest of which clouds of oil sand detached them-

selves and floated away a great distance without touching the ground. Owing to the prevalence of southerly winds, the oil was blown in the direction of Bailov Point, covering hill and dale with sand and oil, and drenching the houses of Bailov, a mile and a half away. Nothing could be done to stop the outflow. The whole district of Bibi-Eibat was covered with oil, which filled up the cavities, formed a lake, and on the fifth day began pouring into the sea. The outflow during three days was estimated at 5,000 or 6,000 tons daily. On the sixth day the wind freshened, and the oil spray began flying all over the town. The square in front of the Town Hall of Baku was drenched with petroleum, which even fell on houses in the outskirts to the north. The loss of oil was prodigious. On the eighth day the maximum was reached, the oil then spouting at the rate of 700,000 poods per day. To prevent the oil being totally lost, attempts were made to divert the stream away from the sea into some old wells.

After the tenth day it began to diminish, and by the fifteenth day the engineers had got it so far under control that the outflow was only 60,000 poods per day. Altogether close on 12,000,000 poods are estimated to have come to the surface, and most of this was lost for want of storage accommodation. The oil simply poured into the Caspian Sea, and was lost for ever to mankind."

In the spring of 1887 the prolific resources of Bibi-Eibat were again proved on No. XX. group by what was known as the Zubalov spouter. The drilling of the well had been started in 1885, and the drill had penetrated to a depth of 567 ft., when the owners, discouraged and disheartened, suspended operations. The success of Tagiev, whose 11,000 ton spouter, only a short distance away, caused them

to re-start boring in November, 1886. The depth reached when the fountain burst forth was 672 ft., the 16 in. tube reaching 196 ft., the 14 in. to 392 ft., the 12 in. to 623 ft., and, finally, the 10 in. to 672 ft. The Tagiev fountain did not spout until a depth of 714 ft. had been reached. On Sunday morning, March 20th, huge quantities of oil and boulders were hurled out of the well to a height of 350 ft. The wind being light and blowing from Baku, sand and stone fell round about the well and did very little damage. Brought in at seven in the morning, at eleven there was a perceptible falling-off in the strength of the spouter, the height of the stalk being 200 ft. Gangs of men directed the stream in the direction of some Zubalov reservoirs. These were quickly filled to overflowing, and, the new earth walls breaking, the oil rushed like a river into the Caspian. From the 20th to the 24th the oil spouted without intermission; then it suddenly ceased for four days, the bore hole becoming choked with stones and sand. On the 28th it began playing afresh, and gushed with great violence for several days, when the tube became completely blocked. Nearly all the oil was lost.

In 1886 the Caspian and Black Sea Company (Rothschilds) had taken over the Batoum Company's concern. Its start as a producer at Saboonchi was most successful. On May 2nd well No. 13 commenced to spout. Between the 3rd and the 9th it produced 250,000 poods. It stopped on the 10th and 11th, when a cap was fitted. Spouting on the 12th and 13th, it produced 30,000 poods, then the bailer came into use, and each time it was raised spouting re-commenced, the well producing 47,000 poods between the 19th and 21st. The well, as a bailer, regularly produced during the whole of 1888 from 4,000 to 6,000 poods per day.

A more powerful spouter was No. 3 well of this company, which came in six days after No. 13 stopped flowing. Starting off for three hours on the 26th, it suddenly stopped, then re-started in the evening, and produced 150,000 poods on the 27th, 120,000 poods on the 28th, 50,000 poods on the 29th, 50,000 poods on the 30th, and 30,000 poods on the final day of the month. It gave out on June 6th, but when bailed it continued to yield from 3,000 to 4,000 poods per day.

In January, 1888, the Caspian and Black Sea Company had No. 16 well spouting for two weeks at the rate of 6,000 poods per day. Nobels had in September, 1887, an exceptionally prolific spouter. From the 27th the well spouted twenty days, giving a regular production of 40,000 poods per day. The well started spouting when repairing work was in progress. A cap was fixed without trouble.

In 1887, Balakhani, put somewhat in the background by the sensational developments at Saboonchi and Bibi-Eibat, came suddenly to the front with a fountain which excited wonder even at Baku. The new well, belonging to the Mining Company, began spouting on August 13th, at the rate of 400,000 poods daily. The well became choked after a nine hours flow. It was thought that the trouble was passed and no attempt was made to fix a cap. On the following day it broke loose. On the 23rd, the stalk was still from 200 to 350 ft. high and the flow up to 300,000 poods. The pressure was terrific, the oil occasionally shooting twice as high as Nelson's Column, and reaching as far as Woolwich Arsenal is from the City. Holes and depressions near the well were filled with oil, which flooded the country for miles around, while the sand which was thrown out formed a 14 ft. high crater round the well and completely buried a number of houses. Gas was given

off in volumes which made it dangerous for anyone to approach the spouter or to light fires in any part of the oil region.

“Yet one day,” Marvin tells us, “a heedless sightseer from Baku attempted to strike a match to light a cigarette; but the fool, very luckily, was seen by some workmen, who knocked the match from his fingers, and would have lynched him on the spot or flung him into the lake of oil but for the opportune arrival of the manager.” After this the fountain was surrounded by Cossacks to keep off intruders. Several fruitless attempts were made to gag the well. Whole tree trunks and a 22-ton cast iron plate were tried, but to no purpose. Within a few minutes every obstruction was hurled off the bore hole, and the spouter played day after day for more than six weeks, the volume gradually decreasing to about 120,000 poods per day. The patience of the Russian Government was at last exhausted, and permission was given to the other firms at Baku to seize and cap the well. Availing themselves of the power given, Nobel, Rothschild, and other firms sent their best engineers to the spot, and these, after working for several days, managed to fix a cap and stop the flow of the spouter. Twelve million poods of oil were wasted. This well was not the most productive in the field, some, it will be remembered, threw up over 500,000 poods, but none continued to do this for so long a period.

CHAPTER X.

GROWTH OF THE INDUSTRY IN 1881-1890.

STEADY PROGRESS—OUSTING THE SMALL FIRMS—THE WHITE TOWN—TRANSPORT DIFFICULTIES—JEWISH PIONEERS ON RUSSIAN MARKETS—COMPLETION OF BAKU-BATOUM RAILWAY—ADVENT OF THE ROTHSCHILDS—RUSSIAN EXPORTS HANDICAPPED—COLONEL STEWART ON BAKU BUSINESS METHODS—NO BRITISH FIRMS AT BAKU—PIPE LINE SCHEMES—PERMISSION TO RUN PRIVATE TANK CARS—BAKU'S FIRST SYNDICATE—IMPOSITION OF EXCISE TAX ON KEROSENE—STARTING OF THE STATISTICAL BUREAU—THE INDUSTRY AT THE END OF THE PERIOD.

GREAT as was the progress made by the petroleum industry in the 1873-1880 period it was small in comparison with the advance made in every direction between 1881 and 1890. The output of crude and refined, the shipments to the home markets, and the foreign trade grew in this period to dimensions unthought of even in 1883. Foreign enterprise, though hated by both natives and Russians, was beginning to tell. The output from 25,000,000 poods in the final year of the preceding period increased to 40,000,000 poods in 1881, and kept on progressing until it reached 226,000,000 in 1890. The exports of petroleum products rose from 23,400,000 poods to 176,300,000 poods. The table on page 111 shows the great growth of the industry.

In 1881 Mr. Ragosine, who all along maintained that the refining centre ought to have been established in Russia proper and not at Baku, submitted to the Minister of Finance a memorandum advocating the imposition of a tax

EXPORTS TO RUSSIA AND ABROAD.

Year.	Production.	Illuminating Oils.	Lubricating Oils.	Residuum.	Crude.	Total.	Percentage of Exports to Production.
Millions of poods.							
1880	25	7·8	—	7·0	0·4	15·2	60·8
1881	40	11·6	—	9·3	2·5	23·4	58·5
1882	50	12·6	0·3	12·6	1·6	27·3	54·6
1883	60	14·2	1·2	12·2	1·9	29·5	49·2
1884	89	21·7	1·4	28·5	2·5	54·1	60·8
1885	115	27·4	1·6	35·6	2·8	67·4	58·6
1886	123	32·4	0·8	35·7	3·0	71·9	58·5
1887	155	44·0	2·3	41·5	3·4	91·2	58·8
1888	182	50·0	2·6	58·5	3·8	114·9	63·1
1889	192	61·1	3·4	88·6	4·2	157·3	81·9
1890	226	67·8	4·6	97·1	6·8	176·3	78·0

on exported crude. A commission of enquiry presided over by Mr. Bunge (shortly afterwards appointed Minister of Finance) was held. Seven or eight of the leading producers attended with the departmental chiefs and Professors Mendeleiev and Lisenko. Mr. Ragosine advocated an export tax of one rouble per pood, but Professor Mendeleiev thought thirty copecks would do. The producers strongly opposed the tax. Mr. Kokorev asked for time to consider the subject. He was supported in this action by the other Baku producers who hoped in this way to get the subject shelved. The first conference was abruptly terminated in order to allow the producers to submit their opinions in writing.

Another conference was convened for a day in March, 1882, but the assassination of Alexander II. (March 1st), led to its being abandoned, and as Mr. Ragosine did not meet with support the matter was allowed to drop.

Naturally, during the rise of Baku there have been frequent periods of stagnation, while more than once it has been openly and confidently predicted that the

industry was on the point of collapse. But at the end of each succeeding year the industry was discovered to have forged ahead and falsified the predictions of approaching evil days. Baku has proved no exception to the general rule that the growth of large firms means the ruin of many small ones. In 1880 there existed near Baku 195 refineries, of which only four (two Mirzoiev's, one of the Baku Oil Company, and one Sarkissov's) were on a large scale; at the end of 1885 their number had been reduced to 136, of which 100 only were working. Of large refineries capable of producing over 500,000 poods of kerosene per annum, there were 12; between 100,000 and 500,000 poods, 15; and under 100,000 poods, 109. These latter included many old Persian plants, consisting of from one to two stills, and only working a few months in the year. The six leading refineries were:—

Owners.	Kerosene Capacity (Tank cars of 10 tons each).
Nobe Bros.	22,200
Caspian Company (De Boer, Manager) ...	5,160
Batoum Oil Co. (Palashkovski and Co.) ...	4,680
Tagiev and Sarkissov	3,300
Baku Oil Company	2,500
Schibaieff and Company	1,700

Of the 43,000 tank cars shipped, Nobels had to their credit 17,100, as compared with ten out of 6,700 in 1885, when they started.

White Town, which had grown up in the meantime east of Black Town, and been laid out on more sanitary and cleanly lines, contained some of the best Baku refineries, such as the Schibaieff, Palashkovski, Oelrich and Bulfroy refineries, and an extensive sulphuric acid plant, the sulphur being obtained in large quantities from Persia.

In 1890 there were 143 refineries, only 97 (including

15 large ones) of which were in exploitation. These produced 73,676,000 poods of kerosene.

In line with the producing and refining branches of the industry developed the pipe line and other transport facilities, the drilling methods, and the organisation of the industry. The six pipe lines connecting the oil fields with the refineries in 1884 had increased to 15, of a total length of 100 miles, in less than three years.

In 1886 there were on the Caspian Sea 29 tank steamers (11 Nobels). These were capable of conveying in one trip 985,000 poods of kerosene in bulk, and from 28 to 30 trips were made by each steamer between Baku and the nine-foot roadstead at the estuary of the Volga during the seven months of navigation.

In 1889 these had increased to—

	No.	Minimum Tonnage.	Maximum.	Total.
Steamers ...	50	215	1,129	31,774
Sailers ...	297	—	—	96,034
In construction	11	532	1,209	8,613

In 1890 the number of tank steamers had increased to 54, of about 1,570,000 cubic feet capacity.

Shipments from the Caspian had increased by about 15,000,000 poods in 1880 to 118,600,000 poods in 1890.

Strange to say, while lakes of oil were burned and many wells remained capped at Baku, simply because there was no demand for more than a fraction of the possible output, the traders on the upper reaches of the Volga found it cheaper to get their oil from America than from Baku, or from the Ragosine Company's refinery near Yaroslav. Stranger still, Tiflis, up to within a few weeks of the opening of the Tiflis-Baku section of the Transcaucasian railway, drew its supply of illuminating oil from America, a distance of more than 8,000 miles, while sufficient

crude to flood the town was running to waste 341 miles from its doors.

St. Petersburg still used (1883) American oil in preference to the Baku product, notwithstanding the higher price (2.40 copecks against 1.30 copecks per pood). In Western and Southern Russia American oil also predominated during the early part of the eighties. Here, however, the cheapness of the Russian product, resulting from overstocking in the Volga region, soon secured for it many consumers, and in this way the import of American oil through Odessa was affected. The pioneers of these markets were Odessa and Kiev Jews, who, however, did not care about the quality of the oil so long as it was cheap. This resulted in some refiners supplying these markets with an oil of the worst possible description, a mixture of solar oils and benzine, until the Government stepped in (1886) and prohibited the sale of illuminating oil having a lower flash point than 28° C. ($82\frac{1}{2}^{\circ}$ Fahr.).

The construction of the Baku-Tiflis section of the Transcaucasian was dragging on, interminably it appeared, largely owing to financial difficulties in which the concessionaires (Palashkovski and Bunge, building the line, who were also refiners and producers) found themselves at the outset.

This indirectly led to the appearance of the Rothschilds with their millions. The Rothschilds had been engaged for some time in the petroleum industry of the Northern Caucasus, and had worked up a fairly extensive illuminating oil business on the Continent. They registered (1883) at Batoum the Caspian and Black Sea Company with a capital of £600,000, having for its object the production, treatment, transport and sale of Russian petroleum. The constructors of the Transcaucasian approached Rothschilds

for financial aid, which was given on a mortgage on the oil fields and refinery of the Batoum Oil Company. Rothschilds in a short period introduced over £2,000,000. As regards the other producers and refiners, this happened at a most opportune moment ; if Rothschilds had not appeared some of them would have had to go to the wall in their competition with the engineering and financial genius of Nobel. Rothschilds bought kerosene freely, and frequently paid the refiners in advance. By doing this they carried those producers who depended on them through many a crisis.

The Transcaucasian was eventually completed in April and started in May, 1883. Up till then Baku oil only found its way to Europe in quantities hardly worth considering, and no wonder, considering that it had to be conveyed more than 2,000 miles by water and rail before it could be delivered into the tank vessels in the Baltic. The competition of the Transcaucasian reduced the distance at a stroke to 560 miles, and brought Baku oil within reach of the European consumer, albeit there was a freight rate of 20s. per ton for the 560 mile run. The line when it started did not improve matters much. As in the case of most lines built during that period the shareholders were guaranteed by the Government a fixed interest on their investment. The result was that they did not trouble much about improvements. Altogether Nobels had then over 1,500 tank cars running on the Russian lines, while the Transcaucasian only had a few hundred. A limit to traffic was also imposed by the blocking of the railway over the Suram Pass.

Colonel Stewart, who attended the third conference on behalf of the London Chamber of Commerce and Petroleum Association, wrote (1886):—"There is no English firm established either at Baku or Batoum. At Poti there

is one English firm doing a good business, chiefly in box-wood, Indian corn, manganese, and other local products, but not particularly engaged in the petroleum trade. Most of the refiners and well owners at Baku are in a state verging on bankruptcy ; but this does not at all show that good business could not be done there. If any trade in the world were conducted on the system, or rather, utter want of system, that prevails at Baku, bankruptcy would speedily follow. Hardly any of the heads of the firms are men of business, or could tell whether they were doing a profitable trade or not, if they were at Baku, but they are generally absentees, leaving the duties to be performed by a manager who is not looked after so long as he remits funds to headquarters. When he ceases to do that, he is summarily dismissed. I know that one of the largest firms at Baku has changed its business manager seven times in about two years. Offices are only open daily from about 8.30 a.m. to 12 noon, and then again for about two hours in the evening, while much time is wasted in card-playing. Scandalous waste, not to say speculation, goes on everywhere. If, under such circumstances, profits were made, it would be rather surprising than otherwise. Some foreign merchants, Germans and others, who attend to their work themselves and conduct the trade in a business way, are making money. I consider that a good opening will occur for English merchants as soon as a pipe line is laid down to Batoum or Poti, for commencing a profitable business by erecting storage tanks at Batoum, and purchasing oil from the refiners ; but I do not consider that it would pay an English firm to own wells or refine oil at Baku, where there are already too many refineries there, and the business requires to be removed to the Black Sea coast, if it is to flourish."

No sooner was the practical advantage of pipe line transport brought home to Baku oil men than schemes for pipe lines to Batoum and the Persian Gulf were put forward. Up to the middle of 1886 these proposals were discountenanced by the Government on the ground that, having to meet the guaranteed interest on the line, it could not possibly sanction schemes likely to compete for its traffic. When it was shown that the line would have sufficient to do, even if it had not a monopoly of the oil traffic, a commission was appointed to draft a general scheme for a concession. Then new considerations arose, the chief one being as to whether the pipe line was to be for crude or refined oil. Result, another investigation and the opposition of the leading refiners on the ground that a line for crude would create a new refining centre at Batoum. Some time passed before the work of making the line was taken in hand, and half the distance, the Mikhailovo-Batoum section, only started working in July, 1900, while the remaining section will not be in working order before the end of this year.

There were plenty of buyers, but the railway company would not provide sufficient tank cars. This poverty of cars and the troubles of the Suram Pass effectively prevented the free and full development of the trade. The Government in 1887 thought it would remedy the evils of the system by giving the exporters permission to lay a forty-mile pipe line across the Pass, the idea being that the cars should carry the oil to one side of the Pass, that it should be pumped across the intervening forty miles, and taken thence in tank cars to Batoum.

The company persistently refused to work a sufficient number of tank cars, and in 1888 the Government gave the refiners permission to run their own. The chief

refiners immediately availed themselves of the privilege, Nobel alone putting on about 465 cars.

The inevitable result was a hopeless congestion of traffic at the Suram Pass, and the Government thereupon gave the refiners permission to make a pipe line from the Baku side of the Caucasus to Quirilla Station, a distance of seventy-eight miles from Batoum.

In 1886 Baku had its first syndicate ; this was promoted by Nobels, and included the Tagiev, Caspian, Arafelov and Batoum oil concerns, the last named being largely in the hands of Rothschild. Nobels dominated the syndicate. In 1888 the Government considered the industry had been sufficiently developed to stand a tax of 40 copecks per pood of home consumed kerosene. This tax was in 1892 increased to 60 copecks, the figure to-day.

Up to 1888 the information bearing on development work at the fields, production of the different properties and refineries, the extension of pipe lines and the export business was imperfect—mere estimates, in fact. The statistical bureau of the Producers' Association came into existence in 1889, and it is only from that year that we can follow the steady growth of the industry and see how the centre of production gradually moved from Balakhani and the western sections of Saboonchi eastward towards Ramani, and also how Ramani and Bibi-Eibat have been making such rapid progress since the day when Nobel led the way in the matter of deep drilling.

There were three systems of drilling in use. The one most generally adopted was the rod system with which fair results were obtained. It was most useful when the drillers were not highly skilled mechanics. The majority of the wells at Baku were drilled on this system, but about the middle of the eighties many firms started using the American

in a spouter. It began to flow very suddenly while it was being drilled and blew the tools high into the air.

The situation at the end of the period is shown in the following tables:—

1889.	Balakhani.	Saboonchi.	Ramani.	Bibi-Eibat.	Total.
Production, poods . . .	68,911,300	105,563,000	—	17,773,400	192,247,700
Number of producing wells . . .	126	135	—	17	278
Number of wells drilling . . .	—	—	—	—	121
Number of wells completed . . .	13	33	1	—	47
Feet drilled . . .	—	—	—	—	45,500
Number of producing firms . . .	—	—	—	—	58
Output of kerosene . . .	—	—	—	—	61,145,000
1890.					
Production, poods . . .	63,337,700	143,355,600	1,546,200	18,027,100	226,266,600
Number of producing wells . . .	145	190	3	26	364
Number of wells drilling . . .	—	—	—	—	231
Number of wells completed . . .	19	58	4	4	86*
Feet drilled . . .	—	—	—	—	103,670
Number of producing firms . . .	—	—	—	—	61†
Output of kerosene . . .	—	—	—	—	73,673,000

BAKU EXPORTS.

	By Caspian.	By Transcaucasian.	Total.
1889	110,200,000	47,400,000	157,600,000
1890	118,600,000	57,300,000	175,900,000

* One at Binagadi.

† Of the firms at work in the preceding year 7 had ceased to exist, while 14 new ones started.

CHAPTER XI.

HISTORY OF THE EARLY CONFERENCES.

THE 1886 CONFERENCE AND THE CASPIAN-BLACK SEA PIPE LINE—LASTS TWENTY-SEVEN DAYS—TROUBLE BETWEEN LARGE AND SMALL FIRMS—QUESTION OF REPRESENTATION—ONE FIRM ONE VOTE—A RESOLUTION THAT RESULTED IN THE WITHDRAWAL OF LARGE PRODUCERS—THE SMALL REFINERS AND THE FEES—THE AIMS AND OBJECTS OF THE PRODUCERS' ASSOCIATION, THE GREATEST OF THE KIND IN THE WORLD.

DURING the period just dealt with the Baku Producers' Association was formed for reasons which are made obvious by the facts which I give in this chapter.

The huge quantities of oil belched forth by the giant wells of 1883, instead of benefiting the trade, brought about a crisis. The Minister of Agriculture and Domains was handed petition after petition from the producers who appealed for a commission of inquiry and for permission to attend the conference. The result was an *Ukaz* (February 16th, 1884) directing that a conference should assemble at Baku to consider the situation and enable those concerned to express their views and state their needs. The conference was invited to submit recommendations to the Imperial Government. The first meeting under this order was held in 1884, and resulted in a considerable increase of the carrying capacity of the Transcaucasian Railway between Baku and Batoum. Large quantities of new rolling stock were placed on the system.

The second conference assembled in 1885. This was a failure; the practical results of many earnest discussions

were nil; but complaints concerning the difficulties of running the petroleum industry grew in number, and a third conference was held in 1886.

Merchants, financiers, speculators, and indeed all connected with the industry were loud in their complaints about the stagnation caused by the great drop in the prices of petroleum products, particularly of illuminating oil. It was urged that it was impossible to export the enormous quantities of oil from the wells at Baku unless a pipe line were laid from the Caspian to the Black Sea, or considerable improvements made in the carrying capacity of the Transcaucasian.

The third conference (March, 1886) was presided over by a Government mining engineer, and was officially attended by delegates from the Ministry of Public Works, the Imperial Department of Mines, the Military Governor of Kutais (with control at the naval port of Batoum), and the Baku branch of the Imperial Technical Society. Eight delegates represented different railways and steamboat companies, and eighty-four represented branches of the petroleum industry at Baku. Nine delegates from England, France, Germany, and Russia were given permission to attend, but were not allowed to vote. Vice-Consul Peacock, Batoum, represented the British Foreign Office. The agenda contained the following:—

(1) The organisation of future conferences, proposed to be held annually (especially with reference to the right of voting to be granted to each member); also the organisation of a permanent executive council to carry out the orders and decisions of the conference.

(2) The marine transport of oil in bulk.

(3) Measures for developing the Russian petroleum export trade.

(4) The reduction of railway tariffs on certain articles required in the burning of astatki (petroleum residuals).

(5) Harbour improvements at Batoum to facilitate the shipment of petroleum products.

(6) Advances on credit (from the State Banks) to oil men.

(7) Classification of oil cargoes.

(8) Measures likely to advance the scientific and technical branches of the Caucasian petroleum industry, and measures for the proper organisation and protection of the oil fields and refineries.

(9) Regulation of local dues levied on crude to meet the requirements of the industry. (One-tenth of a copeck per pood was levied at that time to meet these expenses.)

(10) An excise tax on crude oil and products.

(11) Trial drilling on new oil-bearing territories.

This conference lasted twenty-seven days. Amongst other proposals the one referring to voting power created trouble between the large and small firms. The proposal submitted for debate was that only the representatives of the well or refinery owners should be permitted to vote, and that each producer of 300,000 poods of crude, or of 100,000 poods of kerosene or lubricating oil, should have one vote on any question submitted, and for every 300,000 poods of crude, or 100,000 poods of refined beyond the first, one extra vote should be allowed, and so on. In case, however, of one firm producing such a large quantity of oil as to obtain more than one-fifth of the votes capable of being given at the conference, the firm was not to be allowed more than one-fifth of the whole of the votes. A heated discussion ensued. Mr. von Welke, a well owner and lawyer, was commissioned by the small well owners and refiners to resist any measures proposed by the large firms if they were hostile to their interests.

Mr. von Welke proposed that no one should be allowed more than two votes, the number not to be regulated by the amount of production, but of the dues (one-tenth copeck per pood) paid to the association—a person paying dues on 250 wagons (600 poods each) to be entitled to one vote ; a firm paying on 500 wagons to be entitled to two votes, but no firm to be allowed more than two votes. After much discussion, Mr. Welke's proposal was carried by an overwhelming majority. This decision caused the delegates of sixteen of the largest firms to withdraw for a few days.

The question was put (twenty-fifth day), how the expense incurred for the hire of room, lighting, printing, salary of secretary, etc., was to be met, the £300 which had been assigned for this purpose having been exceeded by £250. It was proposed that each firm of refiners should contribute £2 10s. It was, however, stated that if this proposal was not accepted, the large refiners would make up the deficiency. In consequence of the decision that each firm represented should pay £2 10s. towards the debt incurred, the small refiners abstained from attending on the following day, and only three paid.

(This association, almost wrecked at the start through a shortage of £250, has now an annual income of upwards of £120,000, and spends over £100,000 in maintaining a huge hospital, several ambulances and technical and statistical staffs, and publishing records of the world's oil trade.)

During the past twenty years the association has rendered yeoman service to the industry. It is more truly representative of the chief branches of the trade—producing, refining, and transporting—than any similar organisation in the world. The scope of the aims and objects of the

association will be gathered from the following summary of its statutes:—

(1) With the permission of the Minister of Agriculture and Domains, annual conferences are convened not later than November each year, and extraordinary conferences as and when required—(a) for the purpose of preparing statistics relating to estimates of crude oil production, capacity of refineries, the transport facilities of the Transcaucasian Railway, and the capacity and working of the oil pipe lines; (b) for the purpose of dealing with the internal and administrative business of the association; (c) for the purpose of discussing, if found necessary by the Minister, various questions connected with the petroleum industry; (d) for the purpose of fixing the amount to be levied by the association to meet the expenditure on behalf of the petroleum industry; (e) for the purpose of drawing up and modifying the transport regulations by arrangement with the representatives of the oil-carrying railways and steamship companies, all drafts or amendments of this description being subject to the approval of the Minister of Means of Communications.

(2) The time and place of a conference to be fixed by the Minister of Agriculture and Domains by arrangement with the Civil Administration of the Caucasus.

(3) The conferences are entitled to approach the Government institutions on all questions relating to the needs and improvements of the petroleum industry of the Caucasus.

(4) The conferences to be under the control of a chairman appointed on each separate occasion by the Minister of Agriculture and Domains.

(5) The chairman to notify the members of the association of the time, place and programme of the conference

not later than three weeks before the opening date by publication in the official metropolitan and local papers. This need not be done in the case of extraordinary conferences. The chairman to open and close the conferences, conduct and direct the debates in conformity with the agenda, and enjoy all rights generally vested in a chairman at meetings.

(6) Participation in the conferences with all the rights of actual membership is enjoyed by the specially appointed delegates from the respective Ministries, oil men (petroleum producers, refiners and pipe line carriers) or their attorneys and representatives of the railway and steamship companies of the districts abutting on Baku.

(7) In addition to those mentioned in the preceding paragraph right of participation in the conference, but only with a consulting vote, is given to delegates from scientific and technical societies, trading and industrial enterprises, municipal and rural bodies, and generally to all parties interested in the development of the Russian petroleum industry.

* * * *

(12) When certain questions require detailed treatment the conferences can appoint special commissions of inquiry.

(13) In the event of a disagreement in discussing a question the matter is to be finally decided by open ballot, actual members only voting.

(14) At the request of not less than ten members, the open ballot may be replaced by a closed ballot.

(15) On questions relating to the expenditure of the funds of the association only those members are entitled to speak and vote who enjoy the qualification stipulated in paragraph 32.

Officers of the Association: their Privileges and Duties.

(16) At the conferences the following officers and committees are elected for the Baku district:—(a) the chairman of the council; (b) members of the council (not more than five and three candidates); (c) the members of the Technical Committee of Baku; (d) the members of the Auditor's Committee; (e) the members of the Technical Baku Oil Field Protection Committee; (f) the representatives of the petroleum producers at the Caucasian Mining Department; (g) the members of the committee for the allotment of railway wagons on the Transcaucasian between the producers and the refiners; and (h) the members of the committee for the erection of workmen's dwellings and the organisation of amusements for the workmen and employés in the Baku district.

* * * *

Conferences.

(18) In addition to the auditors elected by the members of the association, one must be appointed by the Minister of Agriculture and Domains.

* * * *

(24) The council will ascertain, with the assistance of the local Government engineer, the yearly output of the oil properties, pipe lines and refineries, and prepare for the next conference a list of members, giving against each name the production of the preceding year, and issuing the voting tickets based on the output to these firms.

The council will prepare the draft programme for the next conference and submit same for approval to the Minister of Agriculture and Domains.

Any member of the association desiring to submit a



A (TIME). STARTING FROM THE LEFT (FRONT ROW):
 ER (FORMERLY CONNECTED WITH THE RUSSIAN
 N. IN THE CENTRE OF THE LEFT-HAND TABLE IS
 AND SLIGHTLY TO THE LEFT) IS MR. ABRAMOVITZ
 RIGHT IN THE CENTRE OF THE FRONT ROW IS
 OTHER COMPANIES, AND CHAIRMAN OF THE BAKU
 O, MR. FEIGEL (ROTHSCHILD), MR. ARAMANTZ

question for discussion at the conference must first give notice with an explanatory note to the council. If such a notice is signed by not less than five members, the subject must be incorporated in the agenda of the next conference.

* * * *

(28) Everyone entitled to take part in a conference is eligible for election as an officer for the conference.

Members on the Technical Committee, the Technical Oil Field Protection Committee, and the committee for the erection of workmen's dwellings and organising amusements for the workmen and employes of the Baku region may also be elected from amongst those entitled to take part in the conferences, but without voting power.

(29) All officials are elected till the ensuing annual conference, with the exception of the chairman and members of the council and their candidates who are elected triennially.

(30) In the event of the chairman resigning before the expiration of his term of office, the members must elect a chairman who shall act till the next annual conference. A member who resigns may be summarily replaced by the candidate who received the largest number of votes at the election.

(31) The election of officers to be conducted by secret ballot. Those receiving the greatest number of votes, and subject to their representing more than half of the votes present, to be elected.

(32) Votes at elections are only allowed to firms (or to their representatives) who are actually engaged in the working of oil fields, refineries and pumping of oil through pipe lines, and on condition that they pay the poodage impost levied by the association for the general needs of the petroleum industry, as fixed by the preceding

conference. No one but the actual lessee of a property is entitled to a vote.

(33) All these firms are classed under two heads. The first includes the more important firms owning oil fields, refineries and pipe lines with a total output of about two-thirds of the production of the region, while the other group contains the smaller producers, representing about one-third of the entire output. Each group is allowed an equal number of votes on the following basis—those classed in the first group are allowed one vote for every 1,000,000 poods of crude produced, 400,000 poods of kerosene and lubricating oils extracted, or 4,000,000 poods of oil pumped through the pipe lines, while those coming in the second class are granted one vote for every 500,000 poods of crude produced, 200,000 poods of kerosene and lubricating oils extracted, or 2,000,000 poods of crude pumped through the pipe lines.

(34) The votes are allotted separately for production, refining and pumping, so that the same firm may vote separately as a producer, refiner and pipe-line owner.

(35) Firms, if the quantities they individually produce, refine or pump do not entitle them to a vote, may combine and transfer their combined vote to a representative.

(36) Each voter may also represent an absent one, but not more than one.

The Revenue of the Association. Poodage Impost.

Pursuant to paragraph 555 of the Mining Code the obligatory poodage impost levied by the association to defray the expenditure necessitated by the requirements of the Baku petroleum industry was in 1902 fixed at one-tenth copeck per pood, or roughly $1\frac{1}{2}d.$ per ton. Of crude forwarded from the oil fields of the Baku region since June

last year the impost has been increased to one-fifth copeck per pood, or roughly 3*d.* per ton.

This impost is divided between the three different branches of the industry in the following manner—(a) The petroleum producers pay 0·05 copeck per pood of crude delivered to the pipe lines; (b) The owners of pipe lines pay 0·02 copeck per pood of crude passed through their lines; and (c) the refiners pay 0·03 copeck per pood of crude received at their refineries for treatment.

In order to render collection easier, the last-mentioned impost is made chargeable on the products forwarded from the refinery on the basis that each 3½ poods of crude received yield one pood of kerosene and two poods of residuum (astatki), and each four poods of residuum, one pood of lubricating oil and two poods of goudron. On this basis the products forwarded are charged :—

- (1) 0·0525 copeck per pood of kerosene.
- (2) 0·02625 copeck per pood of residuum or goudron.
- (3) 0·0525 copeck per pood of lubricating oil.
- (4) 0·03 copeck per pood of crude or lake oil sent out of Black or White Town.

Also, to facilitate matters, the impost is entirely charged up to the quantities forwarded in the case of the Bibi-Eibat region, the impost fixed for this region being on the following basis :—

- (1) 0·1 copeck per pood on crude and lake oil forwarded outside the Baku region.
- (2) 0·01 copeck per pood on crude and lake oil forwarded to Black and White Towns.
- (3) 0·1751 copeck per pood on kerosene and lubricating oils forwarded.
- (4) 0·08745 copeck per pood on residuum and goudron forwarded from the Cash Department of the Council.

The impost is collected by the issue of permit certificates of nine different series (A—I).

As mentioned the above charges have been doubled in proportion for the three years from June 1st (O.S.) of last year.

Enquiries made during a visit to the palatial offices of this wealthy and powerful association brought out the above interesting information together with the fact that in 1903 the income was £129,050, or a little more than the expenditure, which amounted to £112,410.

CHAPTER XII.

THE INDUSTRY FROM 1891.

GENERAL REVIEW—THE CHOLERA YEAR—EXTENSION OF PROVEN AREA—ROYALTY FACTS AND FIGURES—PRODUCTION STATISTICS—THE LIFE OF BAKU WELLS—REFINERIES—EXPORTS—PRICES.

THE producing industry maintained an upward movement till the summer of 1892, when it was checked by the outbreak of cholera. Most of the workmen fled from the oil fields, and there was a total suspension of industrial and business life, not only in Baku, but all over the Caucasus and the Volga trading region. The result was a decrease of drilling activity and a reduced yield by bailing. It was only in 1894 that the 1891 figure was regained. The production of the bailed wells from 1889 was as follows :—

1889 ...	150,000,000	1897 ...	318,070,000
1890 ...	177,000,000	1898 ...	372,796,000
1891 ...	235,000,000	1899 ...	444,759,000
1892 ...	210,762,000	1900 ...	532,931,000
1893 ...	215,565,000	1901 ...	573,157,000
1894 ...	236,144,000	1902 ...	542,094,000
1895 ...	265,286,000	1903 ...	543,089,000
1896 ...	299,306,000	1904 ...	578,747,000

But for the exceptionally prolific spouters of 1892 and 1893, there would have been a considerable decline in the total production. Since that year the output has steadily grown, especially since 1896, when the Government held the first public auction for petroliferous reservations within the oil field areas. The terms were on the basis of fixed

cash royalties per pood. At the auctions of 1898, 1899, and 1900 the terms were the same. In 1900 speculation was wild, traders offering over twelve copecks per pood royalty, an abnormally high figure, the significance of which will be recognised when it is stated that about 43 acres went at an average royalty of 2·67 copecks per pood, at the second auctions 189 acres at 2·83 copecks per pood, at the third about 200 acres at about 2·91 copecks per pood, and at the fourth auction (1900) over 300 acres at an average royalty of 5·82 copecks per pood. The result was that in 1903 another auction had to be held for re-letting, but not on a poodage royalty, but on a percentage of production, the royalty offered not to be under 40 per cent. The result of these gradual extensions of the oil-bearing area has served the purpose of maintaining the total output and the average production of the wells. One Anglo-Russian Company, the Russian Petroleum and Liquid Fuel Company, pays no royalty and only a nominal rent.

During the period under review, Balakhani, notwithstanding its prolonged development and the comparatively shallow depth of its producing wells, steadily increased its production down to 1900, but since that time it has been gradually declining. Spouters, for which the field was at one time famous, became rarer every year, and the quantity of oil thrown up since 1891 does not total 2,000,000 poods.

While Balakhani was declining as a spouter-producing locality, spouters, as described in one of the preceding chapters, were great features at Saboonchi, especially in its western and northern sections. The spouter area gradually shifted westward, in the direction of Ramani, the strongest point being just where the road from

Saboonchi village to Ramani village is intersected by the Ramani boundary, near the Avakov property.

Ramani, although it only came into exploitation at the conclusion of the 1881-1890 period, quickly occupied an important position in this group of oil fields and from the beginning has maintained its reputation as spouter ground. The best year for spouters was 1895, when 68,400,000 poods of spouter oil were produced, or more than the combined spouter production of Bibi-Eibat and Saboonchi. During the last year Ramani production was considerably increased by the output of the Moscow-Caucasian Company from the Ramani Lake reclamation. This company alone had over 20,000,000 poods. Finally, as regards Bibi-Eibat it has produced surprises galore, especially in the matter of huge spouters. In 1896 not one spouter in the Peninsula was under 1,050 ft. Nine spouters had an aggregate production of 67,479,000 poods, or about a third of the production of all the 228 producing wells exceeding 1,050 ft. in depth. As a matter of fact, two Bibi-Eibat wells accounted for more than two-thirds of the spouter production. One, a Zoubalov well, produced 24,495,000 poods from 1,358 ft., the other, a Tagiev well, 22,092,000 poods from 1,330 ft. From 1891 down to 1903 Bibi-Eibat had 49 prolific spouters, which produced 386,500,000 poods, as compared with 47 Ramani spouters, which threw out 302,000,000, and 42 Saboonchi spouters, which gave 189,800,000 poods, making 138 wells which gave 878,300,000 in the whole of the Peninsula.

In 1901 there were three spouters which gave more than 3,000,000 poods each. One of the most famous spouters was brought in by the Russian Petroleum and Liquid Fuel Company. The value of the oil was about half the purchase price of the property.

Year.	BALAKNANI.				SABOONCHI.			
	Poods.	Per-centage of total.	No. of pro-duc-ing wells.	Production of Spouters.	Poods.	Per-centage of total.	No. of pro-duc-ing wells.	Production of Spouters.
1891	74,175,100	31'3	178	100,000	163,537,500	55'2	227	30,100,000
1892	69,861,731	24'4	178	—	144,347,846	49'7	221	38,300,000
1893	71,280,330	21'9	185	—	132,607,774	41'	214	28,200,000
1894	69,643,731	23'4	205	—	132,421,057	44'5	248	10,100,000
1895	76,871,733	20'4	243	—	142,018,169	37'6	268	18,600,000
1896	90,358,761	23'4	304	148,000	147,804,573	38'2	311	14,100,000
1897	100,336,495	23'8	396	—	162,610,054	38'5	384	15,400,000
1898	108,836,439	22'4	485	1,400,000	179,828,697	37'	457	20,400,000
1899	114,854,151	21'9	610	—	230,757,289	43'9	543	35,700,000
1900	124,680,087	20'8	736	—	251,634,159	41'9	665	11,100,000
1901	117,783,832	17'5	775	—	295,254,315	43'9	780	37,900,000
1902	101,504,267	15'9	720	—	267,159,044	41'9	751	9,800,000
1903	38,650,141	14'8	693	—	230,454,593	38'6	747	3,000,000
1904	82,014,410	13'3	732	—	218,127,012	35'5	792	5,370,000

Year.	RAMANI.				BIBI-EIBAT.			
	Poods.	Per-centage of total.	No. of pro-duc-ing wells.	Production of Spouters.	Poods.	Per-centage of total.	No. of pro-duc-ing wells.	Production of Spouters.
1891	12,968,100	4'8	26	400,000	23,887,700	8'7	25	8,400,000
1892	41,041,383	14'3	29	20,100,000	33,262,880	11'6	20	17,300,000
1893	73,146,364	22'5	33	44,000,000	47,494,729	11'4	26	37,000,000
1894	61,701,047	20'7	52	27,200,000	37,785,249	12'5	27	24,500,000
1895	111,408,645	29'5	62	68,400,000	47,128,073	18'2	31	25,800,000
1896	78,088,324	20'2	84	20,600,000	60,855,123	14'9	35	52,100,000
1897	96,266,133	22'8	106	30,400,000	62,514,479	19'9	38	43,000,000
1898	100,523,699	20'7	113	31,400,000	96,526,783	15'4	48	59,900,000
1899	98,581,782	18'8	138	23,700,000	80,840,807	18'2	58	21,100,000
1900	114,835,986	19'1	185	30,100,000	109,207,063	20'1	112	26,600,000
1901	124,156,817	18'5	213	22,000,000	133,613,181	20'1	143	38,100,000
1902	139,943,833	21'9	219	38,500,000	127,433,285	20'0	135	46,100,000
1903	119,952,259	20'1	221	13,100,000	157,289,515	26'4	174	37,400,000
1904	133,442,406	21'7	253	8,500,000	181,090,766	29'5	222	22,355,000

Year.	TOTAL FOR APSCHERON PENINSULA (including Binagadi).				
	Poods.	No. of pro-duc-ing wells.	Production of Spouters.	Per-centage of total.	Drilling Record, ft.
1891	274,568,400	456	39,000,000	14'	139,860
1892	286,513,840	448	75,700,000	26'	81,690
1893	324,529,197	458	109,200,000	33'6	76,860
1894	297,551,084	532	61,800,000	20'4	90,013
1895	377,426,620	604	112,800,000	29'7	146,055
1896	386,116,781	735	86,900,000	22'5	195,889
1897	421,727,161	904	88,800,000	20'9	278,887
1898	485,943,348	1,107	113,100,000	23'2	406,847
1899	525,217,415	1,357	80,500,000	15'2	600,761
1900	600,763,812	1,710	67,800,000	11'3	581,987
1901	671,276,263	1,924	98,000,000	14'6	540,481
1902	636,831,120	1,840	94,400,000	14'8	282,730
1903	596,604,805	1,850	53,500,000	9	343,485
1904	614,971,989	2,012	36,225,000	5'9	435,736

The production returns for the first six months of this year are given in the Appendix.



THIS TUNNEL WAS THE SCENE OF ONE OF THE MOST FRIGHTFUL ATROCITIES IN SEPTEMBER. IN IT A NUMBER OF ARMENIANS SOUGHT REFUGE, BUT TARTARS BLOCKED UP THE ENTRANCE WITH WOOD AND RUBBISH SOAKED IN PETROLEUM AND SUFFOCATED AND BURNED THEM TO DEATH. THE WATER OF THE RAMANI LAKE FLOWS BY GRAVITY THROUGH THIS TUNNEL INTO THE CASPIAN SEA.

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Year.	BALAKHANI.				SABOONCHI.				RAMANI.				BIBI-BIBAT.				TOTAL FOR THE AFSHERON PENINSULA (INCLUDING BINAGADI)			
	No. of Producing Wells.	Average Depth of Producing Wells In Feet.	Average Production of all Wells.	Average per Bailed Well.	No. of Producing Wells.	Average Depth of Producing Wells in Feet.	Average Production of all Wells.	Average per Bailed Well.	No. of Producing Wells.	Average Depth of Producing Wells in Feet.	Average Production of all Wells.	Average per Bailed Well.	No. of Producing Wells.	Average Depth of Producing Wells in Feet.	Average Production of all Wells.	Average per Bailed Well.	No. of Producing Wells.	Average Depth of Producing Wells in Feet.	Average Production of all Wells.	Average per Bailed Well.
1861	871	159	417.714	—	227	778	720.425	—	25	828	985,480	—	458	715	599,300	—	458	715	599,300	—
1862	862	181	392.481	387.483	221	843	521,271	—	20	880	1,152,200	877.182	20	880	1,653,150	1,190.272	20	880	1,653,150	1,190.272
1863	858	67	439.353	387,986	214	801	519,662	523,668	33	900	2,216,500	323,025	26	1,069	1,866,700	525,736	448	765	709,680	500,938
1864	859	69	339,725	340,323	248	868	574,278	508,176	27	980	1,186,500	1,124,907	27	980	1,231,300	1,106,330	458	796	759,680	513,430
1865	243	703	316,344	317,542	268	966	429,018	491,753	62	1,068	1,796,913	1,424,503	37	1,034	1,580,260	1,076,330	604	854	359,360	467,483
1866	304	702	297,266	268,246	311	962	475,256	447,115	62	1,147	2,020,692	1,644,622	38	1,124	1,995,860	1,626,000	904	884	624,878	476,259
1867	396	727	253,375	233,375	364	954	423,463	418,115	104	1,197	2,122,887	1,731,923	38	1,241	1,645,117	1,221,425	904	898	526,246	428,192
1868	485	753	224,415	222,814	457	987	393,498	394,012	113	1,430	889,590	697,794	48	1,307	2,010,972	1,086,541	1,107	918	468,065	376,392
1869	610	765	188,285	188,578	543	1,000	424,444	466,583	138	1,299	1,714,300	576,794	58	1,400	1,393,807	1,057,541	1,107	918	468,065	376,392
1870	736	707	159,402	160,402	695	1,036	378,597	364,375	185	1,353	620,734	478,889	112	1,214	1,975,000	825,927	1,170	975	351,323	333,403
1900	1,000	812	151,076	151,076	780	1,036	378,597	364,375	185	1,353	620,734	478,889	112	1,214	1,975,000	825,927	1,170	975	351,323	333,403
1901	775	820	140,972	140,972	731	1,161	355,737	334,008	213	1,399	862,865	498,336	143	1,247	934,358	697,420	1,024	1,015	348,865	303,579
1902	660	848	127,942	127,942	731	1,161	355,737	334,008	213	1,399	862,865	498,336	143	1,247	934,358	697,420	1,024	1,015	348,865	303,579
1903	660	867	127,942	127,942	747	1,185	368,506	307,352	221	1,480	542,770	506,251	174	1,497	903,062	758,908	1,850	1,125	323,692	298,893
1904	732	886	113,407	113,407	792	1,196	275,425	271,015	253	1,462	527,440	507,896	222	1,615	815,724	755,888	2,012	1,154	206,248	294,413

The importance of the old wells is gradually declining. There are two reasons for this : first, the producing wells passing over from one year to another are steadily declining in number, and an increasing percentage of these, compared with the number in the year of completion, have to undergo repairs, be deepened, or allowed to stand idle, and to be abandoned in the end. In the second place, it is only natural that the layers in exploitation should become exhausted, and that the average production of the wells should decline to an extent which renders it impossible to work them with profit. (In the Appendix there are references to the questions of the upkeep of wells and the water troubles.)

In the following tables, compiled from the reports of the Baku Petroleum Producers' Association, the subject is dealt with separately in regard to the Balakhani-Saboonchi-Ramani oil fields and Bibi-Eibat. There is comparatively little information on the subject of Bibi-Eibat anterior to 1896. Besides, there was no great amount of drilling activity (the number of completions never reached 10), and it was only after the auctions in February, 1899, that there was a marked increase in the number of completions. As a matter of fact, in 1896 there were only 35 producing wells on the two groups and six plots in exploitation. In 1900 the number of producing wells increased to 112, the number of developed oil properties to 22, and the output from 69,855,123 poods (including 17,787,123 poods from 28 spouters) to 109,207,063 poods, of which 82,596,000 poods came from 100 spouters.

THE LIFE OF OLD WELLS.

Year.	New wells completed.	Number of these in production during												
		1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903
1888	227*	181	135	108	129	133	124	124	125	71	64	56	42	38
1889	47	34	27	22	24	25	27	23	21	25	22	21	17	13
1890	81	76	67	56	30	46	48	45	40	36	35	33	25	23
1891	142	142	119	109	108	92	98	98	90	84	73	70	49	47
1892	80	—	80	74	70	64	62	55	52	52	44	44	30	25
1893	64	—	—	64	56	53	50	44	38	37	32	31	25	25
1894	87	—	—	—	—	80	79	74	67	63	56	48	37	34
1895	81	—	—	—	—	—	76	68	60	54	53	46	38	34
1896	135	—	—	—	—	—	—	120	113	102	97	83	65	55
1897	212	—	—	—	—	—	—	—	190	165	154	134	113	96
1898	259	—	—	—	—	—	—	—	—	249	231	208	175	153
1899	353	—	—	—	—	—	—	—	—	—	315	281	227	216
1900	402	—	—	—	—	—	—	—	—	—	—	377	323	288
1901	334	—	—	—	—	—	—	—	—	—	—	—	304	267
1902	219	—	—	—	—	—	—	—	—	—	—	—	—	186

* The 1888 number refers to wells in production according to the Caucasian Department of Mines. The total yield of the wells dating back to that year was as follows:—

1888	...	166,000,000	poods.	1896	...	30,000,000	poods.
1889	...	145,000,000	"	1897	...	30,000,000	"
1890	...	127,000,000	"	1898	...	13,000,000	"
1891	...	76,000,000	"	1899	...	11,000,000	"
1892	...	45,000,000	"	1900	...	8,000,000	"
1893	...	38,000,000	"	1901	...	5,000,000	"
1894	...	36,000,000	"	1902	...	4,000,000	"
1895	...	36,000,000	"	1903	...	3,000,000	"

As can be seen from the preceding table, the production of a well declines most rapidly in the first few years of its life. Generally speaking, at the end of the fourth year the yield of a well declines to about a third of the original production. In succeeding years the decline becomes less marked, partly as the result of repairing work, and also because of the exhaustion of the natural gas, the chief cause of the productivity at the start. The ratio of decline is shown in the following table :—

	Per cent. of Original Production.		Per cent. of Original Production.
Second Year	... 35·1	Ninth Year	... 89·2
Third Year	... 58·8	Tenth Year	... 92·6
Fourth Year	... 67·1	Eleventh Year	... 94·4
Fifth Year...	... 76·7	Twelfth Year	... 94·8
Sixth Year	... 82·2	Thirteenth Year	... 95·6
Seventh Year	... 86·4	Fourteenth Year	... 96·8
Eighth Year	... 88·4	Fifteenth Year	... 98·3

The comparatively small number of wells completed at Bibi-Eibat scarcely enables one to form an exact idea regarding the extent of the gradual decrease in the average production of the old wells. However, the Balakhani-Saboonchi-Ramani statistics, compared with those referring to Bibi-Eibat, bring out the fact that the Bibi-Eibat wells exhibit greater stability in their average yield. After a rapid decline during the second year of their existence, due evidently to the stoppage of spouting, there is not such a pronounced decline in the monthly average as occurs in the case of the other regions.

BIBI-EIBAT WELLS.

Year of completion.	Number of wells completed.	Number of these producers in							
		1896	1897	1898	1899	1900	1901	1902	1903
1896	6	6	4	3	4	4	4	3	2
1897	11	—	11	9	9	10	9	8	7
1898	15	—	—	15	15	15	15	12	13
1899	8	—	—	—	8	8	8	8	8
1900	46	—	—	—	—	46	45	36	37
1901	45	—	—	—	—	—	45	31	35
1902	24	—	—	—	—	—	—	24	24
1903	36	—	—	—	—	—	—	—	36

Average yield per well in first year.		Average production per well in thousand poods.							
Year of completion.	1,000 poods.	1896	1897	1898	1899	1900	1901	1902	1903
1896	4'318	4'318	1'278	849	635	1'836	2'180	143	325
1897	3'058	—	3'058	849	1'052	1'003	632	291	2'123
1898	3'756	—	—	3'756	2'100	2'122	1'85	2'144	1'833
1899	1'555	—	—	—	1'555	2'535	1'169	1'608	779
1900	537	—	—	—	—	537	714	874	851
1901	786	—	—	—	—	—	786	532	691
1902	1'283	—	—	—	—	—	—	1'283	962
1903	741	—	—	—	—	—	—	—	741

Year of completion.	Decrease in the monthly average production of the wells in comparison with the first year.						
	2nd Year.	3rd Year.	4th Year.	5th Year.	6th Year.	7th Year.	8th Year.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
1896 ...	87'7	93'9	93'9	82'8	79'0	99'0	98'4
1897 ...	87'8	84'8	84'0	90'9	96'3	76'9	
1898 ...	66'5	66'1	70'1	72'6	74'7		
1899 ...	1'4	54'7	37'5	69'7			
1900 ...	56'0	56'6	56'6				
1901 ..	71'2	67'8					
1902 ...	63'8						

The average decline in production in comparison with the first year of exploitation works out at 62 per cent. for the second year, 70 per cent. for the third year, 68·4 per cent. for the fourth year, 78·9 per cent. for the fifth year, 83·3 per cent. for the sixth year, 87·9 per cent. for the seventh year, and 98·4 per cent. for the eighth year.

The percentage of illuminating oil extracted to the quantity of crude produced has been steadily decreasing since 1890, when it stood at 32·6 per cent.

Class	I.		II.		III.		IV.		Total.	Working.	Idle.	
	over 1,000,000		1,000,000—500,000		500,000—100,000		under 100,000					
Produc- tion poods	Year.	Number.	Percentage of total output.	Number.	Percentage of total output.	Number.	Percentage of total output.	Number.	Percentage of total output.			
1891	15	—	—	13	—	38	—	24	—	127	90	37
1892	17	—	—	10	—	30	—	31	—	106	88	18
1893	26	—	—	5	—	20	—	16	—	103	67	36
1894	15	81·60	9	8·70	24	8·60	15	1·10	102	63	39	
1895	21	84·08	11	8·23	25	7·49	4	0·20	102	61	41	
1896	27	82·28	12	9·97	19	7·22	8	0·33	102	66	36	
1897	21	82·97	14	10·56	20	6·22	9	0·25	101	64	37	
1898	22	89·59	11	8·35	8	1·81	9	0·25	88	50	38	
1899	27	90·19	11	7·56	8	1·93	7	0·32	86	53	33	
1900	32	87·28	14	8·10	20	4·48	5	0·14	84	71	13	
1901	36	88·60	17	8·86	12	2·37	4	0·17	69	14	83	
1902	33	91·78	10	5·25	15	2·80	4	0·17	62	17	79	
1903	38	95·17	9	2·99	9	1·69	5	0·15	58	21	79	

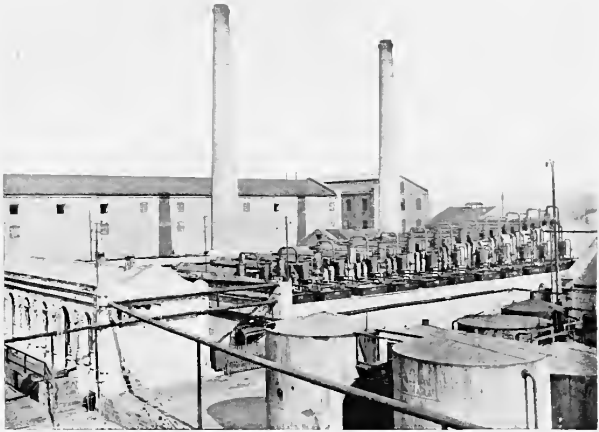
Crude oil and its products are sent away from Baku by sea, rail and cart. Up to 1900 the country within a certain radius was exempt from the payment of the excise duty, and this was supplied by cart. In that year the Government restricted the exempted area to the Black and White Towns, and all oil, even if forwarded by cart, had to pay the full duty. Therefore, we may safely assume that all quantities registered as exported by cart were consumed either in Baku or the vicinity.

The exports which now leave Baku by sea go chiefly to

Astrakhan for distribution in the home markets; also to Petrovsk, Krasnovodsk, Persia, and other ports on the Caspian. The largest quantities forwarded to Petrovsk are sent across to Novorossisk by the Vladicaucasian for transshipment to foreign countries, a small part only finding its way to Russia and Black Sea ports. As regards the railway transport, it was, down to the end of 1899, exclusively in the hands of the Transcaucasian, and it was only in 1900 that the Baku-Petrovsk branch of the Vladicaucasian railway was opened for traffic. This second line plays an unimportant part in the general exports, and, although there has been a slight increase, this route is not likely to develop a great business owing to the high tariffs. The petroleum freights carried by this line amounted to 1,228,166 poods in 1900; 3,140,602 poods in 1901; 4,130,593 poods in 1902; 4,852,885 poods in 1903; 3,993,000 poods in 1904, and 857,488 poods in the first six months of this year. The large increase in the quantities forwarded by the Transcaucasian since 1901 is due to the opening of the pipe line. The pipe has considerably increased the carrying capacity of the line. It can now handle 100,000,000 poods per annum, but even then the line is unable to cope with the demand for transport facilities to the Black Sea, and considerable quantities of oil, chiefly illuminating, are forwarded by sea to Petrovsk, whence it is sent on by rail to Novorossisk. From 1895 the quantities, chiefly of illuminating oil, forwarded for foreign export by the joint sea and rail route amounted to—

Year.	Poods.	Year.	Poods.
1894 ...	5,206,357	1901 ...	18,366,198
1895 ...	10,159,680	1902 ...	11,151,358
1896* ...	18,381,200	1903 ...	28,524,870
1897 ...	4,778,271	1904 ...	25,756,238
1898 ...	8,929,459		
1899 ...	24,058,308		(First six months.)
1900 ...	32,244,028	1905 ...	13,306,615

* Breakdown on the Transcaucasian.



PARTS OF THE REFINERY OF THE SCHIBAIIEFF PETROLEUM COMPANY (LONDON), OF WHICH MR. J. CATER SCOTT IS CHAIRMAN. MOST THOROUGHLY UP-TO-DATE AND THE LARGEST BRITISH-OWNED REFINERY AT WHITE TOWN. THE TOP VIEW SHOWS THE CONTINUOUS LUBRICATING OIL PLANT, WHICH CONSISTS OF 12 STILLs, EACH OF 20 TONS CAPACITY AND TAKING A CHARGE OF 10½ TONS. THIS DEPARTMENT OF THE REFINERY DISTILLS FROM 355 TO 420 TONS OF MAZOOT PER DAY, AND PRODUCES 100 TONS OF SOLAR OIL, 16 TONS OF SPINDLE OIL, 90 TO 105 TONS OF ENGINE OIL AND ABOUT 10 TONS OF CYLINDER OIL. THE SECOND PHOTO SHOWS THE REFINING DEPARTMENT OF THE LUBRICATING OIL PLANT, WHICH IS CAPABLE OF PRODUCING UP TO 160 TONS OF ENGINE OIL PER DAY.

EXPORTS TO RUSSIA AND ABROAD.

Year.	Production of Crude Oil.	Kerosene.	Lubricating Oil.	Residuum.	Crude.	Other Products.	Total.	Percentage of Total Production of Crude.
Millions of poods.								
1891	275	74·0	5·7	103·3	11·4	0·5	194·9	70·9
1892	286	78·6	5·6	116·6	11·5	0·3	212·6	74·3
1893	325	85·9	5·8	143·5	12·0	0·7	247·9	76·3
1894	297	71·2	6·4	193·6	16·4	0·7	288·3	97·1
1895	377	81·0	6·7	180·4	15·1	1·1	284·3	75·4
1896	386	86·5	8·9	185·0	25·5	1·0	306·9	79·5
1897	421	90·4	9·1	221·7	23·7	1·2	346·1	82·2
1898	486	94·7	10·5	242·4	43·9	1·4	392·9	80·8
1899	525	103·2	11·5	244·9	24·5	1·5	385·6	73·4
1900	601	123·9	13·6	264·4	39·0	2·2	443·1	73·7
1901	672	128·7	13·8	309·3	35·1	1·2	488·1	72·6
1902	636	120·2	14·8	342·5	34·1	2·2	513·8	80·8
1903	596·6	146·5	16·6	303·9	26·4	0·9	494·3	82·8
1904	614·6	153·6	15·5	302·6	18·7	1·4	491·8	80·0

Year.	Total Export.	By Sea.	By Rail.	Percentage	
				by Sea.	by Rail.
In million poods.					
1889	157·6	110·2	47·4	70·0	30·0
1890	176·9	118·6	57·3	67·6	32·4
1891	194·4	132·6	61·8	68·3	31·7
1892	212·9	145·1	67·8	68·2	31·8
1893	248·1	174·7	73·4	70·4	29·6
1894	288·4	222·6	65·8	77·2	22·4
1895	284·3	216·1	68·2	76·0	24·0
1896	306·8	244·8	62·0	79·7	20·3
1897	346·1	266·8	79·3	77·1	22·8
1898	393·0	309·3	83·5	78·8	21·2
1899	385·3	301·7	83·6	78·3	21·7
1900	443·1	352·9	88·8	79·6	20·4
1901	488·2	383·8	101·9	78·6	20·85
1902	513·4	409·4	101·2	79·7	19·7
1903	494·0	386·3	105·0	78·2	21·2
1904	491·8	379·8	108·9	77·2	22·1
1st six months.					
1905	224·8	190·9	32·5	84·4	14·4

Baku crude prices refer to delivery at the oil fields. Piping to the Black Town increases the price by $\frac{1}{4}$ -copeck, while sundries and leakage put it up another $\frac{1}{2}$ -copeck, so that Black Town prices are, roughly, $\frac{1}{2}$ -copeck more than oil field prices.

CRUDE OIL PRICES AT WELLS.

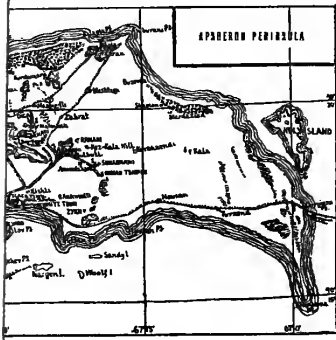
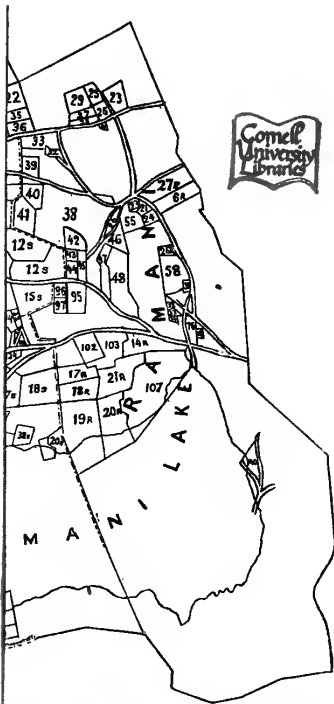
—	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
Copecks per pood.															
January ...	4'0	1'4	2'3	2'1	4'5	7'1	8'9	8'4	12'8	16'6	11'42	4'6	7'78	16'16	14'053
February ...	4'0	1'3	2'2	2'0	4'7	7'4	8'9	8'7	12'9	16'7	10'35	4'7	6'86	15'66	13'444
March ...	3'5	1'2	1'8	2'3	4'3	7'5	7'5	8'9	12'8	17'0	10'40	5'35	7'71	15'98	14'302
April ...	3'5	1'0	1'2	2'8	5'0	7'7	7'5	8'8	12'8	17'9	7'37	9'42	8'75	14'54	15'033
May ...	3'0	0'7	0'6	2'6	6'9	8'1	7'5	8'5	12'1	17'8	7'88	7'54	8'50	15'11	17'026
June ...	2'7	0'7	0'6	2'3	7'2	8'1	7'2	9'0	12'6	17'7	8'40	7'64	7'25	14'21	20'584
July ...	2'5	1'0	0'6	3'2	7'1	8'2	7'5	10'1	12'9	17'0	7'80	7'03	7'50	12'72	20'733
August ...	2'2	0'0	1'0	3'8	8'0	8'1	7'5	10'2	13'25	16'6	7'69	7'44	8'00	13'67	—
September ...	2'0	1'2	1'5	3'7	9'0	7'7	7'6	11'1	13'75	14'9	6'73	7'14	8'54	15'17	—
October ...	1'6	1'1	1'6	3'9	8'0	8'2	7'8	11'1	15'1	12'5	7'36	7'98	9'41	15'23	—
November ...	1'5	1'3	1'8	4'0	6'5	8'2	7'6	11'0	17'0	12'5	6'74	7'87	12'21	13'91	—
December ...	1'5	1'5	1'9	4'5	7'0	8'5	8'5	12'1	16'5	11'5	5'45	6'94	15'99	13'74	—
Yearly Average...	2'7	1'1	1'4	3'1	6'5	7'8	7'7	9'8	13'7	15'7	8'11	6'72	9'04	14'67	—

RESIDUUM PRICES.

—	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
Copecks per pood.															
January ...	4'5	2'5	2'6	3'1	5'3	7'8	8'0	9'2	12'6	15'2	13'58	5'5	7'03	14'21	14'875
February ...	4'0	2'5	2'6	2'9	5'5	7'4	8'0	9'3	12'4	15'4	13'46	5'3	7'25	14'92	14'625
March ...	3'5	2'0	2'0	3'2	5'5	7'4	8'2	9'2	12'5	16'4	13'05	6'2	7'98	15'62	15'839
April ...	4'0	1'3	1'7	3'8	6'0	8'0	8'0	9'6	12'6	17'5	9'93	8'58	8'53	15'25	17'229
May ...	4'0	1'1	1'3	3'8	6'9	8'0	8'0	9'1	12'5	18'0	9'25	9'37	8'75	15'5	17'5
June ...	4'0	1'0	1'2	3'7	6'3	8'2	8'0	10'1	12'9	18'8	9'81	9'28	8'0	15'12	—
July ...	3'0	1'0	1'2	4'0	5'8	8'5	8'2	11'3	13'9	18'4	8'50	8'81	8'75	13'92	22'695
August ...	3'0	1'0	1'8	4'5	5'8	7'2	8'0	11'4	14'1	17'9	7'92	8'72	8'49	15'05	—
September ...	2'7	1'0	2'4	4'2	6'5	7'2	8'1	12'2	13'9	17'4	7'82	7'86	8'62	16'42	—
October ...	2'5	1'0	2'6	4'1	6'5	7'3	8'4	12'6	13'6	14'5	8'19	7'87	9'12	16'78	—
November ...	2'0	1'2	2'8	4'5	6'5	7'5	8'7	12'7	14'2	13'5	7'44	7'60	10'21	13'72	—
December ...	2'0	2'0	3'2	5'0	7'0	8'5	9'0	12'0	14'5	13'5	6'34	7'21	12'75	14'07	—
Yearly Average ...	3'3	1'5	2'1	3'9	6'1	7'7	8'2	10'7	13'3	16'4	9'60	7'69	8'79	15'04	—

There are two prices for illuminating oil at Baku—one to home consumers, for oil in tank vessels, and another to

foreign consumers for oil in tank cars. Home prices are more or less stable. In the absence of strong competition, and because of a steady growth in the demand, we find a reason why prices for oil in tank vessels are not subject to the same fluctuations as those for export oil. On the other hand, export oil prices rule the Baku market, and frequently, especially in the case of a rising market, home prices move with them.



LE THE BOTTOM RIGHT-HAND HALF
-EIBAT FORESHORE AT THE EXPENSE

[To face p. 146

PART II.
THE RISING IN THE CAUCASUS.

CHAPTER XIII.

THE FIRST (FEBRUARY) MASSACRES—AN ARMENIAN AT BAY.

CONFLICTING VERSIONS OF THE ORIGIN—WHO BEGAN THE WARFARE IN THE CAUCASUS?—THE STRANGE EXPERIENCE OF A *Times* CORRESPONDENT — ARMENIAN AND TARTAR VERSIONS — THE ARMENIAN ADAMOFF'S FIGHT ON THE BALCONY—A THREE DAYS' SIEGE—SHOT IN THE HEAD—DEATH OF YOUNG ADAMOFF—THE HOUSE STORMED BY TARTARS AND THE INMATES MURDERED—END OF THE LALAEFFS—TARTAR DEAD—STREET INCIDENTS—COSSACKS DEMAND MONEY FOR SUCCOURING ARMENIANS.

I FIND it necessary that I should briefly refer to the numerous conflicting versions of the origin of what are known as the February massacres. I leave over for a few chapters an account of the still more serious racial, religious and political risings in the Caucasus in September, and devote this one to a description of some of the incidents in the fighting in February, and particularly to one which promises to live in Caucasian history—the death of the Armenian Adamoff.

First of all, the origin. Here I am met with an insurmountable difficulty in the well-rooted conviction I have that no human being can even classify or analyse the multitude of versions of the start of these massacres, while I unhesitatingly declare that no one can put forward a theory that will be universally accepted as true. Baku is the hot-bed of wild theories, misrepresentations and lies.

I do not advance a theory of my own, and am content to preface my story of those terrible days with brief

statements of the cases of Armenians and Tartars as they have been prepared by their friends and, in the case of the Armenians, by one of their leaders.

This contention of mine that a satisfactory investigation of the origin of these racial disorders is impossible will probably strike some as being weak. That it is true has just been discovered by the *Times*, which has provided me with a striking illustration of the great difficulties with which historical truth has to struggle before it reaches the light in a city like Baku. The paper has had an extraordinary experience, and is compelled to make the editorial admission—

“That the heated atmosphere of feud in the Caucasus is scarcely helpful to one who is in search of accurate information. But,” it continues, “the full extent of the obstacles in the way, the systematic perversion of facts in some quarters and the misinterpretation of them in others, will only be appreciated after a perusal of our correspondent’s letters.”

The *Times* correspondent tried to find an answer to this question—“Who began the warfare in the Caucasus, the Tartars or the Armenians?” and after four weeks of investigation he dispatched two letters. Below I give the introductory paragraphs of each :—

THE OUTBREAK IN THE CAUCASUS.

I.

THE RACIAL CONFLICT.
(From a correspondent.)

Tiflis, Sept. 27.

I have during the last four weeks had many opportunities of discussing the recent disturbances which still continue to disquiet

II.

THE RACIAL CONFLICT.
(From a correspondent.)

Tiflis, Sept. 28.

In my letter of yesterday’s date I mentioned the main causes of complaint urged by the Tartars against the Armenians, especially

many parts of the province of Elisavetpol and which reached their climax at Baku ; and, though I cannot, of course, pretend to be in a position to pronounce a final opinion on a question of such complexity, I have obtained enough information to justify an attempt to deal with the general aspect of the situation, especially as the accounts of it which have hitherto reached England appear to be of a fragmentary and imperfect character. . . . I found, somewhat to my surprise, that at Shusha, as well as in other towns, the Tartars were unanimous in ascribing the collisions which had taken place to the activity of the Armenian committees, and I was assured also by many witnesses who might claim to be considered impartial, Russians and Georgians, that the charge was true. It is noticeable also that at Baku the general opinion of non - Armenians, whether Russians or foreigners, inclines to hold the Armenians responsible for the outbreak and for the continuance of the hostilities.

in Baku, and I pointed out that they invariably attribute the recent deplorable outbreaks to the sinister influence and activity of the Armenian committees. *After weighing the evidence as carefully as possible, I am driven to the conclusion that this charge is quite unjustifiable, and that the Armenians have throughout acted on the defensive.* The evidence in favour of this conclusion, both direct and indirect, is, in my opinion, overwhelming ; and it is, at the same time, not difficult to understand why the Tartars have so steadily persisted in attacking the committees, and also why the foreign residents at Baku have been, by the force of circumstances, almost inevitably precluded from taking a purely objective view of late events.

In this manner has the *Times* failed to throw light on the origin of the extraordinary racial upheaval at Baku.

AN ARMENIAN VERSION.

(Given to the Author by an Armenian Leader and Organiser at Baku a few days after the February massacres came to an end.)

This bloodshed is the result of the attitude of the authorities towards the Armenians in recent years. Until the early eighties no race in the Caucasus were more loyal to the Russian throne than the Armenians. It is a mistake to think, as many Englishmen do, that

the Armenian has only the trading instincts of the Jew and is afraid of war ; rather should the world know that the Armenian "is apt to return an insult with a backhander." From the first appearance of the Russians in the Caucasus the Armenians have been the only race on which the Czar could depend for assistance. There was a time when the commerce of the Caucasus was in the hands of members of our race ; to-day the men who lead by their enterprise, wealth and integrity in the huge business of oil are Armenians, and those who love to recall the deeds of heroes in battle will not overlook those performed by such famous Armenian Generals as Melikoff, Lazareff, and Tergoukasoff, who fought for Russia against the Turks and Persians. The Armenians were largely instrumental in putting an end to the Shamyl revolt in Daghestan. How have my countrymen been repaid for all this loyalty ? They are hated and despised by Turks and Russians alike. The change came when Alexander III., determined to effect the Russification of the Caucasus, found our race, men of fine physique and the sons of an ancient kingdom, a stumbling-block in his path. Since then it has been the great desire of Russia to break down the Armenian nationalist spirit. The St. Petersburg authorities abolished the autonomy of the Armenian schools. Until the early eighties these schools were under the control of Armenian clergymen and supported by the voluntary contributions of the Armenian Community in the Caucasus. In 1884 the Government demanded that the Russian language should be employed in the schools, and in the end our schools passed under the control of the Russian Ministry of Public Instruction. That was one of the first blows delivered by Russia at the national spirit of the Armenians. The next one was dealt when Russia opposed reforms in the Armenian provinces of Turkey. In 1894, after the Sassoon massacres, Great Britain, France, Italy and even Austria were inclined to compel Turkey to grant reforms, but Germany and Russia opposed, and our people are obliged to live under a system of cruelty and oppression. We Armenians still blame Russia for the awful atrocities which took place in Turkish Armenia in 1895. The feeling against us culminated in 1903, when the Government took the Armenian church properties, one of the most shameful acts of sequestration in the ecclesiastical history of this or any other civilised country.* That was the last

* Since I took this statement of the Armenian case at Baku the Government has announced its intention of returning the property it took from the Armenians. Arrangements are being made to do this, and when effect has been given to the Imperial edict Armenians will have one woe the less.

blow delivered at Armenian nationalist spirit and it was the one which turned the Armenians of the Caucasus against the Government and converted them into an army of revolutionists—men organised for revolution, if not actually in open revolt. After the sequestration of church properties frequent attempts were made on the lives of the officials of the Caucasus, and it would not be difficult to count ten officials who have been killed within the short space of ten months—one per month, by the way. Among these was the Vice-Governor of Elisavetpol. An attempt was made to take the life of the Vice-Governor-General of the Caucasus, Prince Galitzen,* who is held by the Armenians to have been responsible for the formulation of the sequestration decrees which robbed the Armenians of their church properties. The Prince, remembering the attempt on his life and anxious for revenge, pressed on Prince Michael Nakasheidze,† the Governor of Baku, the necessity for the adoption of strong measures.

A TARTAR VERSION.

(Below is a Tartar version which must be read in connection with the revelation of the action of the military authorities in arming the Tartars and leading them to believe that the Armenians intended to blow up the arsenal, sack the city, and murder the Mussulmans.)

Two months before the February massacres the Mussulmans believed that the Armenians were organising a rising which had for its object the capture of Baku and the annihilation of the Mahomedans. It is a fact, and one which has never been officially denied, that it was given out by the authorities that the Armenians had attempted to bribe the officers in charge of the arsenal in order to get control of the guns and ammunition stored there for the defence of the city. This started a strong feeling of unrest. Believing that the movement had a political character, so far as the Armenians were concerned, the authorities took sides with the Tartars, telling them that the Armenians were preparing to attack. Undoubtedly, the Mahomedans became scared and told their fears to the Governor, who, it was not denied, supplied them with arms and ammunition, while the few troops in the city made no attempt to stop them, once they had started to massacre

* The stimulation of hatred between Tartars and Armenians was introduced into the Caucasus by Prince Galitzen, now a high official at Moscow, and one who has surprised even his friends by the most pronounced character of his new (Liberal) opinions and actions.

† Just before the September massacres Prince Nakasheidze was killed by a bomb when driving near his official residence at Baku.

the Armenians. One of the Tartar papers is even now putting forward the theory that the conflicts between the Tartars and Armenians all over the Caucasus are traceable to the machinations of the Armenian Revolutionary Committee, which, they say, is responsible for bomb throwing and assassination. The Tartar opinion is that before the Armenians engage in open war with the Government they are anxious to gauge the striking power of their own forces. This, they imagine, they can best do by starting with the Tartar element under the impression that they will have the support of Christian Europe in any struggle they may have with the followers of Islam. In the meantime the Armenians think they will be able to see what number of troops the Government is capable of throwing into the Caucasus and learn something about their disposition; in other words the Tartars think the Armenians are organising and arming for a war on a large scale.

* * * *

The Tartars abhor the Armenians on religious and economic grounds because they are getting the trade of Baku and the large Caucasian towns into their own hands. These outbursts of fury are, they declare, their only weapon against being utterly destroyed by their competitors. A large percentage of the Tartars in the hills and some at the oil fields are genuine barbarians with all the qualities and shortcomings of that type of humanity, and absolutely callous in the matter of shedding blood, but it is fair to add that they are making progress and that educated and business-like Tartars are becoming much more common than they were. In fact, there are Tartars who in business ability and integrity come up to Western ideas of civilisation, while some of the Tartar workmen, chiefly of the Kazan type, are popular with foreigners because of their faithfulness under a pledge and loyalty to those who show them kindness.

* * * *

An anti-Government version of the start is that the affairs were the outcome of three causes—injustice to the natives; indifference to labour grievances and complaints; provocation of race and religious hatreds. Those who believe this to be true and take an anti-Armenian view declare that the Tartars have been oppressed in every way, but chiefly by arbitrary dispossession of their lands and dwellings. Finding no means of redress, the mountaineers have for years resorted to brigandage as a means of livelihood, and have been encouraged in this belief by the failure of the Russian administration to punish crime. The Balakhani oil region has been systematically sectioned out amongst the original Mahomedan owners of the land for purposes

of blackmail, and the companies have found it impossible to put an end to this evil.

Mr. Emmanuel Nobel has declared that the original and principal cause of the last outbreak was the discontent at the slow progress of the oil field reform programme—a point which has been discussed with a display of fiery temper by those who allege that some who support this theory are the very ones who have failed to keep the promises made to the workmen.

* * * *

I am conscious of the necessity for quoting all versions with reserve owing to the bewildering multiplicity of mysterious race movements, political animosities and private blood feuds which are seething beneath the industrial system of Baku and other parts of the Caucasus. Indeed, hopeless of ever fathoming the real mystery of the start, I am content to finish the fruitless and thankless task by giving the following extract from a letter I have just received from Baku :—

“What the end of these massacres will be it is impossible for anyone to foresee. Even those who know the factions best cannot tell just why or how the massacres started, and, as I say, I do not think anyone can tell how this great problem of the tribes will finally be solved. In my opinion, I may say the general opinion, a lasting peace can only be secured by the removal of either Tartars or Armenians. But how is this to be done?”

The only comment one feels inclined to make on this is that the Government and the best men engaged in Caucasian industries are engaged in the great task of attempting to solve the problem of bringing these tribes together in connection with the industrial system at Baku.

* * * *

The story of the death of a rich and popular Tartar named Babaeff (head of an ancient Caucasian tribe and the owner of waste lands converted into oil fields) must be told before English readers will be able to understand how the shooting really started. This man was walking at midday through Molohansky Square when he came face to face with a bitter Armenian enemy with whom he had a domestic dispute. He shot the man dead. Many Armenians were in the square; these, rushing

up, assumed a threatening attitude, while Babaeff gave himself into the custody of a *gendarme*, saying, "I have killed that man." A Tartar-driven phaeton—and the Baku phaetons are owned and driven by Tartars—was hailed, and Babaeff and the *gendarme* stepped into it, but before they could leave the spot Babaeff was wounded in the chest by a revolver shot. Springing out, he stumbled along in the direction of the Grand Hotel. Many Armenians fired at him, and he fell, riddled with bullets. The story of the murder was carried by the police to a Tartar quarter.* Rushing on to the scene a number of Tartars took possession of the body, and, forming a procession, moved off with it, not mournfully, but with the wildest shouts of vengeance and cries of "The Armenians have risen." When the body of Babaeff was being borne through the Shemekha some of the Tartars blew out the brains of a young Armenian student. In a moment terror-stricken Armenians began to stream out of their houses, and before the body of Babaeff had passed out of sight, some thirty of them had been shot in the streets.

In this way began a three days' massacre—one which, while it is likely to be remembered in the annals of Caucasian race warfare, cannot be compared with the frightful slaughter which took place in September. Respecting it the Mayor of Baku said—"They themselves do not know why they are killing each other."

First of all the Tartars said they were attacked by Armenians, but, when the massacres were over, and the best and most influential of their class met the representatives of the Armenians, they declared that they were incited to use their revolvers and kinjals by the authorities,

* The Armenians declare that the police arranged the procession to incite the Tartars to rise.



THE HOME OF THE ADAMOFFS (FROM A PHOTO TAKEN TWO DAYS AFTER THE MURDER OF THE INMATES). IT WAS FROM THE SMALL BALCONY ON THE LEFT THAT ADAMOFF FOUGHT THE TARTARS FOR THREE DAYS. A FEW MONTHS BEFORE ADAMOFF WAS MURDERED, HIS BROTHER, ALSO A WEALTHY ARMENIAN AND ONE OF THE FOREMOST OIL MEN OF THE CITY, WAS SHOT DEAD AND MUTILATED IN THE PUBLIC GARDENS. THE WIPING OUT OF THE ADAMOFFS IS ONE OF THE MOST THRILLING CHAPTERS IN THE HISTORY OF THE MASSACRES.

who supplied many of them with rifles. When the revelations of official duplicity came out I wrote:—

“Baku has passed from winter snows into the warm sunshine of summer. The change has been phenomenally sudden. But more strange still is the manner in which it has passed out of a period of human sacrifice—away from the slaughter of 2,000 Tartars and Armenians—into a state of most unnatural peace. Those fighting factions—the terrible Tartars, and the more calculating but less cruel Armenians—have paused in their bloody work and are looking with astonishment at the duplicity of the authorities. . . . If not to-day, then to-morrow, but if by any chance not to-morrow, then most certainly before the end of the year, there will be another battle of the tribes.”

My prophecy was fulfilled in September. I only went wrong in my calculation of the magnitude of the battle.

* * * *

On the small balcony (shown in the photograph on the preceding page) one of the most thrilling and tragic incidents of the February massacres took place. It was the scene of Adamoff's gallant fight against terrible odds; his foes were a horde of Tartars, who were determined to have his life and the life of every member of his household. He fought to a dramatic finish with such sublime tenacity and heroism that the spot must for all time have a fascination for Armenians and any friends of Armenia who visit Baku.

Adamoff was the crack rifle shot in Baku, one of the wealthiest Armenians engaged in the oil business, and his residence in Arnianskia Street was one of the palaces of the city so far as the magnificence of the Oriental decorations were concerned. He stood a three days' siege, and

shot no less than forty Tartars, who on the last day formed a heap of dead at the corner of the street.

The affair started by his shooting a Tartar; after that his only hope lay in the successful defence of his house and people until the Cossacks appeared. His forty dependants made preparations for a resolute defence. They kept the Tartars at bay until the third day. On the morning of that day he took up his position on the balcony, and immediately after the first shot was fired his weapon, a powerful repeating Winchester, started to do deadly work amongst the Tartars. His son kept him supplied with loaded weapons. It is a remarkable fact that many of his victims were struck between the eyes; directly a Tartar showed himself the ever-watchful Armenian took deadly aim.

While one man after another was being shot down by the brave Armenian several Tartars stormed an oil shop, while others secured large quantities of oil from the street lamps. Returning to the house with quantities of oil and straw, they smashed in the front door, filled the hall with straw saturated in kerosene, and started a conflagration. It was at this point that Adamoff was shot in the head. He retired, only to return at the end of five minutes with his head swathed in linen and with an aim that was not less deadly than at the start of the terrible siege. Several Tartars who did not expect him to reappear were shot dead before they could get out of the street.

Slowly the flames crept up the front of the house, but his faithful weapons were never silent. His seventeen year old son took up a position alongside his father; but he was instantly shot by the Tartars, and fell over the balcony into the street. Receiving a shot in the shoulder, the deadly marksman dropped his rifle on to the railing of the balcony, but, nerved with the courage of despair and determined to

sell his life still more dearly, he continued shooting. His movements becoming slow, the Tartars became more aggressive, and he finally received a fatal wound, which laid him low on the balcony. This was the signal for the Tartars to storm with savage fury the lower parts of the house which were not in flames. In the cellars they found nine men and eleven women. The men were dragged into the street and slaughtered, while the women were taken away.

The last scene in this terrible tragedy was when an old woman, one of Adamoff's favourite dependants, fell on her knees before the ruffians and implored them to save the life of her son, who was still in the house. While she was doing this the son, who heard the scoffing remarks of the Tartars, and evidently feeling ashamed that his mother should beg for his life, bravely strode into their midst, and, Cæsar-like, covered his head with his small robe, awaiting his death. The mother, recognising her son, fell with her head against the wall of the burning house, while the mob, shrieking with delight at the prospect of a new victim, immediately dismembered the boy. This was done while the mother was being burned to death.

The police record of the dead bodies taken from the building shows that there were forty victims; in other words, every member of the household was either shot or burned to death. Adamoff wreaked a terrible vengeance; he took the life of a Tartar for the life of every member of his household—a brilliant, if bloody, performance, and one which was greatly extolled by the British Colony and the Russians in the city.

The brave Armenian, Adamoff, gave his name to an oil company; by his death he left a name that should live in Caucasian history and one that should be honoured

by every friend of that ancient and oppressed nation—Armenia.

Another foul atrocity was the murder of the Lalaeff family and their dependants. The murdered head had the reputation of being a merciless landlord, and was execrated by the Tartars. Many stories were told of his rapacity.

When the Tartars started to attack his house he telephoned to the Governor for assistance. This was promised, but not given. Like the brave Adamoff he determined to sell his life dearly and fired repeatedly at all Tartars who showed themselves. There were three loyal men-servants in his employment, and these assisted him to stand a three days' siege by a display of marksmanship which kept the Tartars at bay. During the siege, which lasted until the night of the third day, one fire after another was started in the city. Seeing that his ammunition was giving out, and fearing that the Tartars would fire his house, he telephoned to a wealthy lady named Sakousoff imploring her to use her influence on his behalf with the Governor. She telephoned to an Armenian member of a well known Baku and London petroleum firm, who appealed to the Governor to send help to the besieged household. It was not until the following day that the Governor rode up to the house, only to find it in flames and the dead bodies of Lalaeff, his wife and other victims lying in the street.

His end was dramatic. When his ammunition gave out, the house was fired. He sought refuge with his family in a secret cellar. When the Tartars rushed in they slew two of the servants who had assisted him to defend his home. The third one was not killed, and of him they demanded to know the whereabouts of the Armenian and his family. After being tortured the man gave away the fatal secret almost with his last breath.

Lalaeff, his wife, his old uncle, his daughter, and his nephew were dragged out of the house. The uncle and nephew were murdered in the cellar, but Lalaeff and his wife and daughter were led out into the street. The Tartars ordered the women to leave Lalaeff. His wife, famous in the city for her remarkable beauty, threw her arms round her husband's neck, appealed to the mob to let him go, and offered the ringleaders 10,000 roubles for his life. Man and wife died together, riddled with bullets. Their daughter, seeing her parents murdered, dashed into the crowd, only to be seized in the arms of a ruffian and carried away.

Before describing some of the atrocities let me say that only a Tartar is allowed to touch a dead Tartar, while a dying Tartar, even in the moment of death, struggles to draw himself up into a crouching position. The Tartars seldom fail to drag dead Mussulmans off the streets, and this accounts for the fact that during the fighting in the Caucasus very few dead Tartars lay long near the scene of battle.

Directly the Governor, accompanied by the head Mullah Sheikh-ul-Islam and the Armenian Bishop, paraded the streets, proclaiming peace, all the dead were brought out and set up in rows, silent witnesses of the "peace" festivities in which both Tartar and Armenian joined arm in arm and danced. This is a fact.

* * * *

Let me describe some individual cases of murder. Near the Oil Exchange four Tartars drove up the Gorchakoffskaia Street and fired into two groups of Armenians, four of whom they killed. The murderers had not driven 200 yards when three of them with their driver were shot by Armenians. A young Englishman on his way to business witnessed a most deliberate murder by a young Armenian. This

youngster, pushing the Englishman aside, shot a Tartar in the back. In a moment the young assassin was shot by another Tartar. Mere boys took part in the fearful slaughter. There was the case of an Armenian boy who, shooting from a balcony, hit a Tartar, but finding he had not killed him, went down into the street and put a second bullet into his victim. As showing with what rapidity the fearful scenes in the streets changed, I may say that just as this murderer was turning to leave his victim, two Tartar water-carriers threw themselves upon him and cut him limb from limb.

There was a tragic incident where a father left his son locked up in a fruit shop before going on the roof to assist his compatriots. The father was unable to leave the roof for nearly three days, and when he did come down he found his shop intact and still bolted from the outside, but his son was dead, a bullet fired through a chink in the door having struck him in the heart.

A fair young Armenian posed as an Englishman by wearing an English cap and smoking a briar pipe. Near his house the Tartars saw through his disguise and fired, but they failed to hit him, and he escaped.

In the Parapet, where fighting went on for three days, about 100 Tartars and Armenians, fifty a-side, came together, and used their revolvers and daggers with the most terrible results. The Armenians drew the Tartars nearer towards their own quarter, when some of their number got behind the Tartars, with the result that scarcely a man escaped. In fifteen minutes there was not a living soul in the street, but ninety dead bodies remained. There were other fights in this street, and many Tartars and Armenians were shot as they attempted to remove their dead.

Any account of what took place must be imperfect without a reference to the part played by the Cossacks. These soldiers robbed the people under circumstances of exceptional cruelty, and it is known that they held flying Armenians until their pursuers got near enough to shoot. There were thousands of instances of their demanding money for succouring Armenians, and even when martial law was declared they were known to tear up passports and rob the owners.

This is a short and imperfect catalogue of the February atrocities, which, until a month ago, were thought to be without a parallel in the records of Caucasian troubles. Now we know that their most terrible features have been made to look less horrible, if that be possible, by the barbarities, outrages, and wholesale destruction of life and property during the fearful inter-tribal struggles of September.

CHAPTER XIV.

THE "CHUCKSEE WUCKSEE" AT BAKU.

MR. HERBERT COXON AND THE MOLOKANS—THE RISE OF ALI IBN ABI TALIB—ELECTED CALIPHA IN 656—ASSASSINATED BY FANATICS IN 661—DESCENDANTS OF ALI FIGHT FOR THE CALIPHATE—HASAN, THE FIFTH CALIPHA, POISONED BY ONE OF HIS WIVES—HISTORY OF THE SHIITES—HOSEIM, SECOND SON OF ALI—THE "CHUCKSEE WUCKSEE" CEREMONIES AT BAKU — "CUTTING" DAY—BOY PERFORMERS — YOUTHS BEAT THEMSELVES WITH CHAINS AND WHITE-ROBED MEN CUT THEIR HEADS WITH KINJALS —STAGGERING BLOOD-SOAKED FIGURES.

THERE is no English work in which the Caucasian version of the Mahomedan "Chucksee Wucksee" ceremony is described. It is a Mahomedan ceremony in which the fanatical participants cut and otherwise mutilate themselves. It is known to Englishmen in the Caucasus as "The Chucksee Wucksee." Twenty years ago Mr. Herbert Coxon (Newcastle-on-Tyne), in his narrative of a carpet-buying journey to the East, mentioned a peculiar Russian sect, the Molokans, the members of which mutilated themselves. "They are," he says, "strongly represented at Baku, and have a whole street to themselves, where they carry on the business of bakers." This is the only reference I have been able to find in an English work referring to Caucasian racial and religious subjects.

When I witnessed the ceremony in Baku, just three weeks after the February massacres, I was successful in collecting some information about the origin and character of the ceremony. This I am now publishing for the first time, and



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SCENES AT A "CHUCKSEE WUCKSEE" CEREMONY OF SELF-MUTILATION.

with it I am giving my own impressions of what I think will be admitted to be an extraordinary display of religious fanaticism. The story of the chief characters is easily told.

Ali Ibn Abi Talib, the truest and bravest of the prophet's followers (a nephew and son-in-law of Mahomed by his wife Fatima), was born 600 A.D., at Mecca. In 656, when Othman was assassinated, Ali was elected Calipha, but not with universal approbation. He was constantly at war with rebels. Although he was successful for a time, the rebels in the end started to gain ground. On January 22nd, 661, he was attacked by three fanatics, and died of his many wounds two days after. In valour, virtue and piety, he ranked foremost among his contemporaries. As the son-in-law of the Prophet his followers regarded him as his legitimate successor, and the legitimists of Islamism for centuries persisted in demanding the Caliphate for his successors, the Alides. The insurrections became a danger to the existence of the Caliphate, since the Persians, for nationalist reasons, had, in their opposition to Arabism, commenced to use the Legitimist principle as a means of furthering their own ends. In Persia the veneration of Ali has developed into a sentimental cult, and in some parts he even overshadows Mahomed. Descendants of Ali (Sherriefs, *i.e.* nobles) still rule in Morocco, Mecca and South Arabia, and his grave at Kufa is visited by large numbers of pilgrim Shiites.

Hasan, the fifth Calipha, and the eldest son of Fatima (Mahomed's daughter) and Ali, succeeded his father, but only ruled about six months, when he abdicated in favour of Muawiyah, the founder of the Omayad dynasty, on condition that he was to resume office at Muawiyah's death. Hasan was poisoned by one of his wives, who had been instigated to do the deed by Yezid, the son of Muawiyah.

In this way started the Shiite schism.

The Shiite name is derived from the Arab word "Shiah," meaning a sect. The Shiites believe that Ali, son-in-law of Mahomed, was the rightful successor of the prophet, and for this reason they display quite a fanatical veneration for his memory. According to them the first three Caliphas, Abu Bekr, Omar, and Othman, were usurpers, and an essential part of their religious practice is to curse and denounce the memories of these rulers. As these Caliphas are held in high reverence by the orthodox Mahomedans (Sunnites) the animosity between the rival sects is of the fiercest possible character, and has for many centuries been the cause of a number of terrible battles. Ali and his two sons having been murdered, the Shiites consider it a religious duty to wreak vengeance on the Sunnites. Persia is the stronghold of the Shiites, who are also to be found in Central Asia and India, numbering in all about 18,000,000 persons.

Hosein, second son of Ali and Fatima, was, on the death of his brother Hasan, considered by the Shiites as the rightful heir to the Calipha. On the death of Muawiyah (680) Hosein attempted to make good his claim against Yezid I., but on October 10th of the same year he was defeated and killed by Yezid's troops at Kerbela, near the Euphrates. The place where he died (Kerbela, near Meshed) afterwards became a place much frequented by pilgrims, while the date of his death (10th Mohammaram) is still considered in Persia a day of mourning, and the celebrations are of the character of a theatrical representation of his unfortunate end.

The martyrdom of Hasan and of his brother Hosein is annually commemorated by the Shiites during the first ten days of the month of Mohammaram (meaning in Arabic

"The Prohibited," and alluding to the fact that in pre-Islamic Arabia war was prohibited in this month). Mohamaram is the first month in the Mahomedan lunar year, and is kept up by the Shiites as a period of penance and mourning in commemoration of their national saint, the Iman Hosein.

The Shiites profess allegiance to a line of twelve Imans, beginning with Ali and ending with Al Mahdi, who mysteriously disappeared, and for whose return the faithful are still waiting. In the meantime, they receive religious and legal decisions from Mudgtahids, a class of authorities not recognised by the Sunnites, except in the case of the founders of the four orthodox Sunnite schools.

That is the story of the origin of the "Chucksee Wucksee" ceremony so far as I am able to tell it.

This year the ceremonies in Baku, at the oil fields, and in the surrounding villages were more elaborate than usual. There were several reasons for this. They took place a fortnight after the February massacres, and this was the first time they were conducted in the public streets of modern Baku. The authorities, hoping to please the Mahomedan part of the population, granted permission for the holding of a large number of ceremonies in the open air.

The ceremonies covered a period of no less than ten days, starting with street processions, and finishing on the last day with the wildest of ceremonies and self-mutilation. On the "cutting" day I went early to one of the Mahomedan business quarters of the city; everywhere, between eight and nine, I found the streets thronged with Tartars, Persians, and Russians. Evidently a general holiday had been proclaimed for the Mahomedans. Those who knew Baku best told me that they had never

seen so many veiled Mahomedan women in the streets. These women, in their shroud-like dust cloths, sat in crowds on the flat roofs of the houses overlooking the streets specially selected and barricaded by the authorities for the ceremonies.

Ceremonies started simultaneously in a score of places. The one I witnessed was conducted on a pretentious scale, and I saw it from beginning to end from the roof of a house. It began when two horses, caparisoned with black velvet, and carrying a circus-like saddle arrangement, were slowly led in at the end of the street. These were the equine representatives of the sacred animals which carried the martyred Imans. They were led and not ridden, though I was told that one of the animals is usually ridden by a boy, who grips the handle of a short sword which is thrust through his turban, some might think through his forehead, so realistic is the thrust, and so horribly real the look of agony on the face of the young equestrian performer.

One of the horses, made restive by the melancholy wailings of the crowd behind, lashed out at some of the followers of Ali, and had to be taken out of the procession; the other one, walking with all the slow dignity of the familiar equine drum-carrier of the English Horse Guards, led the procession once up the street and back again before it also was removed.

All the time, men, in small contingents, moved about the streets, following a small procession of leaders carrying religious flags, and a most miscellaneous collection of devices, beating their chests, and mournfully crying "Chucksee Wucksee" (English pronunciation).

Others took confetti out of a box, carried on poles, sedan-fashion, and threw it over the people who clustered round,



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CEREMONY OF SELF-MUTILATION.

[To face page 168.]

beat themselves still more vigorously, and displayed every possible sign of suffering excruciating anguish. A line of black-robed figures, keeping time with the regular beat of a drum, swung rhythmically down one side of the roadway and up the other. Behind this contingent moved two youths, who beat their own backs with chains, which they swung across their shoulders, while they loudly chanted the words "Chucksee Wucksee." The chains struck and cut the flesh at every beat on the roughly made drum. Juvenile followers of the prophet beat their naked chests, and as they had been doing this every morning for ten days the flesh was red, and in some cases, contused and bleeding.

More lines of black and red-robed figures were led out of an ordinary yard, but it was not until the "white men," who were to do penance by cutting themselves, made their appearance that the moaning developed into a frenzied roar, and the words, "Chucksee Wucksee" were shouted with fearful emphasis. Those in charge, a number of vigorous men, wearing ordinary clothes and brimless felts, addressed the robed figures in impassioned language, and with much theatrical gesticulation. Thereupon, men wailed, sobbed, and vigorously beat themselves. At the end of nearly an hour the chief performers, those wearing white and the only ones who cut themselves, came out a second time. Moving in a line, swaying forwards and backwards to the beat of the drum, and with still louder shouts of "Chucksee Wucksee," they passed quickly down one side of the street. When they were coming up the other side, the masters of ceremonies, carrying a supply of kinjals, walked close to these men in white, and, by shouting and urging them to wilder movements, worked them up into a state of frenzy that was awful to behold.

They put the terrible kinjals into the hands of the performers, and it was with these weapons that they started cutting their heads. Each man, grasping a kinjal in his hand, brought it up in front and down on the crown of his head. Almost at every stroke the blood gushed forth, and soon one man after another became a staggering, blood-soaked figure. Many grew too weak to strike themselves, and, fainting from loss of blood, fell on their faces, and were either dragged or led away by those who had handed them the weapons.

I was told that at the ceremonies, especially at Kishli* and the oil fields at Balakhani, men cut their heads open, and inflicted fatal wounds. Some of those who cut themselves most savagely were expiating the sins of wealthy Mahomedans. The money paid to them by rich sinners they shared with the priests.

* The festivals at Kishli, a dirty little Tartar village passed by the traveller on the way out to Balakhani, are famous throughout the Tartar world for the amount of self-mutilation that is indulged in. Why this should be is in a way accounted for by the fact that Kishli is one of the most crime-stained places in the Caucasus. The population is chiefly composed of oil line thieves, men who tap the pipe lines laid from Balakhani to the refineries at Baku, and who have repeatedly refused to accept employment as pipe-line custodians.



SHOT DEAD IN THE STREETS. THE MAN NEAREST TO THE TELEGRAPH POST CARRIES A REVOLVER.



THE DEMI VICTIM.

CHAPTER XV.

BAKU IN SEPTEMBER.

SHUSHA'S EXAMPLE—SHUSHA IN RUINS—BAKU ARMING—THE SOLDIERS AND TRAM STRIKERS—A DAY OF SMALL SKIRMISHES—"THE BLACK HUNDRED"—TARTAR QUARTER DESCRIBED—THE FIRST VICTIM, A MAHOMEDAN SHOPKEEPER—ARMENIAN WATCHMEN—NO QUARTER; "AN EYE FOR AN EYE"—THE OIL FIELDS ABLAZE.

"MILLIONS sterling have been turned into smoke and cinder, and thousands of Persian, Turkish, Gruzin, Armenian and Russian nationals have either lost their lives by bullet, knife, or firebrand, or been maimed for life or wounded."*

"The accounts of the massacres, though incomplete, are full and lengthy enough to prove that in revolting cruelty—much of it indescribable for moral reasons—and fiendish treachery what has taken place is without a parallel in the annals of Caucasian warfare and revolution. In the great blood-red picture there is one ray of light; it is there as the result of many acts of heroism which show that chivalry and human daring have not deserted these blood-stained spots in the Caucasus. . . . Acts of heroism? Yes, many, for there are heroes up to high Western ideals even in the oil fields."†

The slaughter was terrible; it beggared description, and those who are least likely to work up the sensational and theatrical cannot deny the awful magnitude of the

* *Morning Post*.

† J. D. H. in the *Daily News*.

massacres. I have no desire to paint a too lurid picture of this month of horrors; my story, while it may be the fullest published in this country, is nothing more than a severe epitome of Russian accounts, many of which have passed through the hands of the censor, supplemented by extracts from the letters of eye-witnesses.

* * * *

Some say Shusha* started the war of races at Baku. The rumour reached Baku that the Armenians had gained

* Shusha, in ruins, stands on a terrace overhanging a valley and is backed by a mountain, at the foot of which flow two small brooks. The ancient part of the town is protected by walls, in which there are three gates—one leading to Elisavetpol, the other to Shemakha, and the third to Keuriss and Nakhitshevan. In the sixteenth century, when it was the capital of the Khanate of Karabagh, it was besieged by the Persians and Turks. The Russians occupied it in 1805; eighteen years later they “incorporated” it. The Mahomedans of Shusha are noted throughout the Caucasus for their fanaticism, and during the festivals in honour of Hussein and Ali there is more self-mutilation in this small place than in almost any other part of the Caucasus. Shusha is famous for its hammered and filigree silver work. It has weaving mills, and an important trade is done in silks, woollens, cereals and colza. There are also some copper mines in the mountains. Only one London paper, the *Morning Leader*, I think, described the destruction of Shusha during the first week of the massacres. A correspondent of that paper wrote—“As I neared my journey’s end I met hundreds of armed and mounted Tartars. One old man, of superior station, asked me where I was going. ‘To Shusha,’ I told him. ‘Shusha is destroyed,’ he said, gravely. The last part of the drive to Shusha is magnificent. The town lies at a height of 5,000 ft., and is visible two or three hours before one reaches it. The fine post-road winds backwards and forwards on the face of the mountains, and the view widens with every turn. A light smoke was curling up from the ruins when I arrived. It was indeed a deplorable sight. Street after street was in ruins, absolutely nothing left but the bare walls. Whose fault it is that the best part of this fine town of 30,000 inhabitants has been destroyed it would be hard to say. It may recover eventually from this great disaster, but not for years, and, judging by the temper of both Tartars and Armenians, no real

the upper hand at Shusha, and Mahomedans were urged to seek revenge. The Armenians declared that the Mahomedans intended to start fighting if the Armenian prisoners accused of the murder of Prince Nakasheidze, the Governor of the city, were dismissed. Mysterious meetings were held at the houses of the leaders of the factions. It was known that after the February massacres both the Armenian and Mahomedan factionists started to arm; some did this legally, licences being freely issued by the authorities, but thousands did not trouble about licences, and openly prepared for the next fight. Large quantities of arms were secretly stored in the city and on some of the small islands of the Caspian Sea. During the last days of August the people of Baku lived on a hidden volcano of race plots, labour tyranny, political conspiracy and revolutionary propaganda.

In some quarters it was felt that if those overwhelming fountains of Tartar and Armenian feeling, made bitter as gall by religious and political antagonism, thousands of private feuds, and the angry reminiscences of the February massacres, were allowed to belch forth again there could only be one end—the almost total annihilation of the Russian half of the world's oil industry (so far as this could be effected by the firing of the oil fields and the derangement, if not the destruction, of the gigantic oil distribution systems), the burning of the city, the fiendish employment of the revolver, rifle, kinjal and firebrand, and most awful and indescribable chaos, with the customary Caucasian aftermath of mutual recrimination, lying reports,

reconciliation is likely to take place. Enough bitterness has been awakened to last for a generation, and the resources of the Russian Government will be taxed to the uttermost to restore any semblance of peace in this part of the Empire."

and massacres in the mountains, where Baku is looked upon as the industrial metropolis of the Caucasus, fit place, these fierce fighters think, for the starting of a war either against capital or the Government.

There was a strike of tramway employés, quite a peaceful affair until the authorities placed soldiers in charge of the trams. But, beyond a half-hearted attack on the soldiers, a cow-boy display of shooting in the air, and the arrest of several strikers, nothing serious happened.

In connection with the allegation that the affair started at the trams it will be remembered that when the February massacres began there was a great deal of shooting from the trams. Indeed, one of these trams, while it was being driven by Armenians past a row of small, lock-up shops, formed a moving target for Tartar bullets. In Baku, where there are many steep hills, the tramway system is small and comparatively unimportant; the small cars are drawn by horses and the line is laid along the level thoroughfare which skirts the bay. At this point there are many Tartar shops, and both Tartars and Armenians are employed in large numbers at the ship-repairing yards and wharves.

On the fateful 2nd, shooting in the Petrovsk Square brought Mahomedans and Armenians into conflict. It was a day of small skirmishes, but I get very near to the truth when I say that on the night of the 2nd the chiefs were hard at work preparing for a life-and-death struggle which they were probably not too anxious to avoid and which they knew only too well was destined to take place in the city of blood.

* * * *

A reign of terror—the second in a single year—had started, and many blood-curdling incidents, omens of the

coming trouble, took place in the streets and at the oil fields.

Hooligans—the famous members of “The Black Hundred”—started to attack workmen at the oil fields. A mechanic employed by the European Petroleum Company, Ltd., of London, when on the way from Balakhani station to his home at the oil fields, was attacked by a man wearing a black cap. He asked the fellow why he interfered with him, and the answer he got was “Cannot you see I wear a black cap? I belong to ‘The Black Hundred,’ and we are just going to do as we like.” The hooligan then sprang at the mechanic, who received injuries which were so serious that he had to be conveyed to the hospital at Balakhani.

* * * *

A strong Tartar quarter is the top of Bailov and near the jetties of the Kavkas and Mercury Steam Navigation Company ; from there it extends along the northern wall of the citadel, through Tzitzianonov Street and Shemkhinka, to a dangerous point of contact with the Armenian settlement, the scene of some of the most frightful encounters in Baku race warfare. At the outbreak of hostilities these thoroughfares were strongly held by Mahomedans, the Christian part of the population having abandoned their homes and sought safety in Armenian centres.

Near the station is the chief fighting colony of the Armenians, Georgians and Russians. On the 2nd this was guarded by armed Armenians, a precaution taken as early as August 20th, when some Armenian houses and shops were pillaged and several Armenians were done to death in the Tartar quarter. Incendiaries were busy at Armenian houses on the Tchemberkent side of the city,

while bands of hooligans were going about committing numerous acts of cruelty and murder. When the military and Cossacks drove these cowards out of the streets, they started to shoot from behind corners and out of windows, but a few volleys fired by the military put an end to their pillaging for the time being.

Before the night of the 2nd had come to an end one street after another had been fired, Government Street being one of the first. Miscreants—a terrible horde of bandits—from the outlying villages attempted to get into the city, but were met by the soldiers and Cossacks outside Tchemberkent and Shemkhinka, where many of them were shot.

“A cracking of shots started a time of mutual destruction,” is one description of the start on the morning of the 3rd. Revolvers were fired in the lower part of the city, but some declare that they were fired in Petrovsk Square, where the soldiers were guarding the trams.

In Krasnovodsk Street a Mahomedan shop owner was wounded. He was carried on a stretcher along the Chadrov Street and up Tartar Street towards the Tartar quarter. The crowd of Tartars soon became a howling mob, “until,” says a witness of the procession, “shooting started in different parts of the town.” An eye-witness says:—“At five o’clock in the evening the Mahomedan owner of a meat shop was fatally wounded in Krasnovodsk Street, near Bagirov Square. He was taken to Chadrov Street, where he was laid on a stretcher and carried through the streets, followed by a crowd of Mussulmans with cocked revolvers. The crowd grew into a small army of excited Tartars. The procession moved up Tartar Street towards the Military Hospital. Then revolver and rifle shots were

heard in different parts of the town. That night there was a great deal of firing." The official version of this incident is that the Tartar was killed in an ordinary quarrel with an Armenian.

It was then that numerous armed mobs came together, and neither gave quarter. In the Armenian quarter Mahomedans, irrespective of calling or position, were mercilessly beaten and murdered, while in the Tartar part of the city the Mahomedans wreaked a terrible revenge on all the Armenians they could get hold of. The night that followed was comparatively quiet, says one writer, and we are told that there were no volleys, no fires, and not even an occasional shot—only a death-like quiet in the city of so many bitter hatreds.

The wildest of rumours were afloat. Blood had been shed on the Sunday in this hotbed of revolution; denuded of troops, a wholesale massacre was inevitable. There were too many murders for records to be kept, and too many to be forgotten by these merciless enemies, or to make peace possible without another trial of strength.

Six Armenians, two armed with rifles and four with revolvers, shot a water carrier in Krasnevodsk Street, and a Tartar workman received a revolver bullet at the corner of Bolshaya Morskaya and Raratine Streets. Two Mussulmans in Charden Street, taking some running figures for Armenians, fired, but missed; but seeing an Armenian watchman in the yard of another house they fired and wounded him. In the same street another Armenian watchman was fatally wounded, and the body lay on the pavement until dark before it was removed.

It was a bad day for the watchmen of Baku. These watchmen are a creation of those fearful February days when so many wealthy Armenians and their families were

burned to death in their homes, and in some respects resemble the watchmen of our own feudal days. At night they wander round the houses and through the gardens of rich Armenians. Every few minutes they blow a low-sounding whistle ; in this way the inmates are able to tell where the watchman is, and it is only when the whistle is not heard for some time that they know something unusual is happening.

Let us leave Baku, bleeding and burning—an unprotected city plundered by its own people.



SHOT IN THE STREET.



MASSACRED ARMENIANS LAID OUT FOR BURIAL.

CHAPTER XVI.

THE BALAKHANI OIL FIELDS ABLAZE.

FROM BAKU TO BALAKHANI—THE MANTASCHEFF PLOTS ON FIRE—
SOME THRILLING EPISODES—THE MYSTERY OF THE BELL AT
BALAKHANI — ARMENIANS DEFEAT THE TARTARS — TARTARS
CHARGED BY COSSACKS — ARRIVAL OF TARTAR CHIEFS — THE
FIGHT AT THE HOSPITAL—TERRIBLE BATTLE AT THE MAN-
TASCHEFF WORKS—ATTACK ON THE PROPERTY OF THE GOVERNOR
OF THE CAUCASUS.

PEOPLE flying from Baku, when near Kishli, beheld a forest of derricks burning beneath a pall of smoke. Dread news, the oil fields were in flames!

“Although it was two o’clock in the afternoon we could not see the sun,” says one, while another declares “that at Saboonchi the smoke was so thick that it pained our eyes.” Again: “On the way out we saw large numbers of workmen, with faces black as the smoke, standing helplessly near their homes. At the station there were a few soldiers and groups of men, who, flying from the oil fields, passed up and down the platform, looking from time to time in the direction of the fires and hearing the yells of the murderers and the shrieks of their victims. Opposite the station, on the Ter-Akopoff property, wells threw out fire and flame, which shot up into the smoke. Soon tongues of fire grew into one great blaze; then there was a crash, down came the derricks, and the sparks flew amongst the crowds which were seeking safety in flight. Men, looking like demons, plunged into the smoke, only to emerge and dash off towards the station; these were

workmen escaping with their belongings. The Mantascheff properties started burning, and the smoke made it impossible for us to see the great blaze beyond."

Here is another account :

" At Saboonchi station I saw a number of men in white overalls ; they were the ambulance company. From them I learned that many of the workmen and office staffs had sought safety at the Saboonchi hospital, but a few were making for Baku (twelve miles away), and that those who were at Zabrat could not be reached. We proceeded towards the hospital. At the head of our small procession was one of the ambulance men carrying a white flag with a blue cross. Passing across a lake we entered a region of thick and impenetrable darkness. Our nerves were at the highest tension, there was not one of us who did not know that he might at any moment get a bullet, but, looking at the flag that the brave fellow carried in front of us, we felt secure and knew that we would not be deliberately shot at. We arrived safely at the hospital, where we saw thousands of men, every one with trouble written on his face, promenading the yard. Many were armed with revolvers and rifles, and at openings in the walls patrols were on the look-out for foes who might attack. All were hungry, and a little bread brought into the hospital was quickly consumed. I returned the same day and arrived safely at Baku."

The man who wrote this story in Russian got back to Baku. He was a journalist, and when, a few days later, he was shot dead in the streets of the city, his paper, in a black border announcement, said he had died doing his duty—the dangerous one of collecting massacre information in the open streets.

A telephone message stating that shooting had re-started at Baku caused a wild panic amongst the Armenians at Balakhani ; they hurriedly closed their shops and fled to the Armenian centres of safety. Throughout the night armed Tartars drove wildly about the oil fields in phaetons.

On the morning of the 3rd the rumour was spreading that a Tartar boring master, employed by the Armenian firm of Mantascheff and Company, had been killed near the Lilanzov property. The Tartars ran to the spot and held a meeting, the result of which remained a mystery. The Tartars and Georgians continued trading till one o'clock. In the meantime Tartar bands marched and drove about the oil fields in search of stray enemies.

Every hour accounts of the massacres at Baku were telephoned to the oil fields and inflamed the feeling there. Then followed an ominous silence ; the telephones were unresponsive for nearly a day, and there was no railway communication with the city. This increased the feeling of uneasiness and led the crowds to believe that something serious was taking place at Baku. The feeling amongst the Armenians became one of tense anxiety, while the Tartars collected in crowds on the permanent way at the station. Evidently they were preparing to start hostilities, but wanted reliable information from Baku. There were no soldiers or police to be seen.

The Armenians, hidden in their rooms, awaited attack. Sunday wore on till four o'clock, when shots were heard. These were fired by members of "The Black Hundred," who hoped in this way to get the Tartars to start an attack on the Armenians. Still the attack was delayed ; the Tartars were still waiting. Towards night hundreds of armed Mussulmans arrived from the adjoining oil field of Ramani for the purpose of deciding on a plan of

campaign with the Balakhani Tartars. Balakhani was in danger, and every one expected shooting to commence at any moment. Still the evening passed off quietly. At four o'clock in the morning from twenty to thirty shots rang out amongst the derricks at Saboonchi, and the bell at Balakhani Church—the Christian place of worship at the oil fields—told ominously, sacred messenger of coming carnage. The ringing of this bell is one of the many mysteries of a night of awful suspense; no one has been able to explain by whom or why it was tolled.

The Armenians had concentrated at the fewest possible points in order to offer better resistance. At Saboonchi they collected in the workmen's barracks, and at Ramani and the outlying field at Zabrat at the Mantascheff works and other points. That night Balakhani was in flames, and pillage and massacre started at Ramani. Mingling with the crackling of the fire were the poppings of revolvers and the louder reports of rifles, sounds which told only too plainly the fate of those Armenians caught by the Tartars at Ramani. That night the soldiers and Cossacks, fearing an ambush, refused to proceed to Ramani, but on the following morning a detachment of Cossacks went out. Finding themselves besieged by larger numbers of Mahomedans, the Armenians saw that it would be impossible to hold out much longer, and, escorted by the Cossacks in groups of 200 and 300, they made their way to the Saboonchi Hospital of the Producers' Association. Although Ramani was ablaze from end to end the Russian workmen refused to leave with the Armenians and remained in their barracks.

When the morning of the 4th dawned thousands of Tartars, armed with revolvers, guns and kinjals, collected once more on the railway line. A few minutes'

talk, and they started their bloody work—a long week of fearful carnage.

First of all, they attacked the technical inspection building of the Baku Producers' Association, in which a number of Armenian workmen had taken refuge. The Armenians made a fight of it; they drove off the Tartars, who retreated to the railway line, their favourite rendezvous, and there aimlessly fired about twenty volleys into the air before they went off to the Va Wotan works, where many Armenian workmen lived. There the Tartars suffered a second defeat. They were charged by Cossacks, who, using their sabres, cut deeply into them, and while many were killed and wounded, a number threw away their arms and fled. The Tartars never expected they would be charged by Cossacks; rather did they expect they would be left free to murder the Armenians. When more Cossacks arrived the Tartars were in full flight.

The Cossacks, having cleared the streets, left the place. Tartar shops were re-opened, and reassuring news came from Baku. Those who arrived by train stated that order had been restored, and confirmation of this was found in the resumption of railway communication with Baku.

Unfortunately one of the trains from Baku brought a number of Tartar chiefs, who were welcomed with the wildest of cheering as they stepped on to the platform. The Tartar yells reached the school of the Producers' Association, where the Armenians, believing that their foes had set out again on their mission of murder, fired into the crowds assembled on the railway lines and in the square near the station entrance. "The Tartars started slowly. . . . The flames from burning derricks and oil wells leaped up into the awful pall of smoke which hung over the inferno. Looking towards Balakhani from the

Saboonchi Station I realised for the first time in my life all that can possibly be meant by the words 'Hell let loose' (says one who was present). "Men crawled or dashed out of the flames only to be shot down by Tartars. . . . When I got out of the station at Balakhani I thought the scene might well be compared with the last days of Pompeii. It was made worse than anything that could have taken place at Pompeii by the ping of rifle and revolver bullets, the terrific thunder of exploding oil tanks, the fierce yells of the murderers, and the dying screams of their victims. The bazaar (that thoroughfare of small, filthy shops, the worst of their kind in Russia) was converted into a shambles."

On the 5th, nearly all the Saboonchi Armenians, fully 2,000 in number, had collected at the hospital. It was an awful spectacle, this crowded mass of excited humanity. There was scarcely anything to eat, not even dry bread for the invalids. Many Armenians were armed. In the square a number of Cossacks guarded the hospital and technical survey offices. No Tartars were to be seen. The Armenians placed outposts to protect the hospital against incendiaries. Suddenly, some Tartars were seen approaching with two barrels of mazoot. This news spread like wildfire; the Tartar incendiaries were trying to fire the hospital, and the Armenians opened a wild fusilade upon them. There was an unexpected *dénouement*. The Cossacks, thinking the Armenians were shooting at them, wildly returned the fire, "evidently," said an eyewitness, "as a result of fear, because only a couple of Cossack horses had been killed by the Armenian fire." The Tartars, startled by this unexpected development, disappeared without taking part in the *mêlée*.

There were some terrible atrocities on the property of

an Anglo-Russian company. An Armenian refugee, flying from the Ter-Akopoff property, was caught by this company's watchmen, who dismembered the body and threw the pieces into the flames. There were many victims on this property, where the watchmen displayed revolting cruelty. Some men sought safety in the Ramani Lake tunnel of the Moscow-Caucasian Company. They were discovered by some fiends, who packed the entrance with inflammable materials and then burned them to death.

On the 7th, Tartars and Lezghins laid a regular siege to the Mantascheff works. A mob, armed with all kinds of weapons, made an attack, but were beaten off by the volleys of the besieged. Then a small army of Tartars arrived, some with cartloads of mazoot and kerosene, but the troops put in a timely appearance and fired into the attackers. Some resisted, but the majority fled terror-stricken. Smoke was seen to rise. The Tartars said this was their work and jubilantly shouted that every man on the works had either been shot or burned to death. Another report of this encounter was to the effect that Mantascheff's men had been disarmed by the military and allowed to leave, the Tartars openly expressing their displeasure with the troops for having prevented them from ending their ghoulis work.

Even the oil property of the Viceroy of the Caucasus did not escape the attention of the incendiaries. Two derricks of the Khalafi and Mantascheff Companies at Balakhani were on fire. The flame spread to the Vorontzov-Dashkoñ property (owned by the Viceroy), where eleven derricks were consumed. In the past year the Viceroy's property (Plot No. 5) produced about 40,000 tons of oil. There were on the property twenty-seven wells, of which nineteen were producing, but when the

struggle finished there were only four derricks left standing.

* * * *

There were thousands of tragedies. Tartars fired into the Melikov works at Ramani. Armenians, rushing from this place to a stone building some distance away, were shot down by Tartars lying in ambush. Seventy remained. The Tartars pumped kerosene into the cellars, set fire to the building, and burned every Armenian to death. At Ramani, an Armenian, an assistant drilling master employed by Mantascheff, hid in the house of a rich Tartar. Armed Tartars lured him out with the promise that they would see him safely to the Mantascheff works at Zabrat. On the way they riddled him with bullets, cut up his dead body, and threw the pieces into a fire. At Ramani, three Armenians hid in a bailer between the boiler house of the Russian Oil Company, but a crippled watchman on the property shot them with a revolver and burned the bodies in the bailer, which, I should explain, is a huge elongated barrel, capable of bringing a ton of oil out of a well.

Stories are told of the employment of artillery in the bombardment of buildings, conflagrations in which crowds of terrified victims were roasted to death, and the murder of men as they crawled out of reservoirs of oil.

CHAPTER XVII.

BALAKHANI (CONTINUED). THRILLING ACCOUNT OF A VISIT TO THE OIL FIELD.

AN EYE FOR AN EYE—DEEDS OF HEROISM—A DARING RUSE—ARMENIANS DISGUISED AS COSSACKS—STORY OF AN ARMENIAN CLERK—THE EXPERIENCES OF A HUNTED ARMENIAN—HIS ESCAPE.

LOOTING and shooting were done by Tartars, Lezghins, Kazan Tartars, and Russian navvies. "It was," one report says, "with these fiends an eye for an eye and a tooth for a tooth, and at some parts of the oil fields this also correctly describes the conduct of some of the Armenian fighters." Hands raised to heaven, prayers for mercy, imprecations and curses, were all useless; the man who once got on his knees never rose again. He was either shot with a revolver or slashed at and stabbed with the kinjal.

After four days of fighting and when every oil plot was strewn with dead—heaps of dead, on which there shone a fierce September sun—the Armenians retained possession of several fortified buildings, including the school of the Producers' Association, standing in an excellent strategical position in a war of this kind, the Ramani ambulance building, and the stores of Goldlust, Bagdasar, Akopov and others. Communication between these places was maintained by small detachments of well mounted Armenians armed with rifles. Of these a Russian said:—"They conducted themselves like knights of old; they took helpless people, women and children, away from positions of danger to places of safety. They were heroes."

Some incidents in the massacres ought to live in those pages of Caucasian history which record the noble deeds of the fierce fighters of those parts. Stories of Scottish heroism—some fine old border tales—are likely to be recalled by an incident of the night of the 7th. Saboonchi, Ramani, and Balakhani were on fire, thousands of tons of oil, hundreds of derricks, and scores of workshops were feeding the flames. The Armenian defenders of the Ramani ambulance building were without water for the women and children. Placing the terrified women and children in several ambulance vans, some of the bravest of the Armenians, disguised as Cossacks, formed an escort, and the cavalcade of heroes moved away through crowds of Tartar enemies to the railway station.

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The following is a literal translation of the thrilling story of an Armenian who escaped from Balakhani:—

“On the 2nd, while on the property of the Russian Naphtha Company at Balakhani (VII. group, about a mile N.W. of the Saboonchi station, on the outskirts of Balakhani), I heard that fighting had started in the city, and returned to my quarters, on No. 76 plot at Saboonchi, less than half-a-mile S.W. of the station and the most southerly of the developed Saboonchi properties. A relation, who was lodging with me, arrived from the city, and somewhat allayed my fears by telling me that rioting had not started although many influential residents had left Baku by the Surakhani train and that crowds were rushing to the railway station. Rifle firing started in the city an hour after the train left. On the following day there were no disturbances at the oil fields, but work ceased at many properties on the Sunday. No amount of

pleading, nor the offers of extra pay, would induce the workmen to go into the derricks. The night passed quietly, and I only heard a few shots fired. On Monday morning work was resumed, but soon abandoned. I was informed by telephone that there had been a conflict between Armenians and Mahomedans near the Saboonchi railway station, and that the Mahomedans were assembling near the Balakhani offices of the Russian Naphtha Company. At two o'clock I was rung up by the Armenian clerk on our No. 140 Saboonchi property, on the shore of the Ramani lake. He informed me that he had just seen Tartars firing the wells on the No. 37 plot of the Raduga Company. The properties of the Soutchastniki and Raduga Companies were the first to be fired. At the same time he told me that outside Tartars had appeared and asked the Tartars on his property whether the clerk was an Armenian. Having received an affirmative reply, they proposed that he should be killed, but those on the property did not agree with them. About mid-day I was informed that because the Tartars had started to fire the houses and oil fields, and also because the detachment of ten soldiers stationed in the office yard declared that they had been ordered to leave, the Armenians engaged at the office were preparing to remove to the property of the Soutchastniki Company (No. 13 group), half-way to the station. About half-an-hour later I was rung up from No. 140 plot of the company and informed that the Armenian clerk had been killed. This news caused me to leave my quarters; closing them up I proceeded in a landau to one of the Naphtha Company's Balakhani properties. On the way there I met small crowds of Armenians and Russians. Once there, I was hidden in one of the rooms. My

protectors, thinking I might be seen by Tartars who were collecting near the house, locked me up in a dark room. Opening the shutters a little, I could just manage to see what was going on outside. First there was an occasional shot, now and again a free exchange of shots, and then a regular fusilade.

* * * *

“The reflection of fire gradually spread over the sky ; one fire after another was started, and the one which was closest gradually came creeping up to the buildings of the Baku Naphtha Company, in which I had found refuge. It was a terrible night for me, an Armenian refugee. On the morning of the 7th, the third day of my confinement, my hosts told me that as the danger from fire had become so great they intended to abandon the house. They advised me to remain, lock myself in the bath-room, and, should the worst happen, jump out of the window and run for safety, exactly where or in what direction I did not quite know. However, I did not agree, and declared that I would leave the house with them. No sooner had we appeared in the yard than armed Tartars came forward to help the employés of the company. They assisted in the removal of a number of things and promised to take care of them. They did not touch me because, thank God, my hair is light in colour, and I was wearing an engineer's regulation cap. The engineers of the Naphtha Company thought they had done all they could when they entrusted me to the keeping of a Tartar, with instructions to take me to the wife of N. This Tartar, armed with a rifle, escorted me I felt as if I were choking. My throat was parched and my legs would hardly support me. Still, I marched on, expecting every moment to come across a Tartar who knew me and to meet my doom. At last I

came to the place occupied by the wife of N. No sooner did she see me than she fled. At first I could not understand why she did this. I thought she was afraid, and trying to find her way into the yard of the company's workshops where her husband is engaged, but when I approached her in the yard she and her servant turned their backs on me, and, terror-stricken, screamed, 'Leave us.' Where was I to go? Terror-stricken, I rushed through the first open door I saw; this led to the rooms of one of the turners of the company. Introducing myself as a friend of N., I told him I was a new man who had just arrived in the Caucasus, and that what was going on had affected me most terribly. I mentioned that I had left N.'s rooms along with many others, and asked for permission to sit down and rest for a few minutes. I was given some tea and asked to enter the room. After about two or three hours, when there appeared to be no more danger from fire to the rooms of N., and all had again returned home, I sent a note asking him to send a conveyance in which I could return to him unobserved. I noticed that my long stay in the room of the turner was causing suspicion. N. sent the following reply:—'Tell him to entirely forget my existence. I have a wife and child; let him take care of himself as best he can.' The workmen who brought the message appeared doubtful how to act, and I offered to go with them to N. and explain the matter. But how was I to get to him while there were Tartars all round me? . . . I have to mention here that my note only reached N. after the fire had broken out once more, and when they had again left the house. I explained to the workmen that N. was probably agitated and had not had time to trouble about me. I asked for permission to remain until the fires were quelled. Late in

the evening N. asked a mechanic of the company to help me to escape. This mechanic showed me the greatest sympathy, even in accommodating me in his own lodgings. Here I have to record a fact which, though not bearing directly upon my terrible experiences, deserves mention. On the morning of the 8th the workshops of the company received an order from a plot engineer of the company for the quick delivery of thirty troughs. An order for troughs at a time when the bodies of victims were lying close by, so recently shot that they had not become rigid, and while the children of the workmen were starving! The head office had issued instructions that on the 9th work was to be resumed at the workshops and oil fields of the company. On the 9th the whistles were blown, but the workmen, of course, did not turn up. . . . That morning I was escorted to the station by three soldiers. What I saw on the way there is indescribable. In order to fully comprehend the magnitude of the tragedy, to imagine it in all its horrible colouring, one must have been a resident of Balakhani, know Balakhani and its people, and then see everything as I saw it. At the station I was told by our Russian carpenters that the Lezghins had fired my quarters, after removing all they could lay hands on."

CHAPTER XVIII.

ZABRAT, WHERE THE BRITISH WERE BESIEGED.

THE DIARY OF MR. ROLAND WALLIS—NAMES OF THE BRITISH—TARTARS ASK FOR BREAD AND DEMAND THAT ARMENIANS SHALL BE GIVEN UP—ESCORT OFFERED—MANTASCHEFF'S ZABRAT BARRACKS RUSHED BY TARTARS—STABLEMAN CARRIES AN APPEAL FOR HELP TO BAKU—ARAMAZD'S DERRICKS FIRED—LEZGHIN WATCHMAN SHOT—"LIT UP AS IN BROAD DAYLIGHT"—PITOIEV'S WORKS SACKED AND DESTROYED—TARTAR WATCHMEN PROTECT ARMENIANS—EIGHT ARMENIANS SHOT AND MUTILATED—HOW A KAZAN TARTAR SAVED TWO ARMENIAN WOMEN—EARTHQUAKE SHOCK—MR. LESLIE URQUHART'S RIDE—"A BRAVE DEED BRAVELY DONE"—LETTER FROM AN ARMENIAN.

IT was on the Zabrat property of the Baku-Russian Petroleum Company that a small band of Britishers were besieged during the week of the massacres. I am under obligation to Mr. Roland Wallis for courteously complying with my request that he should write an account of what took place. He has sent me his impressions in the form of a diary.

* * * *

September 2nd (Saturday).—I left town by the 5.18 p.m. train to spend a quiet week-end at Mashtagi, but only heard on arrival at the Baku-Russian Petroleum Company's Zabrat Works that the Tartar-Armenian feud had actually started again—this time in the centre of the town, and only about a quarter of an hour before I had left. I, therefore, decided to stay on with Willans and await developments. There were then seven British in Balakhani—Willans, MacCallum, Marryat, Murtagh, Caird, Chambers, and

myself—representing each constituent part of the United Kingdom.

September 4th (Monday).—The news from town was that firing and fighting still continued, so I decided to stay on with Willans. Shortly after nine we heard firing from Aramazd, and as the shooting was becoming general, Willans telephoned to Chambers and Caird (his assistants) to come up to him. We then tried to get in a reserve supply of drinking water, but without success, so it was decided to put the horses on other water. Several Armenians left us; the workshops, however, continued working until the break for lunch, but work was not afterwards resumed. Shortly after midday the first fire started, and in a very short time I saw eight distinct fires, but as a strong wind was blowing we were very soon entirely enveloped in thick smoke. We had a small fire in the yard: it was started by the flying sparks, and was soon extinguished. The telephone was working hard, but always the same story: a fire started near such and such a plot and anyone attempting to extinguish it was at once fired upon. Later in the afternoon telephonic communication, even in Balakhani, was interrupted, and we were cut off from all outside news.

September 5th (Tuesday).—During the night the wind veered right round, and during the whole of the day we had the Baku-renowned "Nord," with its accompanying dust storm. Owing to the varying and strong winds of Monday and Tuesday, the flames spread with marvellous rapidity. Early in the morning, Chambers and Caird left and endeavoured to get to their plot. We afterwards learned that they could neither get there, nor get back again, but they managed to get safely into town. Then the Tartar labourers came and wanted us to guarantee

them a supply of bread. We naturally could not do this, so they left us in a body. This had a disquieting effect. We were then about 300, mostly Russian, with about a dozen Armenians and half-a-dozen Lezghin watchmen (Mahomedans). About 11 o'clock several fully-armed Tartars (from the adjoining houses) came in and demanded that we should give up the Armenians. We replied that there were none with us, whereupon they searched the whole house. They offered to escort us to Zabrat village, or Mashtagi, but Willans refused to leave. They then assured us we were perfectly safe as long as we did not harbour any Armenians. That was where the rub came and where our position was made so very precarious. Early in the afternoon, after heavy firing for probably an hour, we saw Mantascheff's Zabrat barracks rushed. These were about three-quarters of a mile off, but we could distinctly hear the shouts of the stormers. The place was immediately sacked and set on fire. An hour later we saw a workman (apparently a Russian, but it afterwards transpired he was an Armenian), dashing across the plain towards us. He got within 150 yards, when, evidently seeing himself covered by the weapons of some Tartars, he suddenly turned and made towards Arinazd, when the Tartars immediately fired on him. After lying down for a short while he got up and went straight for the Tartar house, when the Armenians fired. It was clearly a case of the man who hesitates being lost, as, fired on from different quarters, he soon fell, mortally wounded, but lingered on until night, when the dusk permitted the unfortunate man being put out of his misery.

September 6th (Wednesday).—One of the stablemen was found willing to take a letter into town and started off first thing. This morning our Russian workmen, going with

pails to secure drinking water from outlying wells, were fired upon by the Armenians and forced to return, but otherwise the morning passed without incident. In the afternoon Aramazd's derricks were seen to be burning. As the wind had dropped considerably and was then blowing away from their quarters, it is probable the workmen on the property fired the derricks themselves in self-defence. Shortly afterwards some dozen men advanced, firing in correct "Red Book" style. They were making a bee-line for us, their object probably being to gain the protection of our walls preparatory to making a final rush for safety to Mantascheff's. They advanced about half the distance to our works and then retired. It was at this time that one of our Lezghin watchmen, showing his head over the wall, was shot through the forehead. As darkness fell our messenger, a Kazan Tartar (Mahomedan), returned, but in only his shirt, and bearing an empty envelope addressed to Willans in Mr. Urquhart's handwriting. We, therefore, knew our message had been delivered, but this did not afford us much consolation, as the man said that matters were far worse in town.

September 7th (Thursday).—To-day the climax was reached. Our provisions were exhausted; we had an egg each for breakfast, but I must admit that we had no appetite for more. Early in the morning Aramazd's quarters were seen to be in flames, but nothing could be seen of the men, who had probably got away during the night to Mantascheff's, although this move must have been attended with great difficulty as when the smoke cleared from the blazing ambars and reservoirs, the whole place was lit up as in broad daylight. Very soon the whole plain in front of us was alive with Tartars, and the cross-firing from Pitoiev's made it inadvisable to remain a spectator. When the firing

stopped, we saw that Pitoiev's works were being sacked and blazing. Shortly afterwards fifty Cossacks appeared in the near distance, but almost directly moved off towards Zabrat. Most of the Tartars had begun to retire, but about 100 men from outlying villages, totally unknown to us, and most apparently fanatically excited, surrounded our works. They broke open a small Armenian liquor shop and invited our Russian workmen to help themselves. (The Mahomedan religion forbids them to drink spirit and liquors.) They set the shop on fire and immediately afterwards took possession of our yard. After a heated altercation with the watchmen (Mahomedans), who swore by their faith there were no Armenians in our quarters, they gave up the attempt to enter our rooms, and proceeded to search the rest of the buildings. Eight Armenians (five of whom were clerks of the company) were found and these were immediately shot down by those possessing revolvers, and, in most cases, were afterwards slashed several times across the chest by those who carried kinjals. It was terrible to have to be a passive witness of such inhuman slaughter, but there was absolutely nothing to be done, as witness the fact that at least over 300 fully-armed Armenians were at Mantascheff's, within a few hundred yards of us. This butchery over, there was a terrible row with the watchmen, who had maintained from the first day that there were no Armenians in our yard. High words were used, but eventually, to our intense relief, the Tartars moved off. It appeared that there was a special desire to get one of the clerks and he had not been found; in fact, of those who remained, he was one of three who escaped, while nine others, outsiders, remained undiscovered and were afterwards escorted across to Mantascheff's. I must here mention an act of great bravery performed by the

head coachman, a Kazan Tartar, who dressed two Armenian women up as his wives. All those in the yard guessed where the women were, and it would have meant instant death had his ruse been seen through. Scarcely had we realised that the worst was over than we were seriously threatened by fire from the neighbouring Tartar houses, which were now all ablaze, having caught fire from the Armenian liquor shop. We then noticed that a white flag was flying from Mantascheff's works. About 300 infantry, with a gun, had at length arrived, and from that moment not a shot was fired nor a Tartar seen. This must have been about 2 p.m. The Armenians were disarmed and escorted into town. We applied to the commanding officer for soldiers. He refused to divide his troop, but proposed that we should join him at Mantascheff's, the only Armenian concern in Balakhani that had escaped destruction. However, during the afternoon we secured a certain quantity of bread, obtained several additional watchmen, and, having lit up, there appeared to be a restoration of confidence amongst those remaining. A good many had gone off to the station with their goods and chattels. I may here mention that we had been husbanding our fuel, having only sufficient for one-and-a-half night's lighting, and on the previous nights we had managed with kerosene lamps and candles.

September 8th (Friday).—We were awakened about 5 a.m. by a fairly severe shock of earthquake. An hour later Mr. Urquhart arrived from Mashtagi, quickly followed by water and provisions. After some discussion, it was decided to send those Russian workmen who wished to go on to Schibaieff refinery, in White Town, where everything was quiet, and that we should get into town somehow. However, owing to the selfish action of some of the workmen,

and the attitude assumed by the watchmen, who misconstrued our decision as distrust of them, neither Mr. Urquhart nor Mr. Willans dare risk leaving, so we decided to stay on till the next day. Only MacCallum left on Friday, and Urquhart, Willans and myself drove in on Saturday morning. Willans, however, returned to the field next morning. Along the road scarcely a soul was to be seen ; here and there we saw frightened faces at the windows of houses which had escaped destruction, but so dense was the smoke that nothing could be seen beyond fifty yards on either side. The ruins were still smouldering. It is easy enough to be wise after the event, but the most terrible part of those five days was the suspense and not knowing what was really going on elsewhere. The workmen's wives and women servants were the greatest trial, as, not content with being thoroughly frightened themselves, they found employment in starting and circulating most blood-curdling rumours until many actually believed them to be true. The most troublesome part was with the workmen on Thursday afternoon and Friday. The strain and tension on one's nerves having been removed, and after having saved the company's property by pluckily sticking to his post, Willans had to fulfil the by no means easy task of playing heavy father to the workmen, who brought forward most childish demands, and did not appear to know their own minds two minutes together. As an instance, I may mention that there were several cases of families removing with all their belongings and bringing them back again *twice* on Thursday and *twice* again on Friday.

As one of those relieved by Mr. Urquhart, I do not think that in justice to him I can close this account without referring to his ride from Baku to Zabrat. The

papers, in their desire to get copy, have absurdly overdone the whole incident. Some papers speak of our having had to fight our way through armed crowds, and as it has also been stated that Mr. Urquhart arrived at Zabrak when all was over I feel that these conflicting statements may possibly place him in a ridiculous position and lead to a misrepresentation of the facts in England. Mr. Urquhart left Baku on Thursday on receipt of a letter which we wrote in the excitement of the moment. He started with two Cossacks, and a Russian, whose wife was in one of the outlying villages, joined him. He had absolutely no idea what he might be going to, or what he might have to go through before he reached the place of our captivity. Making a wide circuit to approach Zabrak from the west and avoid passing right through the burning oil fields he unfortunately rode right into bodies of retiring Tartars, and several times his little party were covered by rifles. That is why he was unable to get into Zabrak before night. I have since seen his companion, who avers that he would never in his life repeat that ride, not even for a hundred wives. That he got through unscathed was mainly due, he told me, to Mr. Urquhart's thorough command of their language, and, to a great extent, also owing to his possessing such an exceptional knowledge of life in the Caucasus, whereby he has acquired the air, if not the authority, of a chieftain in his intercourse with the people. I am immensely pleased to have this opportunity of placing it on record—and I am now writing on behalf of myself and my companions—that it was a brave deed bravely done.

* * * *

Mr. Wallis, in his graphic description of the experiences of the British, gives some facts which contradict a grave and widely circulated accusation that some of our countrymen

refused or neglected to protect Armenian employés, and actually delivered some of these up to their foes. Mr. Willans, the oil field manager of the Baku-Russian Company, has written on the same subject, and contradicted some of the mis-statements about what took place on the property at Zabrat. The plot manager of the property (an Englishman) and the other employés, Mr. Willans emphatically points out, did everything possible, and some things which seemed impossible, to save the lives of those Armenians who sought refuge on the plot. They succeeded in saving the lives of a few Armenians; these they hid, and risked their own lives by not giving them up. It was true that about eight Armenians were found by Tartars and massacred, "but," writes Mr. Willans, "there was no human possibility of saving them, for you must remember that we had no protection, and were without help from the outside." Continuing, he says, "I find it necessary to add that a shot fired from the Aramazd plot killed a Tartar, who had refused to give up one of the Armenians hidden on our property. At a time like the present when passions are so excited, one ought to be careful in the quotation and publication of statements, and should be most careful in the employment of words. Impartial readers will understand how very unfair are the ironical comments concerning the 'gentlemanly Englishman.' Our consciences are clear; we did all we could to save innocent lives."

* * * *

The charges against British managers were published in *Baku* (Armenian). A convincing letter of explanation and denial, written by an Armenian in the employ of the European Petroleum Company and sent to that paper, was rejected. This fact having been brought to the notice

of Mr. H. Pike Pease, M.P., the chairman, I have been asked to give space in this book to the unpublished letter. It reads—unaltered and just as I have received it :—

“DEAR SIR,—In the paper issued by you of the 30th August, you report that the cause of the destruction of the Armenians employed on the property of the European Petroleum Company by the evil doers was that this company did not assume adequate means for their protection and that also the cause of their destruction were the Lezghin watchmen. As the author of these reports has not any *de facto* proofs, and as he did not ascertain the truth of the said occurrences of which he had been informed, but based these reports on false rumours and allowed himself to publish them, I, in order to clear up the truth and re-establish the honour of our firm and kind chiefs, kindly request you to insert the following letter in one of your nearest numbers :—

“On the 23rd August (Tuesday), early in the morning, the Manager of the European Petroleum Company, Mr. Fienbarg, having been informed of the approaching danger of the Armenian employés on the properties trusted to his care, immediately left town, and on his arrival on the properties immediately collected all these Armenians who were scattered about the various plots into the office, from where he hid them in the manager's house, which was considered the safest place of all the other houses. Then Mr. Fienbarg sent one of his employés to the Naphtha Producers (Sovet Siedz), where a great number of Armenians were collected, asking them whether they would be agreeable to receive us, and having received their consent, proposed to us that we Armenians should go over to the Sovet Siedz, which was situated not very far from the house where we were hidden, under the escort of our watchmen and accompanied by himself, promising these watchmen a very big gratuity for the escort. Notwithstanding his insistent requests and supplications we would not leave the house lest we might be murdered en route by the various bands of Tartars. Thus Mr. Fienbarg from 9 a.m. to 2 p.m. was with us imploring and insisting us to go with him to the building of the Sovet Siedz, warning us that here in this house we might be destroyed, as several times bands of Tartars came around this plot searching in all the quarters and looking for us, but, to our great misfortune, we would not listen to him and stopped in the manager's house.

“Not having the power to induce us, Mr. Fienbarg, again before leaving the property, entreated and begged of us, almost with tears in



HUNDREDS OF DIFFERENT PHOTOS OF THIS CHARACTER SHOW HOW COMPLETE WAS THE WORK OF DEVASTATION IN ALL PARTS OF THESE GREAT OIL FIELDS. EVERYWHERE WRECKED DERRICKS, WORKSHOPS AND OFFICES.

his eyes, to make one effort and go over with him to the Sovet Siezd, but even then this time his supplications were all in vain.

“Some time after Mr. Fienbarg had left the property we were surrounded by a band of about thirty Tartars who broke into the house. Our watchmen, owing to their small number, were not in a position to defend us. At this moment the servant of the Balakhani manager threw me into a trap hole and hid me there. After this the Tartars broke into the house, killed four of us, and wounded one.

“I was saved owing to the administration of the properties, who at night brought me out of this trap hole and for two days fed me and hid me in various places. Finally on the 26th August the management of the properties was able at last to receive an escort of Cossacks, by the help of whom, I, the wife of the assistant machinist, with two children, and a lad, the son of our Armenian porter, were escorted to the police station, from where we safely came into town, and thus we five persons, owing to the efforts and measures assumed by Mr. Fienbarg and the administration of the European Petroleum Company, saved us, and I take this opportunity of expressing, in the name of those who have been saved and in my own, our heartfelt thanks.

“Head Clerk on the Property of the European Petroleum Company, Ltd.

“(Signed) SITRACK TER-ASTVAZATOUROFF.”

At a meeting of the shareholders of the European Petroleum Company, held in London after the massacres, Mr. H. Pike Pease, M.P., the chairman, said, “Several members of our staff, and including Mr. Fienbarg, Mr. A. J. Parker’s assistant, and Messrs. Schwartz and Manikovitch, at the risk of their lives, while men were being murdered on all hands, gallantly defended and protected our properties,” while the shareholders showed their approval of this statement by passing the following resolution: “That the best thanks of this meeting be accorded to Mr. Fienbarg, assistant manager, and Messrs. Schwartz and Manikovitch, and the other employés of the company at Baku, for the valuable services rendered by them at personal risk towards the protection of the company’s property during the recent disturbances at Baku.”

CHAPTER XIX.

BIBI-EIBAT.

OFFICIAL REPORT OF THE MASSACRES — ARMENIANS FIRE ON A COSSACK CAMP—WAR WITH BOMBS—ANGLO-RUSSIAN PROPERTIES FIRED—ARMENIANS DRESSED AS SOLDIERS—MR. REAY, A TYNE-SIDER, IN THE THICK OF IT—WARSAW AND BAKU—A REMARKABLE PROCLAMATION—ORDER TO FIRE WITHOUT WARNING—“IF THEY STAY WE SHALL KILL THEM”—FLIGHT OF ARMENIANS FROM THE VALLEY—MR. MANCHO’S BRAVE ACT—FRENCH MANAGER ASSASSINATED—THREE ARMENIANS AND THREE COSSACKS—LIVES SAVED BY A TIP—TELEPHONE AT WORK—THE BOY ARMENIAN’S REVENGE—SEA ROBBERS—A STEAM LAUNCH AND A SCHOONER LAND ARMED TARTARS.

(TRANSLATED FROM THE RUSSIAN.)

Report of the Chief of the Baku District to the Governor-General on Events at Bibi-Eibat between the 3rd and 12th September.

September 3rd.—Between nine and ten o’clock in the evening some shooting near the Pitoiev property caused a feeling of uneasiness amongst the population of Bibi-Eibat. At that time the Armenians in the barracks of the Tiflis Company fired at a Cossack camp on the sea shore. By order of their chief the Cossacks replied with volleys. After this crowds of Armenians from the Pitoiev and Mirzoiev works were seen moving towards the Afanasiev barracks, where shots were also fired at the troops. The district inspector, having been informed by wire of what had taken place, ordered an immediate search of both houses. The troops found two rifles with ninety

cartridges, three revolvers with two hundred cartridges, two daggers, and three tins of smokeless powder. The Armenians in the Tiflis Company's barracks were arrested.

September 4th.—At midday shooting started at many parts of Bibi-Eibat, and a drilling master at the Gefest Works was killed close to the plot of the Caspian Company. According to statements made by Armenians engaged on the property of the Shikhovo Company, this murder was committed by Tartars, who escaped. Shooting, they said, took place between the Armenians at the Shikhovo and Caspian Companies' oil fields and the Tartars. A superintendent of police, with twenty-five Cossacks, proceeded to the spot and quickly restored order. Two Tartars pointed out by the Armenians were arrested. At four o'clock in the afternoon two murders were committed; one victim was a boiler master employed by the Schibaieff Petroleum Company, and the other a workman from the Russian Naphtha Company.

September 5th.—At the request of the district inspector the Cossack detachment at Bibi-Eibat was strengthened by a squad of marines. This detachment was drawn up on the Mantascheff Square, near the workmen's barracks, in order to prevent a conflict between Tartars and Armenians, while the Cossacks were entrusted with the patrolling of the whole of the northern part of Bibi-Eibat. In the southern part of the region the structures of the Bibi-Eibat water conduit were fired, and Engineer Timoni, the manager, was killed and his body thrown into the flames. About midnight two wells on the Soiuz (Union) property, a derrick on the Baku-Russian Petroleum Company's property, and four derricks on the Mantascheff property were fired. From these the flames were carried by

the wind to the property of the Bibi-Eibat Petroleum Company, of London, where the electric station and two Zabaloff and an equal number of the Caspian and Black Sea derricks were consumed. The Khatissov works were fired, and two Armenians were murdered, one being the manager of the Khatissov works, who was discovered in a cellar on the Nobel property.

September 6th.—The fires continued and shots were heard in every part of the region. On this day, two Tartars and some Russian workmen reported to the superintendent of police that Armenians from the Milov and Tairov barracks, dressed as soldiers, were firing on Mahomedans—a report which caused the greatest excitement amongst the Mahomedan workmen employed by the Russian Petroleum and Liquid Fuel Company, of London. This was confirmed by Mr. Reay,* oil field manager, of the Russian Fuel Company. The superintendent of police, when he arrived with thirty Cossacks, stopped the shooting, and on searching the Milov and Tairov barracks, where Armenians were said to be disguised as soldiers, found two bombs and some rifles, revolvers, and daggers. In the evening, the chief of the

* Mr. Reay (at one time an engineer at Newcastle-on-Tyne) has publicly corrected a mis-statement regarding the Russian Petroleum and Liquid Fuel Company, of which he is the plot manager at Bibi-Eibat. He emphatically denies that the watchmen on his property disembowelled anyone; there was, he says, no search for Armenians on the property, and no Armenians were delivered up. All the Armenian workmen on his property were alive and unhurt. *Baku*, correcting the mistake, says the incident took place at the Balakhani property of the Baku-Russian Petroleum Company and not at Bibi-Eibat, but my readers will remember that on a previous page Mr. Willans, the manager of the last-named Company, has denied the charge made against some of the British of having delivered Armenians up to Tartars.

rural police, with fifteen Cossacks, went round the oil fields. Visiting the Mukhtarov workmen, and securing from them a promise to abstain from fighting with the Armenians, he returned to the Cossack barracks. It was then that firing started at the Naftalan and Kalantarov barracks. The superintendent, with fifty Cossacks and a naval detachment, rode direct to the spot, while the chief made a detour in order to come upon the men unawares. Near the water shed, the troops were fired at, and they replied with five volleys, scattering the rioters in all directions.

September 7th.—The fires continued. About midday, while one of the fires was raging most furiously, a naval officer, who arrived at Bibi-Eibat with a detachment, reported to the superintendent that the higher authorities had instructed him to remove the naval detachment from Mantascheff Square to a point nearer Bailov. He handed a note to that effect to the officer in charge of the detachment. The superintendent of police asked the officer to take away any of the Mantascheff Armenians who desired to leave the barracks. This was done. The naval detachment delivered at the Bailov police station a bomb believed to have been thrown by the Armenians.

September 8th.—In the morning the superintendent made a round of Bibi-Eibat for the purpose of seeing that the abandoned properties were not pillaged, and pacifying those who remained. At the Kalantarov property the Cossacks found two bombs in one of the fireplaces of a dwelling. On his return to the station, the superintendent met an officer of gendarmes, in whose presence a Russian boy made a declaration that four bombs were hidden at the Milov and Tairov barracks. The superintendent and the officer, with a Cossack escort, proceeded to the barracks,

where they found the bombs near the offices of the Milov and Tairov Companies. Other bombs were discovered. Throughout the day the fires continued, but on a smaller scale.

September 9th.—Fires gradually abated. The superintendent, while on his morning round, arrested on the Zubaloff property sixteen Persian subjects, who were stealing the oil field inventory.

September 10th and 11th.—No fresh outbreaks of fire; everything in flames up to the 7th was burning itself out.

September 12th.—Early in the morning (four o'clock) the Mukhtarov works were searched, but nothing incriminating was found, excepting three rifles, three revolvers, three daggers, and a few cartridges. The day passed quietly. In the night a fountain began to play on the Zubaloff property. The oil falling in showers on piles of smouldering timber started another fire.

* * * *

When the Governor of Warsaw issued his notorious proclamation ordering the troops to fire on rioters, there was a great outcry in this country, and not a little was written in denunciation of the language in which the order to shoot was couched. I publish, for the first time in English, a similar proclamation applying to Bibi-Eibat, and issued by Colonel Walter, of the Saliansk Infantry Reserves, and Commander of the Military Garrison at Baku. It was issued on September 4th, and read :—

“I command that, in strict conformity with the instructions of the Governor-General, a detachment of marines numbering not less than fifty shall continuously patrol Bibi-Eibat. I order the commanders of detachments of troops to carry out strictly the instructions of

the Governor-General, that in the event of shots being fired from any house the troops are to reply immediately with shots aimed at the windows or balcony from which the shots may be fired, and to arrest those who have been shooting. In the event, however, of the person who has been shooting having hidden, and the landlord refusing to give him up, the landlord is to be arrested. If a mob collects with the intention of creating disorders, fire without warning; inform me immediately whenever a crowd collects, so that I may at once send on artillery. I express my regret that on the occasion when the Third Detachment of the Labinsk Regiment, the barracks of the Daghestan Regiment, and the battery yard were fired at yesterday by the rioters, artillery fire was not opened against the aggressors."

* * * *

When the disorders started in the city, the Mussulmans at Bibi-Eibat held a meeting, at which they decided that not a single Armenian should be allowed to remain at the oil field. "If they stay we shall kill them," they told the managers. On the 4th a drilling-master and a workman of the Caspian Company, both Armenians, were murdered on the main road, and preparations for a massacre of Armenians were openly made. News of the struggle which had started in the city was received with yells of delight. Meanwhile, the managers appealed by telephone for military protection, only to learn that no soldiers could be sent, as there were not sufficient for the protection of the city, Balakhani, and Saboonchi. The terror-stricken Armenians started to clear out of Bibi-Eibat, and fled to Bailov, the hill which overlooks the derrick-studded valley.

The flight of Armenians from the valley of Bibi-Eibat

B.

P

was a terrible spectacle. Vehicles of every description, light phaetons and lumbering oil field carts, filled with women and children and dragged by terrified horses, crowded up the hill. Men and women staggered along beneath heavy loads, and children ran crying at their sides. At the top of the hill the crowds from Bibi-Eibat joined those who were preparing to fly from Bailov. They had to face the full fury of a northerly gale, and clouds of driving and blinding sand added to the terrors of the flight.

An eye-witness says: "What I saw on that fearful night reminded me of descriptions I have read of the flight of ancients attacked by barbarians." While the Armenians were moving in large bodies they were not attacked by the Tartars, but a bullet was always ready for any unfortunate Armenian who became separated from the crowd.

Mr. Mancho, oil field manager of the Bibi-Eibat Petroleum Company and well known in London oil circles, took an Armenian student from Bibi-Eibat to the city—an act of bravery. At Khatissov Works, the manager, a Frenchman, who looked like an Armenian, was compelled to leave his burning quarters. He was stabbed to death in the street.

When the Armenian workmen had fled from the Khatissov Works, a mechanic remained in the barracks. Some of those who reached the city informed the police of his position of peril, and appealed for help, which was not sent. His brother, with an escort of friendly Lezghins, went to his assistance. He was found alive and taken down to the shore, but when he got into a small boat near the Nobel property he was shot dead by some Tartars.

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DEAD ARMENIANS.

[To face page 210.]

On the Zoubalov property three Armenians, a drilling master, a clerk, and one of the workmen, were left behind. Three Cossacks arrived.

"Take them to the city, and here is a tip for you. If you return with a letter that you have delivered them safely, I will give you more," the manager said.

The Cossacks kept their promise, saw the men to a place of safety, and returned to the manager for the promised tip. Asked to remain for the night and assist to beat off any Tartars who might attack them or attempt to set fire to the property, they replied that they could not do so, as they had not slept for thirty-six hours.

The manager of this property, Mr. P. I. Yarkel, was threatened by Tartars for not delivering up all his Armenian workmen. He had to beat off several Tartars who rushed at him with knives. Asking for protection by telephone, he received the usual reply, "No military available."

"But we shall all be murdered," he replied.

"Well, we *may perhaps* send."

This property was fired on the night of the 5th.

* * * *

The Tartars set fire to the waterworks, cut off the water supply, and made it impossible for the military to do anything to subdue the flames. It was noticed that the fire, which started near the foreshore, on the properties of the Russian Oil Company, Mantascheff, and Baku-Russian Petroleum Company, drove northwards against the gale, showing that one plot after another was fired by incendiaries working from south to north. Besides, most of the Bibi-Eibat wells were covered with gypsolite and could only be fired from inside the derrick. The incendiaries, carrying lights, could be seen dashing in

and out amongst the derricks of the Caspian Company. The chief sufferers were the Armenian firms, including Mantascheff, Russian Naphtha Company, Tiflis Company, Milov-Tairov Aramazd Company, Goubalov, Khatissof, and many others. The Russian Petroleum and Liquid Fuel Company and the Schibaieff Petroleum Company, both Anglo-Russian, and Nobel, suffered less damage. More than 300 derricks, including 100 at producing wells, were destroyed, while about 77 wells, many of which were abandoned, remained. While the fires blazed there was a great deal of pillaging.

* * * *

Some gruesome stories are told of the struggle at this oil field. One tragedy, in which a boy of thirteen was the chief actor, took place at the gate of the Mantascheff plot on the 4th. He was an Armenian, and had seen his father shot down in the morning. He hid himself just inside the entrance, and when three Tartars dashed up, he shot two dead and wounded the third. He was seen to do this by other Tartars, who ran him to earth in a ditch and killed him.

Lezghin watchmen, instead of protecting the properties of their employers, took part in the plundering. What the Armenians could not remove—such things as large mirrors, sideboards, crockery, harmoniums, pianos, and tables—these men joined the Tartars in destroying. Pigs, an abomination to the Mahomedans, were butchered in a most fiendish manner, but cows and horses were taken away.

On the night of the 6th a steam launch, crowded with Tartars, appeared off the Zoubalov property. This was an organised descent; there were mysterious signals at sea, answering lights were waved at the oil fields, and

when the launch approached the shore, her lights were out. An armed detachment landed in naval fashion. Assisted by Lezghins and Tartars, these men pillaged the Zoubalov property, and removed everything of value to the launch, which, heavily laden, steamed out to sea again.

Many vessels came into the bay and landed armed gangs of thieves and murderers. The authorities expected that the Black Town refinery region would be attacked from the sea. It was known that hundreds of Tartars were aboard small vessels which hid behind Holy Island in the day time and came into the bay after dark. The coastguards were on the alert, and on the 15th, at ten o'clock at night, they saw a schooner without lights pass the landing stages of the Schibaieff, Mantascheff, and Electric Power Companies. They hailed the mysterious craft, but received no reply. They then opened fire on her, but she kept on her way up to the Tagiev landing stage. The coastguards did not follow her, but on the following morning an officer and ten soldiers proceeded to the Tagiev Works, where they discovered hundreds of armed Tartars. When they arrived the crew of the schooner were making frantic efforts to haul her away from the landing stage, and hoist sail to run out to sea. The officer signalled to her to stop, and she was brought back to the landing stage. Directly she came alongside a number of Tartars jumped ashore, and made off in different directions. There was a great deal of ammunition on board, and a Tartar, the only one arrested, said the cargo of rifles had been thrown into the sea. On account of the smallness of his escort, and the threatening attitude of the Tartars, the officer did not search the works. He was told that a Persian had been killed and

another wounded when his men fired at the vessel on the previous night.

No British subject lost his life in these massacres, but some oil men of other nationalities were killed. Shots, however, were fired at the offices of Anglo-Russian oil companies, and the artillery planted a shell in a room occupied by an Englishman. As soon as possible after the affair started, the members of the British Colony went on board the tank steamer *Paddy*, which took them out to sea beyond the reach of the guns.

* * * *

The curtain may now be let down on this Caucasian tragedy. The tribes played rival roles with bloody zeal; they did this right up to the end of September, a month which will never be forgotten by those who lived through it in this most unfortunate arena of Tartar-Armenian strife.

THE OIL FIELD FIRES IN SEPTEMBER.

	Number and monthly production of destroyed wells.		Number and monthly production of remaining producers.	
	Number and monthly production of destroyed wells.		Number and monthly production of remaining producers.	
	Number.	Production. Tons.	Number.	Production. Tons.
Balakhani ...	408	67,639	194	33,696
Saboonchi ...	405	170,150	205	92,346
Ramani ...	94	63,893	104	71,969
Bibi Eibat ...	118	137,934	80	98,207
Zabrat ...	1	102	—	—
Total ...	1,026	438,818	583	296,218

	Remaining.					Destroyed by Fire.				
	Remaining.					Destroyed by Fire.				
	Drilling, repairing, and deepening.	Temporarily idle	In exploitation.	Unascertained.	Total.	Drilling, repairing, and deepening.	Temporarily idle	In exploitation.	Unascertained.	Total.
Balakhani ...	44	125	194	18	381	81	120	408	26	635
Saboonchi ...	71	132	205	15	423	212	191	495	5	813
Ramani ...	90	36	104	2	232	45	37	94	—	176
Bibi-Eibat ...	98	17	80	—	195	97	17	118	—	232
Zabrat ...	—	15	—	—	15	—	7	1	—	8

	Balakhani.	Saboonchi.	Ramani.	Bibi-Eibat.	Zabrat.	Total.	Value of petroleum products destroyed.	Total.
Derricks—	£	£	£	£	£	£	£	£
According to producers . . .	338,300	537,100	122,000	200,500	12,000	1,209,900	—	—
According to Mining Survey . .	382,000	556,400	119,500	184,400	4,000	1,246,300	—	—
Workshops—								
According to producers . . .	28,000	130,500	3,500	13,700	—	175,700	—	—
According to Mining Survey . .	21,600	28,500	3,400	16,200	4,700	74,400	—	—
Boiler-houses—								
According to producers . . .	16,000	80,600	10,900	3,100	—	110,600	—	—
According to Mining Survey . .	5,400	12,400	2,800	3,400	—	24,000	—	—
Dwellings—								
According to producers . . .	69,300	179,400	3,300	20,000	—	272,000	—	—
According to Mining Survey . .	69,400	68,800	15,500	34,900	5,400	194,000	—	—
Tanks—								
According to producers . . .	19,200	120,700	3,800	14,600	—	158,300	—	—
According to Mining Survey . .	19,000	47,700	7,200	23,000	—	96,900	—	—
Material Stores—								
According to producers . . .	60,800	167,000	9,400	13,400	—	250,600	—	—
According to Mining Survey . .	18,600	20,600	5,200	11,200	1,900	57,500	—	—
Pipe lines—								
According to producers . . .	26,800	148,500	8,200	15,200	—	108,700	—	—
According to Mining Survey . .	31,800	40,700	8,800	11,600	400	93,300	—	—
Various Structures—								
According to producers . . .	28,500	41,100	9,500	2,100	—	81,200	—	—
According to Mining Survey . .	19,500	20,200	4,400	10,500	1,000	55,600	—	—
Total—								
According to producers . . .	586,900	1,404,900	170,600	282,600	12,000	2,457,000	134,600	2,591,600
According to Mining Survey . .	567,300	795,300	166,800	295,200	17,400	1,842,000	134,600	1,976,600



ARMENIANS PROCLAIMING PEACE.



A PEACE PROCESSION. ON THE LEFT A MULLAH; IN THE CENTRE REPRESENTATIVES OF THE ARMENIANS.

PART III.

BATOUM, BAKU'S CHIEF OIL PORT.

CHAPTER XX.

BATOUM: ITS PIPE LINES, SHIPPING, AND PETROLEUM EXPORTS.

THE WORLD'S GREATEST OIL PORT—ITS DISAPPEARING TRADE—SEVEN YEARS' EXPORTS—OIL LOADING ARRANGEMENTS—NOVO-ROSSISK EXPORTS—EARLY DAYS OF THE TANK STEAMER—PRINCIPLES OF CONSTRUCTION—THE SEPARATE TANK SYSTEM A FAILURE—DUAL CARGOES—THE PIONEER TANKER "FADERLAND" BUILT AT JARROW—ON-TYNE—TANK STEAMERS ON THE CASPIAN—THE FIRST TRANSATLANTIC OIL-CARRIER BUILT IN ENGLAND—THE GERMAN-OWNED "GLUCKAUF"—FIRST CARGO OF BULK OIL DELIVERED IN ENGLAND—ILL-FATED "BAKUIN"—THE SUNDERLAND-BUILT STEAMER "CHIGWELL"—OIL-CARRIERS OF THE EIGHTIES COMPARED WITH THE LEVIATHANS OF TO-DAY—THE GROWTH OF THE FLEETS.

BATOUM is the greatest oil port in the world. It is many years since it outdistanced Poti, which, after spending a million pounds sterling on its harbour works, competed with it for the position of premier petroleum port and for the honour of being known in the shipping world as the Odessa of the Caucasian side of the Black Sea. Novorossisk has also been beaten by Batoum, but is still an oil port of considerable importance. Although the Caucasian Mountains separate them, Baku, the Caspian oil port, and Batoum, the sister port on the Black Sea, are linked together by six hundred miles of pipe line, just completed and through which the oil for the foreign markets will be pumped before the end of the year.

Batoum is the creation of Baku, and it has for nearly half a century been fed and fostered by the oil which has

been sent to it across the Caucasus. These two places have played an important part in the history of the marine branch of the petroleum industry, but at the present moment it is only too clear that one (and I, of course, refer to Batoum), if not both, must suffer serious damage as the result of racial and political risings in the Caucasus and interminable labour troubles at the trading centres. The case oil trade is already disappearing from Batoum—going to Alexandria and other Mediterranean ports—and there will be no need for the average number of ocean-going bulk oil-carriers to visit the port during the next twelve months.

Some remarkable figures show the magnitude of the oil business at Batoum. During the past seven years the exports of oil were :—

Year.		Poods.		Tons.
1899	...	71,202,200	...	1,148,422
1900	...	65,377,000	...	1,054,477
1901	...	77,519,700	...	1,250,317
1902	...	84,234,000	...	1,358,613
1903	...	82,211,500	...	1,325,976
1904	...	79,526,900	...	1,282,692
1905*	...	23,666,803	...	381,723
1904*	...	40,501,547	...	653,251

* First six months.

Batoum Harbour is used by the vessels of the Russian Steam Navigation Company, the tramp steamers of all maritime nations, and a large number of tank steamers which run regularly in the Russian oil trade. Although it possesses great natural advantages and its construction has involved an expenditure of vast sums of money, the ordinary mooring accommodation is inadequate, and what is known as the petroleum breakwater does not offer sufficient protection for tank steamers when the sea is running high, and there is a swell in the bay. In rough

weather steamers have either to anchor in the roadstead or steam out into the open sea. Reconstruction projects have been prepared, but not adopted, and the port authorities, considering that the revenue does not justify the reconstruction of the harbour, are at work on improvement schemes which will involve an expenditure of many million roubles.

Kerosene-carrying tankers have loading accommodation inside the breakwater. The pipe lines from all the oil pumping stations are led on to this breakwater, where they terminate in four separate racks, at which four vessels can be loaded simultaneously. At the barrel and case quay, also inside the petroleum breakwater, six vessels can be loaded at one time. No other vessels secure such quick despatches as those which carry oil in bulk.

In 1903, 241 steam tankers loaded 642,194 tons of other products, while 157 vessels took 29,516 tons in barrels, 246,000 tons in cases, and 43,355 tons in tins. In 1903, 5,226 vessels entered the harbour; some 700 of these were steamers, and 2,000 sailing vessels from abroad, while those in the coastwise trade numbered 723 steamers and 1,763 sailers.

The oil exports from the neighbouring port of Novorossisk during the past six years were:—

Year.		Poods.		Tons.
1901	...	15,039,900	...	242,579
1902	...	10,453,000	...	168,597
1903	...	28,687,200	...	462,697
1904	...	27,060,300	...	436,456
1905*	...	8,466,000	...	136,548
1904*	...	12,025,920	...	193,966

* First six months.

I am not aware that there is a complete record of the oil-carrying fleets of the world—certainly not a record

which gives the names, tonnage, etc., of those steamers and sailers which fly the flags of Russia, America, England, Holland, Germany, and other shipowning nations. The vessels which carry oil make a magnificent fleet both in number and carrying capacity. With the rapid increase of spheres of activity, both in the production and consumption of oil, the shipping part of the business has become one of considerable importance, financially and nautically. In its inception, steady development, great efficiency to-day, and striking adaptability to the peculiar requirements of the industry it is acknowledged to be one of the greatest successes of the world's mercantile marine. Per ton the tanker costs a great deal more than the ordinary tramp. Having a more expensive and complicated equipment, its upkeep is greater than that of the ordinary general cargo-carrier, and this demands the display of engineering and scientific knowledge quite unique amongst specialist work in the art of shipbuilding.

. It is not generally known that the system employed for twenty years in the carriage of petroleum and its products has been actually in use for centuries. The system of carrying large quantities of liquids in bulk has been employed in connection with wine and water for a great many years. In Northern Italian ports the method of carrying wine in bulk is adopted in the case of the small coasters. The wine, carried against the outer skin, with nothing intervening, is discharged by small hand pumps into barrels or pitchers on the quay. The buoyancy of these small vessels is preserved by fitting wine-tight wooden bulkheads at the two ends. On the west coast of South America, where there is very little rain, and fresh water is most precious, it has long been a custom to carry water in steamers and store it in old sailing hulks.

When the petroleum trade increased to such an extent that it was becoming difficult to handle the great quantities in barrels, it occurred to a progressive oil merchant to adopt the above idea for the carriage of oil. In this way the modern tanker was born. But it was necessary to employ the feeder principle used when carrying grain in bulk, because, on the long voyages of the tankers, provision had to be made for any leakage and evaporation that might occur and also for the contraction and expansion due to the high co-efficient of expansion. That these early principles were correct the present state of the bulk oil trade fully proves.

Before the advent of the bulk oil carrier a large trade had grown up in the carriage of petroleum, first in barrels and afterwards in rectangular tin cases. The cases were considered superior to the barrels, because they fitted close to one another, and a greater quantity of oil could be carried in a given space, while the cases were also found to facilitate the marketing of the oil as two cases could be slung on the back of a strong animal or two tins on a weaker one. This obviated the necessity of breaking into packages, as had to be done in the case of barrelled oil. It was soon found, however, that, even with the greatest perfection of workmanship, leakage on a large scale took place. This meant not only a considerable loss of oil, but a serious danger to the ship, for the evaporated oil filled the holds with explosive gases, with the result that on several occasions there were disastrous explosions and fires. In order to avoid this risk and save expense the suggestion was made that the vessels themselves should have tanks into and out of which the oil could be pumped. The shipowners started with the idea that there must be separate containing tanks, but this principle was soon abandoned. With every possible care there was always

leakage, and the oil which escaped evaporated, filling the spaces beneath and between the tanks and the sides of the ship with explosive gases. It was found impossible to properly clean these spaces, or to repair the tanks. No naked light could be used, and, of course, the insertion of hot rivets was out of the question. The separate tank system was not only more risky than carriage by means of cases and barrels, but it was also far more expensive. In the process of evolution the next development was to utilise the vessel herself as the tank containing oil, partitioning off a portion at both ends to secure buoyancy, give room for engines, quarters for the crew, and space for the pumping machinery. The 'tween-decks were arranged with trunks to allow for the expansion of the oil, and the remaining portion was used as coal bunkers and for storage. With this system it was found there was practically no loss of oil. So many improvements have been made in the construction and fitting of the various joints, and the shipbuilders now understand and do their work so well, that leakage is scarcely possible. All tankers are now constructed in this way.

The next problem was the building of steamers to carry oil in one direction and general cargo in the other. This was accomplished by means of artificial ventilation, by perfectly cleaning the holds, and by removing every trace of the oil. Powerful fans keep up a continuous circulation of air through the holds. Steamers now carry oil from Batoum to the East, and bring back the most delicate products of Eastern manufacture, foods like rice, and even tea.

The building of the first tank steamer was not considered to be a great event, or indeed an event of any importance whatever, in the shipbuilding trade. Before this tanker came a wooden sailer with a commonplace and not



SCENES AT BATAUM — THE OIL PORT OF THE CAUCASUS. IN THE CENTRE IS A TYPICAL BRITISH TANK STEAMER LOADING OIL AT THE PETROLEUM MOLE.

very nautical name—*Charles*. She had fifty-nine separate tanks, carried 794 tons, and, starting in 1869 to run with crude oil between America and Europe, she did splendid pioneering work until 1872. In these years there were several wooden sailers running with bulk oil to Antwerp and Havre. The start of the steam tanker was something of a mystery. Messrs. Palmer and Company of that year (1872), but now the world-known and famous Palmer Shipbuilding and Iron Company, of Jarrow-on-Tyne, built the *Faderland* (2,748 tons), which was followed by the *Nederland* and the *Switzerland* in 1873 and 1874. Exactly what these steamers did in the oil trade—if indeed they did anything at all—I have been unable to find out, and I ought to add that they are not believed to have been the vessels which really solved the problem of carrying oil in bulk.

Some five years later Mr. Ludwig Nobel, founder of the famous petroleum firm at Baku, had two steam tankers—the *Sviet* and *Ludwig Nobel*—built by the Motalo Company at Gothenburg, Sweden. They were 286 ft. in length and steamed eleven knots, and the *Sviet* brought one of her first cargoes from Batoum to London. The firm of Nobel had other vessels built at this Swedish shipyard, the *Blesk*, in 1890, being one. Some of these were transported in sections through canals in the interior of Russia and down the Volga to near where the river joins the Caspian, where they were put together and proceeded to Baku. They loaded kerosene in bulk, and were the successful pioneer steamers of the great fleet of Caspian Sea oil carriers which exists to-day. The *Ludwig Nobel* ran for many years in the Baltic oil trade, making regular trips between St. Petersburg and Finland.

The first tank steamer to run in the Atlantic oil trade

was the *Fergusons*, built in 1885 by Messrs. Craggs and Sons, of Middlesbrough, and converted into a tanker by Messrs. Bertram Haswell and Company, Sunderland, in 1880, when she became the property of Messrs. Lennard and Sons. The tanks were built up in the hold. She was destroyed by an explosion while lying in the Seine.

The Atlantic was also crossed by the *Gluckauf* (German-owned), which carried 2,600 tons of refined from New York to Bremen. She was built by Messrs. Armstrong, Mitchell and Company, Newcastle, from the designs of Mr. H. F. Swan, who has taken such a deep interest in the construction of some of the largest tankers of recent times.

The first cargo of oil discharged in England by a tank steamer was for Messrs. Lane and Macandrew, of Great St. Helens, while the second cargo was brought by the converted tanker *Petriana* from Batoum.* This vessel started to discharge 2,000 tons at Liverpool on December 11th, 1880. A few weeks before this cargo reached England the *Marquis Scicluna* (afterwards the *Atland*) arrived at Fiume, in Austria, with a cargo of kerosene. Among the first of the Fox tankers were the *Chigwell*, the *Charles Howard* (renamed the *Mineral*), and the *Titian*, all "converted" vessels.

The *Bakuin*, built at Hartlepool by Messrs. W. Gray and Company for Mr. Alfred Stuart in 1886, was the first tank steamer turned out of a British shipyard. On her first voyage, when she was commanded by Captain Kortright (who was afterwards killed by an explosion on the *Petriana*), she discharged a cargo of lubricating oil at Hamburg. At that time (1886) this vessel was considered to be an advance on all oil-carrying steamers of the converted type. Respecting her it was said—"Great care

* Particulars are given in a later chapter.

appears to have been taken in the construction of the *Bakuin* to avoid all possible sources of risk from fire. She is lighted by electricity, the cabins are heated by steam instead of by coal fires, and the cooking is done by steam." The *Bakuin* was destroyed by fire when she was in the floating dock at Callao Bay, Peru. She was running at the time on a charter with the London and Pacific Oil Company, of Talara.

A few weeks after the *Petriana* started to run in the oil trade the *Chigwell*, another converted tanker, commenced to carry oil between Batoum and Fiume. Among the first vessels built by Messrs. R. Thompson and Sons, of Sunderland, in 1889, for the bulk oil trade was the *Wildflower*, lost with all hands (Captain Stanwell in command) after leaving Philadelphia. The *Hafis*, built by Messrs. Hawthorn, Leslie and Company, Hebburn-on-Tyne, in 1886, was another successful tanker of that day. Later in 1887 the *Era* (now the *Apscheron*) was built by the Palmer Company from designs prepared by Sir E. J. Reed, an eminent naval architect. Like the *Oka* (now the *Broadmayne*), built by the same company about fifteen months afterwards, she was looked upon as a most perfect specimen of her type. The *Broadmayne*, often sent across the Atlantic, is 334 ft. long, 40 ft. beam, and 16'9 ft. deep. She carries about 3,000 tons of oil. At that time it was said of the *Broadmayne* that it was doubtful if she could be upset, something that could not be said of all the early tank steamers. The *Oka* was larger than the *Era*. Of the *Era*, *Oka*, and *Charlois* (built by Messrs. Russell and Company, Greenock) it was said that they fully solved the problem of carrying oil in bulk. The *Rocklight* (built at Southampton in 1888 for Messrs. Lane and Macandrew, and now owned by the Shell Transport and Trading

Company) and the *Tankerville* (built by Messrs. Craig, Taylor and Company, Stockton, for Mr. Suart in 1889) were frequently in the American and Black Sea trades. One of the first tank steamers built for Mr. Alfred Suart cleared herself after making two voyages, the freight at that time being 35s. 6d. a ton against a third that figure today. The *Robert Dickinson*, now running as a Shell liner, was converted by Leslie and Company for Mr. Suart in 1887, in which year there were some twenty-five or thirty tankers afloat.

The oil-carriers of the eighties were in tonnage only one-third the size of some of the leviathan tankers launched during the past two years. Nearly all the essential knowledge required for the safety and quick and profitable working of the trade was gathered during the first three years, 1886 to 1889, by those in charge of tankers. Since 1890 there has been very little alteration in the form of the vessels, with the exception of the placing of the engines amidships, which has been adopted in the case of the *Caucasian* (1899), and in still larger steamers like the *Narragansett* and *Tuscarora*, but not by the Shell Company in the case of specially built vessels.

It says very much for the unceasing watchfulness of those in charge of the early tankers that so few accidents occurred. The officers were dealing with quite a new form of cargo, which required as great, if not greater, care than gunpowder. With their lack of experience they did not know how far the explosive vapours would carry. In the case of several converted ships nautical electric arrangements were so imperfect, or the engineers understood so little about them, that for the first two or three years they had no electric lights on board.

* * * *

In 1880 there were only eight oil-carrying steamers and sailing ships, four of each, and these were only employed in local trades. About the year 1887 some fourteen steamers and two sailing ships were built, and several of these were afterwards employed in the Transatlantic trade. In 1888 eighteen steamers were built with a gross carrying capacity of 42,047 tons, while a single sailing ship, with a gross tonnage of 1,254, was launched. 1893 was a great shipbuilding year in this trade, no less than thirty tankers, with a gross tonnage of 94,568, being launched. That was the year in which the Shell Transport and Trading Company built the *Bullmouth* (Gray and Company), *Trocas* (James Laing), *Elax* (Gray and Company), and several others. It was in this year that the Anglo-American Oil Company's successful tanker *Potomac* was converted by Messrs. A. and J. Inglis, Glasgow. For the same company Messrs. Dunlop and Company, Port Glasgow, launched the *Lackawanna* in the same year, while two years later they turned out the well-known Atlantic trader *Chesapeake*, now owned by the Anglo-American Oil Company.

In 1898 there were some 150 steamers and fourteen sailing vessels carrying oil. Only one of each was registered at New York, while seventy steamers and two sailing vessels were registered at British ports. Hamburg and Rotterdam had ten each, while Astrakhan and Baku had twelve each. At that time Newcastle-on-Tyne had constructed seventy-seven of the total of 121 oil-carrying steamers turned out by British shipyards. Sunderland came next with ten, while the Clyde, now a foremost tanker-building river, followed with eight.

Few persons outside Russia know anything about the Caspian Sea oil carriers, although some of these are owned by British companies.

In addition to a large fleet of sailers, about 160 in number, with a carrying capacity of about 1,000,000 cubic feet, there are 140 steamers engaged in the business of carrying oil in bulk. These steamers have a carrying capacity of about 5,500,000 cubic feet. The following table shows the growth of the fleet of steam tankers on the Caspian Sea since 1892 :—

Year.	No. of Steamers.	Total cap. cub. ft.
1892	58	1,720,825
1893	59	1,758,463
1894	66	1,992,947
1895	87	2,728,217
1896	92	2,942,327
1897	93	2,998,447
1898	112	3,804,746
1899	129	4,616,702
1900	134	4,884,692
1901	126	4,690,312
1902	126	4,753,658
1903	127	4,917,259
1904	134	5,328,094

Some of the vessels make as many as sixty trips to the Volga in a good year. There is a movement at present to induce the authorities to deepen the waterway from the fourteen-foot roadstead up to Astrakhan. If this is done tankers will proceed direct to Astrakhan, and it will not be necessary for the oil to be discharged into barges.

If we include Caspian tankers—and some of these are large, full-powered vessels not unlike the *J. M. Guffey*, *Colonel Drake* (which this year has made a new and novel record by towing a Standard oil barge across the Atlantic to this country), and other tankers running in the Texas oil trade—there must be 500 steamers carrying oil in all parts of the world. In the Far East there are numerous small steam tankers owned by the Shell and Royal Dutch Companies. Then there are the sailers—many of them



A BRITISH OIL-CARRYING STEAMER.



OIL TANK STEAMERS ON THE CASPIAN.

full rigged ships—and numerous small coasters and large sea-going barges of the type used by the Standard Oil Company to take oil away from ports in the Gulf of Mexico. Indisputably, however, the largest number of the world's tankers, likewise the tankers of the largest tonnage, fly the Union Jack ; in number there are nearly 150. Every year sees larger vessels added to the list, and such splendid oil carriers as the *Caucasian*, *Oriflamme*, and *Rossija*, the Anglo-American *Tuscorora* and *Narragansett* the Shell *Bulysses*, *Pinna*, *Cardium*, *Pectan*, *Goldmouth* and *Silverlip*, the small fleet of the Pure Oil Company, the Prince and Moss liners, and many others have been placed in the bulk oil-carrying trade.

There are some twenty firms which own tankers, without counting numerous Russian owners, the J. M. Guffey Petroleum Company, the Standard Oil Company, the company which placed the "North" fleet of converted tankers in the Texas trade, and many others, including several on the Pacific coast. Connected with the well known Prince line, which frequently sends liners to New York and Batoum, there are some four or five tankers, one of which, the *Circassian Prince*, is coasting with oil on the Pacific. Some companies in Europe with Standard connections run their own tankers, and some of the Dutch concerns, notably the Royal Dutch, employ oil carriers in the Far East trade. The Burmah Oil Company (Glasgow and London) has a fleet of splendid tankers. In the sailing section there are many fast and beautifully modelled vessels, including the four-masted sister ships *Brilliant* and *Daylight*. These crack sailers have tank arrangements which enable them when they have discharged oil to take in water ballast. This facilitates discharging, and accounts for their exceptional stability when light.

CHAPTER XXI.

THE GROWTH OF THE EUROPEAN-BATOUM OIL TRADE.

NEARLY a quarter of a century ago, oil men in London closely followed developments in the Caucasus. Some hoped that one day Russian oil would be placed on the European markets, and as soon as the Baku-Batoum line was finished (1883) the question of importing the petroleum products of Baku was discussed over here. At that time Europe was served exclusively by American oil shipped across the Atlantic in oak barrels. As Russia did not possess the quality of wood necessary for the manufacture of barrels capable of safely transporting lamp oil, it became necessary to invent other means of transporting the oil from Batoum to the various markets of Europe.

About that time, Messrs. Lane and Macandrew were invited by the directors of the Fiume refineries, who had become interested in the Baku production, to study this matter. The result of a close study of the question in all its phases was that they considered it practicable to adopt the system of ocean transport which was found to work satisfactorily on the Caspian Sea. They recommended that the oil should be transported in bulk in large steamers running from Batoum to the various European markets.

After a great deal of labour and much opposition, especially on the part of Lloyds Registry, they persuaded certain English shipowners (among the first being Mr. Alfred Suart) to convert or construct steamers specially adapted for the ocean transport of petroleum in bulk. It

was in this way that shipowners and oil men came to realise the possibility of placing the production of the Baku fields upon the European markets.

The development of the new method of ocean transport marked a step forward in the petroleum trade of the world ; it resulted in the starting of those organisations by means of which the producers themselves transport from the point of production and deliver to the actual consumer in the smallest possible quantities in all the countries of Europe and the Far East. The lead given by Russia encouraged the Americans to adopt the same methods.

The first cargo shipped in this manner from Russia was arranged for in June, 1887, by Messrs. Lane and Macandrew ; as already stated, it came to London in the *Petrolia*, belonging to Messrs. Nobel Brothers.

Other firms on the Continent quickly followed, amongst the leading ones being Messrs. Oehlrick, of Hamburg, Messrs. Spath & Co., of Antwerp, Messrs. Crockerwitt & Co., of Amsterdam, Messrs. Weddekind & Co., of Palermo, Messrs. Librach and Cantor, of Vienna, Messrs. Nobel Brothers, in Germany, and Messrs. A. André Fils, of Paris, for most of whom Messrs. Lane and Macandrew made contracts for the supply of the necessary tank steamers. From that time on, Russian lamp oil quickly established itself on the European markets.

The Americans at that time had a monopoly of the markets in other parts of the world ; but in 1886, Messrs. Lane and Macandrew, having made arrangements with the company controlled by Messrs. Rothschild, of Paris, namely La Société Commerciale et Industrielle de Naphte Caspienne et de la Mer Noire, undertook to place Russian oil upon the Eastern markets, and eventually succeeded in selling the first cargo to one of the largest

houses in the Eastern trade (Messrs. Wallace Brothers) in the month of November, 1886, after which Messrs. Lane and Macandrew, in conjunction with Messrs. Wallace Brothers and the Société Caspienne, gradually extended the development of the export trade of Russian oil to the East, until in 1893 the export of Russian case oil to the countries of the Far East reached a quantity of about 10,000,000 cases.

The business established in the United Kingdom by Messrs. Lane and Macandrew by the importation of the cargo of the *Petrolia* in 1887 gradually led to the formation of the Kerosene Company, with which they worked in conjunction with Messrs. Wallace Brothers. The trade in Russian oil rapidly increased; in 1886 the import was only 46,814 barrels, in 1887 this rose to 188,461 barrels, and in 1888, the year of the constitution of the Kerosene Company, it reached 549,126 barrels.

Soon after the completion of the railway between Baku and Batoum, the establishment of the lubricating export trade of Russia was undertaken by Mr. August André, of Paris, Mr. Charles Good, of Antwerp, and Dr. Albrecht, of Hamburg, who, from the commencement, have been the leading houses for the sale and distribution of Russian lubricating oil, and who have developed this business to such an extent that to-day the Russian lubricating oil trade amounts to something like 50 per cent. of the entire trade of Europe.

In 1891, Messrs. Marcus Samuel and Company conceived the idea of extending the bulk system of transport from Russia to the countries of the Far East. For the purpose of supporting an organisation having this object in view, Messrs. Lane and Macandrew negotiated a contract between this firm and the Rothschild company,



THIS PICTURE WILL GIVE THE READER SOME IDEA OF THE AMOUNT OF DAMAGE DONE ON A SINGLE FIRE-SWEPT PLOT. ON EVERY HAND THE DÉBRIS OF BUILDINGS, MASSES OF MACHINERY, BLACKENED, CALCINED AND TWISTED, AND TANKS THAT HAVE BEEN SHRIVELLED AND CRACKED BY THE HEAT OF THE BLAZING OIL.



La Société Commerciale et Industrielle de Naphte Caspienne et de la Mer Noire, guaranteeing the necessary supply of oil, and it was in this way that the further development of the export of Russian oil to the East by the introduction of the bulk system was commenced and established. In 1891 the export of Russian oil in bulk to the countries in the Far East, in addition to that exported in cases, amounted to 9,000,000 cases.

The leading Russian oil distributing companies doing business in this country are the Consolidated Petroleum Company, Ltd., Rood Lane, and the Homelight Oil Company, Ltd., St. Mary Axe.

Last year (1904) the exports of Russian refined in bulk to the British Isles were:— From Batoum, 13,304,835 poods, and from Novorossisk, 5,456,087 poods, against 12,404,076 and 8,690,203 respectively in 1903.

For the first six months of the present year (1905) the exports of refined in bulk to the British Isles were:— From Batoum, 2,455,334 poods, and from Novorossisk, 2,604,272 poods against 8,093,655 and 3,217,487 poods in the same period of 1904.

EXPORT RULES AND CUSTOMS.

At all the Continental and British markets oil is only quoted in barrels. The only exceptions are Hamburg and Bremen, at which prices for bulk oil are also quoted. Prices are quoted :—

In England in pence per gallon.

In Germany in marks per 50 kg.

In France, Belgium, Spain, in francs per 100 kg.

In Italy in lire per 100 kg.

In Austria in Austrian gulden per 100 kg.

To find the equivalents of these in copecks per pood multiply—

English prices by	17·25	(	5½	by	17·25	=	94·875	cop. per pood)
German	„	15·18	(	6·25	„	15·18	=	94·875 „ „ „)
Belgian, &c.	„	6·15	(	15·40	„	6·14	=	94·7 „ „ „)
Dutch	„	12·81	(	7·40	„	12·81	=	94·794 „ „ „)
Austrian	„	15·37	(	6·15	„	15·37	=	94·525 „ „ „)

The Baku refiner, however, is only concerned about the f.o.b. Batoum and the respective f.o.r. Baku equivalent for oil in bulk. Therefore, in trying to work out the Baku equivalent of the foreign quotations in copecks per pood, he has to deduct

- (a) The cost of transport to Batoum (19 copecks per pood) and port and landing charges (about 3 copecks per pood), and
- (b) The cost of transport, insurance and leakage from Batoum to the port of destination.

Freight is always quoted in shillings per ton on the gross weight, each shilling per ton, at an average rate of exchange of 940 copecks per pound, working out at 0·7577

copeck per pood. There are generally three prices quoted for bulk shipments from Batoum. The highest is to English and German Ocean ports, the cheaper rate to French ports, and the cheapest one to Italian and French Mediterranean ports.

Marine insurance generally amounts to $\frac{1}{2}$ per cent. of the value of the cargo, while the loss by leakage is usually estimated at 1 per cent.

- (c) Local charges and expenses at the ports of destination.

Where quotations are understood for barrelled oil these consist of—landing and storage; fastening of hoops, glueing, painting, filling and closing of barrel; loss in weight owing to extra rebate on the tare (according to local usage); commission, discount for cash, and interest on capital.

These items roughly constitute about 11 copecks per pood.

In quotations referring to bulk oil some of these charges are avoided, and the expense roughly amounts to 5 copecks per pood.

- (d) The cost of empty barrels.

This is nowhere quoted. It is generally calculated at 4s. 6d. to 5s., or, say, from 24 to 25 $\frac{1}{2}$ copecks per pood.

- (e) The difference in price between American and Russian oil.

In absence of competition between Russian shippers, the London difference mounts up to 2 copecks per pood. At the other markets it is higher. In presence of keen competition, the difference has frequently exceeded 10 copecks.

THE CASE OIL TRADE AT BATOUM.

The sale of case oil is generally undertaken by Batoum exporters with delivery on board the buyer's steamer or sailing vessel (f.o.b. Batoum). Prices for shipments to the Far East are in pence per gallon and to Mediterranean and Danube ports in francs and centimes per case. While the sales for cargoes to the Far East are exclusively effected in London, those for the Mediterranean are arranged in Batoum, Constantinople, and other ports. The London price (in pence) is always understood to be for cash against delivery of bill of lading to the bank indicated by the buyer, or about ten days after the departure of the steamer from Batoum, or from the date the bill of lading was made out. Conditions of payment in connection with Mediterranean sales vary (cash against documents or at the expiration of a fixed period), but payment is generally also made through a bank indicated by the buyer. The London broker charges the seller 1 per cent. commission.

In reducing the Batoum price to Baku price the seller has to consider the following items :—

- (a) A case contains 1·8 poods of kerosene. The leakage on the way from Baku to Batoum amounts to $\frac{3}{10}$ per cent., and from the railway to shipboard to 1 per cent., making a total of 1·3 per cent., or 0·013 pood per pood forwarded from Baku. Therefore each case requires— $1·8 (0·013 \cdot 1·8) = 1·8234$ poods, or, roughly, 1·83 poods of oil.
- (b) Broker's commission, 1 per cent.
- (c) Broker's rate, about 30 copecks per £10.
- (d) Cost of packing and delivery on board, roughly, 65 copecks per pood.
- (e) Railway rate to Batoum on 1·83 poods at 19 copecks per pood = 34·77 per case.

- (f) Interest at 7 per cent. per annum paid for railway transport, assuming two months elapse between the arrival of the oil at Batoum and the receipt of cash for the cargo, 0·25 copecks per pood.
- (g) Port charge at Batoum, 1 copeck per pood, or on $2\frac{1}{4}$ poods (case included), 2·25 copecks per pood.

Assuming, therefore, a price of 50 pence per case, and £10 being equal to 94 roubles 15 copecks, we find the Baku price would work out as follows:—

- (a) Deducting 1 per cent. broker's commission from 50 pence leaves 49·5 pence.
- (b) Deducting 0·30 copecks, the banker's charge on £10 works out at 3·91 copecks per penny, and, therefore,
- | | |
|---------------------|---|
| 49·5 pence = | <small>cop. per case.</small>
193·545 |
|---------------------|---|

Deduct from above—

- | | |
|---|------------------------------|
| (c) Cost of packing and loading charges, including delivery and storage, roughly about | <small>cop.</small>
65·00 |
| (d) Freight to Batoum at 19 copecks per pood on 1·83 poods = ... | 34·77 |
| (e) 7 per cent. interest per annum on freight for two months = ... | 0·25 |
| (f) Port charge at Batoum at 1 copeck per pood on $2\frac{1}{4}$ poods | 2·25 |
| | 102·27 |
| Clearing for 1·83 pood = | 91·275 |
- or 49·87 copecks per pood f.o.r. Baku

NOTWITHSTANDING THE INCREASE OF FIRE-RESISTING AND FIRE-EXTINGUISHING AFFLIANCES AND THE EMPLOYMENT OF STEAM, CHEMICALS AND SAND, FIRE CONTINUES TO BE THE MUCH DREADED FOE OF THE OIL WELL DRILLER IN ALL PARTS OF THE WORLD. THE BELCHING FORTH OF THESE FOUNTAINS OF LIQUID FIRE—THE TERRIBLE ROAR OF ESCAPING GAS, THE SHORT, SHARP REPORTS, THE FIERCE FLASHES OF BLINDING LIGHT, AND THE THICK CLOUDS OF SMOKE WHICH ROLL UPWARDS, FOLD UPON FOLD, AND SHUT OUT THE SKY—IS A THRILLING AND APPALLING SPECTACLE. A SPOUTER BURSTS FORTH TOO QUICKLY FOR THE WORKMEN TO EXTINGUISH THE SURROUNDING FURNACES, A SINGLE SPARK, OR A CARELESS ACT, SAY, THE DROPPING OF A LIGHT, AND THE OIL-SOAKED GROUND, RESERVOIRS, TANKS, DERRICES AND BUILDINGS ARE IN A BLAZE IN A MOMENT. IN THE HISTORY OF THE PETROLEUM INDUSTRY THERE ARE NUMEROUS THRILLING STORIES OF OIL FIELD FIRES; THE MOST APPALLING THE WORLD HAS EVER KNOWN, OR PROBABLY EVER WILL KNOW, ARE DESCRIBED IN THIS BOOK.



OIL WELLS IN FLAMES.



APPENDIX.

TRANSPORT OF BAKU OIL.

TRANSCAUCASIAN TARIFFS.

THE following table shows the fluctuations in the rates charged by the Transcaucasian Railway for the carriage of oil:—

	Copecks per pood.
From beginning of 1894 to March 1st	19
March 2nd, 1894, to July 1st	14
July 1st, 1894, to May 15th, 1895	9
May 15th, 1895, to July 1st... ..	14
July 1st, 1895, to December 3rd, 1897	19
December 3rd, 1897, to January 15th, 1900	12
January 15th, 1900, to April, 1904... ..	16
From 1904	19

Stability of tariffs on this line, the chief outlet for Russian oil sent to foreign markets, has been frequently urged by producers, and by none more warmly than the Hon. Evelyn Hubbard (representing the Russian Petroleum and Liquid Fuel Company and the Baku Russian Petroleum Company), who had an interview with M. Witte at the time when he was the Minister of Finance. Russian exporters recently appealed to the Ministry of Finance for a substantial reduction in the rates to enable them to compete with American oil. A conference at St. Petersburg resulted in the rejection of recommendations submitted by Nobels, Gukassov, Pappé, Skalkovski (Rothschild), and other leading producers. It is now thought that the Russian Government will reconsider these recommendations in the light of recent deplorable events.

Russian oil has lost ground in the foreign markets ; this will have to be recovered, and success will only be possible if the Government decides on a substantial reduction of the rates. The unreliability of the tariff arrangement is seriously handicapping the Russian export trade.

To what extent the working of the Transcaucasian is being influenced by events at Baku will be seen from the following returns. In the first six months of the present year the takings amounted to £1,180,700, the total expenditure to £725,500, and the net revenue to £455,200, as compared with £1,645,500 income, £777,800 expenditure, and £867,700 net revenue for the corresponding period of last year.

* * * *

RAILWAY TRANSPORT TO INLAND MARKETS.

The Minister of Finance has been petitioned by representatives of the industrial regions of Central Russia to reduce the railway freights from Baku and Petrovsk from the $\frac{1}{70}$ copeck per pood and verst to the differential tariff of $\frac{1}{126}$ copeck per pood and verst now charged for coal. This would reduce the freight from Moscow to nineteen copecks and from Petrovsk to sixteen copecks. The present rate, both from Baku and Petrovsk, to Moscow is absolutely prohibitive. The oil tariffs are calculated in the following manner. The rate starting at $\frac{1}{24}$ copeck per pood and verst gradually decreases on a 532 mile run to the minimum rate of $\frac{1}{70}$ copeck per pood and verst, and no further differentiation is made. The object aimed at is to place the centres of coal and liquid fuel consumption on an equal footing in the matter of cost of transport. At present, however, owing to the exceptionally high prices for liquid fuel, the Moscow and Volga regions have been placed in positions which render competition with the coal-consuming centres impossible. When the Volga navigation closes the only route available to Moscow or the Volga centres will be by rail either from the ice-free port of Petrovsk or direct from Baku by rail. At the existing minimum tariff for petroleum ($\frac{1}{70}$ copeck), and assuming that the astatki price at Baku will only be twenty

copecks per pood, a pood of liquid fuel delivered at Moscow will cost fifty-five copecks, a figure the industry could not pay for any length of time. The petition proposes to reduce the tariffs to a rate which will render it possible to deliver liquid fuel at Moscow and the adjacent industrial centres at a reasonable figure. Below is a comparison of the distances and tariffs for petroleum products and coal:—

[From	Distance in versts.	Distance in miles.	Petroleum Tariffs. From Baku.		Coal Tariff.
			In cops. per pood. Actual.	Proposed.	
Tzaritzin ...	1,563	(1,036)	22'73	14'93	12'90
Saratov ...	2,297	(1,522)	33'21	19'01	18'78
Nizhni ...	2,782	(1,844)	40'14	22'66	22'66
Moscow ...	2,386	(1,681)	34'49	19'50	19'49
Vladimir ...	2,549	(1,689)	36'81	20'79	20'79
Ivanovo Voznesensk } ...	2,680	(1,776)	38'69	21'69	21'84
	*	*	*	*	

CASPIAN AND VOLGA NAVIGATION.

The distance from Baku to Astrakhan by sea is about 595 miles. The first 490 miles are easy sailing, but the final part of the journey is most difficult. The Volga, during the high water period, carries over 1,000,000 tons of sand in fifty days. This sand has formed a huge delta of 8,000 square miles. The river divides into many channels, and even the deepest of these have their shallows. Huge quantities of sand are carried towards the sea, and, as a result, the north-eastern part is shallow to a considerable distance beyond the estuary, and does not exceed 11 ft. or 12 ft. in depth. It is only possible to get 15 ft. of water forty-two miles from the shore. In the estuary, the depth of the fairway is 9 ft., but at the shallows it hardly exceeds 4 ft., so that the Volga and its estuary are not navigable for sea-going tank steamers. Navigation is greatly interfered with by the fierce gales which blow in the north-eastern part of the Caspian. The north-western gales reduce the depth of the water in the estuary and fairway from 10 ft. to

12 ft. to 2 ft. to 4 ft. At these times navigation in the estuary and near the shore is brought to a standstill, and vessels have to anchor until the wind blows from the south. These are the natural difficulties with which the Caspian oil fleet has to contend. After covering the first 495 miles, the oil tankers drop anchor at the 12 ft. roadstead. This roadstead is just over 100 miles from Astrakhan, and it is there where the bar divides the channel from the fairway of the Volga. The 12 ft. roadstead has no fixed position. As the tankers draw from 9 ft. to 14 ft., the area used for the transshipment of oil into shallow draught vessels is rather extensive. Up to the middle of the eighties, when most of the tankers only drew 9 ft., the place of trans-shipment, known as the 9 ft. roadstead, was much nearer to Astrakhan, and is now used by general cargo vessels. Properly speaking, the Bakhtemir Channel of the Volga ends near the Island of Birutzia Kossa, about sixty miles from Astrakhan. Some of the tankers anchor in 15 ft. of water. At the roadstead the tankers coming from Baku meet the river craft from Astrakhan. During the day the number of vessels which arrive average between 70 and 100. Most of the firms have special boats at the roadstead, where their staffs are permanently stationed. Here, too, is a floating Custom House, telegraph office, provision store, and a small hospital, so that, properly speaking, the 12 ft. roadstead is a floating colony. Life at the roadstead commences with the opening of navigation, and closes at the end of the season, when all stationary vessels are taken to Astrakhan.

The arrival of a steamer is notified to the agents by a system of signals. Shallow draught vessels are taken alongside, and the oil is pumped into them. All the steamers have their own pumps, while the sailors make use of three pumps which are kept at the roadstead. A tanker is often discharged in three hours. From the roadstead the shallow draughts carry the oil to Astrakhan, where it is trans-shipped into river craft, while smaller quantities go into storage. The trip from the roadstead to Astrakhan takes from thirty-five to forty hours, and the return journey only nineteen hours.

Volga navigation lasts about six months. During the last

two years it opened later than usual ; as a matter of fact, it has never started so late since 1897.

			Ice breaking up at Nizhni.	River clear of Ice.
1901	...	...	April 10th	April 16th
1902	...	...	" 9th	" 23rd
1903	...	...	" 8th	" 14th
1904	...	...	" 22nd	" 28th
1905	...	...	" 20th	" 29th

The extent of the Volga waterways (including tributaries, lakes, and canals), is 29,965 miles, of which only 9,676 miles are navigable in both directions. The distances from Astrakhan to the chief distributing centres of the Volga region are :

	Miles.		Miles.
Tzaritzin	... 306	Kazan	... 1,107
Kamyshin	... 414	Sviazsk	... 1,119
Saratov	... 551	Nizhni	... 1,348
Syzran	... 750	Kineshma	... 1,476
Batraki	... 756	Kostroma	... 1,543
Samara	... 824	Rybinsk	... 1,656
Ufa, along the Volga, Kama and Bielaya rivers	...		1,570
Perm, along the Volga and Kama rivers	...		1,606

The river craft moor at about 140 wintering places, and the chief ones are at the centres mentioned above.

The vessels on the Volga numbered :

In 1884	...	...	665 steamers and 5,896 sailers.
" 1890	...	...	1,015 " " 5,928 "
" 1895	...	...	1,392 " " 7,000 "
" 1900	...	...	1,718 " " 8,250 "

The latest census shows that the Caspian fleet consisted of five mail and passenger boats, sixty-one cargo and passenger boats, and twenty-three cargo boats, 134 tankers, and forty-five tugs and service boats. The sailers running in the oil trade numbered 153. The capacity of the 134 tankers was 4,917,260 cubic ft., and that of the sailers 2,970,428 cubic ft.

The quantities of oil forwarded up stream in the first eight months of this year amounted to 259,400,000 poods, as compared with 289,005,000 poods in the same period of 1904.

* * * *

WORK RE-STARTED AT BAKU.

Reports which are daily reaching London state that the work of re-building the derricks, cleaning out the wells and erecting drilling and pumping machinery is being pushed on with all possible speed. Balakhani is full of life, although, strangely enough, there is still only slight protection for life and property, the force of military being obviously inadequate, and hundreds of workmen are practically prisoners at the works where they are employed. The village, the scene of great slaughter in September, is deserted at nights. Contractors are making huge profits; they are receiving 800 roubles for a derrick which cost 250 roubles before the massacres. The majority of the new derricks are made of gypsolite. Many wells are being bailed.

The stoppage of work has aggravated the water troubles, which cannot fail to be great during the next few months, even if bailing is resumed on a large scale in the shortest possible time. Even before the stoppage many wells were bailing four, and even eight, of water from the bottom to one of oil at the top. The methods of cementing with kir or cement have not given absolutely satisfactory results, and it is known that some of the companies wilfully neglect cementing work on their boundary lines, with the result that the wells of competitors are damaged and flooded. Wells have frequently to be abandoned because water from overlying layers gets into the oil beds and diverts the flow of oil. On an average two poods of water are bailed out with each pood of oil, and the removal of the water into the Caspian is a substantial drain on the exchequer of the Producers' Association. Not only does the underground water diminish the life and production of a well, but it considerably increases the cost of exploitation; the amount of mechanical power now required to raise a pood of oil to the surface is three times as great as it was when water troubles were practically nil. The finding of methods that can be depended upon to effectively shut off water is one of the chief problems of oil field mechanics. More perfect cementing, besides increasing the life and yield of the wells, also improves the chances of bringing in spouters.

At present the chances of a prolific spouter being brought in are diminished by the presence of water and the clustering of the wells at the properties. It is estimated that a well can drain an area of 500 ft. to 700 ft. diameter along the strike of the stratum, and as the distance between many wells scarcely amounts to 30 ft. or 50 ft., one well naturally encroaches on the sources of another, and results in a reduction of the yield of both bailed and spouting wells.

The latest reports from Bibi-Eibat state that a great effort is being made to re-start work quickly. Though small in area it is the most remarkable oil field in the world. It has 222 wells out of a total of 2,000 for the Peninsula, but although it only has a tenth of the wells it has about a third of the production. The last of the great spouters at Bibi-Eibat have not been seen. With perhaps one exception, Balakhani, but certainly not at Ramani and Bibi-Eibat, the last oil stratum has not been reached. Remembering the ancient character of Bibi-Eibat its record and position to-day are remarkable. Few oil men know that the exploitation of the resources of this field commenced as long ago as the first half of the eighteenth century. Gmelin, who visited Bibi-Eibat at the conclusion of the eighteenth century, mentions seventy pits. In 1819 there were nineteen pits, and Eichwald, who visited the region in 1825-1826, saw twenty-two. Of this number, two, owned by a certain Kassim-Bek, were in the sea—one at a distance of 63 ft. from the shore in $1\frac{1}{2}$ ft. of water, and at a depth of 8 ft.; and the other 238 ft. to the north of the first, and 105 ft. from the shore. During the period 1834-1849 the production of Bibi-Eibat was as follows:—1834, 113,889 poods; 1835, 113,310 poods; 1836, 112,730 poods; 1837, 112,300 poods; 1838, 104,835 poods; 1839, 121,470 poods; 1840, 114,037 poods; 1841, 114,084 poods; 1842, 113,934 poods; 1843, 114,186 poods; 1844, 113,966 poods; 1845, 113,814 poods; 1846, 114,130 poods; 1847, 81,245 poods; 1848, 19,955 poods; and 1849, 8,300 poods. In 1900 the figure reached 109,207,063 poods. Not only was the field producing well before the stoppage of work owing to the massacres, but it must not be forgotten, as I have explained elsewhere, that the field will be

extended seawards when the reclamation scheme is carried out. Some of the best plots at Bibi-Eibat are owned by the Bibi-Eibat Petroleum Company, of London.

The Baku oil fields are extending, beyond a doubt. There are reserve oil-bearing lands at Saboonchi, and it has now been proved that the reclamation of land at Ramani Lake was a successful engineering feat and a commercially prosperous undertaking. Near to Balakhani is Binagadi; well clear of the insurrection zone is the oil field of Grosny, where a British company (Spies) brought in another spouter after the massacres, and where Rothschilds have just acquired the property of the Akverdov Company; at the new oil field of Berekei, opened up by Nobels and entered by the Schibaieff and many other companies, drilling work is being steadily conducted; and at Kaia-Kent, Daghestan, another field visited by me in the early spring of this year, drilling is being conducted at new places, on new lines, and with every hope of success. The other fields, which are expected to add to the large supplies necessary to meet the world-wide and growing demands for Russian oil, include Chatma, Kertch (Crimea), the Island of Tcheleken, the Russian (Northern) part of the Island of Sakhalin, Fergana, Telavi (near Tiflis) and many other places.

* * * *

THE UPKEEP OF WELLS AND THE WATER TROUBLE.

In Chapter XII. I refer to the life of the wells. As the development of the oil fields extends, the upkeep of wells, chiefly deepening and repair, becomes a more important part of the routine work at the oil fields. The life, or the oil-yielding period, is steadily diminishing. Formerly it averaged 6-7 years, now hardly half that time. Increasing depth and the water trouble are making the technical part of oil field work more complicated and difficult. During the past few years water has found its way into nearly all developed layers, and consequently repairs and cementing are more frequently needed. Deepening comes first, and then follow repairs in the shape of strengthening deformed casing, cementing and similar

operations. The bottom of a well has often to be cleared of sand, clay or *débris*, which, gradually accumulating, block up the channels through which the oil finds its way. A well, especially if recently brought in, has to be frequently cleansed with the ordinary bailing drum, American sand pump, &c. It is only a question of time before these expedients for rejuvenating a well become inadequate, when exploitation has to be temporarily suspended and a boring rig mounted in the place of the bailing drum.

The following table shows the number of wells which have been deepened in all fields:—

1889	28	1897	155
1890	50	1898	213
1891	87	1899	196
1892	111	1900	255
1893	103	1901	309
1894	101	1902	249
1895	131	1903	278
1896	172	1904	293
	*	*	*

THE ST. PETERSBURG CONFERENCE.

The first conference at St. Petersburg (October 5th) was attended by fifty-eight delegates. Those present included:—Mr. V. N. Kokovtzev, Minister of Finance, in the chair; Mr. I. V. I. Timiriazev, Assistant Minister of Finance; Mr. I. F. Dzhunkovski, representing the Viceroy of the Caucasus; Mr. A. I. Drei, the Ministry of Means of Communications; Mr. E. K. Tzigler, Director of Government Railways; Mr. P. V. Ol, the Society for the Encouragement of Russian Trades and Industries; Mr. V. N. Petzikovski, Director of the Vladicaucasian Railway; Messrs. M. V. Pappé, Yassiuninski, and E. J. Kaminski, for the Baku, Moscow and Warsaw Exchanges respectively; Messrs. P. O. Gukassov (Chairman), G. Kiandzhuntzev and Frolov, of the Council of the Baku Petroleum Producers' Association; Mr. Khatissov, Chairman of the Baku Branch of the Imperial Technical Society; Mr. N. S. Lavrov, the St. Petersburg Technical Society; Mr. A. A. Wolski, the South Russian Metallurgical Works; Messrs. N. S. Avdakov

and F. Enaki, the Donetz Collieries; Mr. Yukovski, the Dombrova Collieries; Mr. D. V. Sirotkin, Volga Shipbuilders; for the Baku producers, Messrs. E. L. Nobel, K. A. Shalkovski (Caspian and Black Sea Company), J. Gadzhiev, Ter-Akopov, Benckendorff, Scriepinski, Ogulevitch, Tagianossov, Lianozov, and Sadukiantz; Messrs. Toptchibassev and Agaiev, of Baku; Mr. Lazarev, Engineer; Mr. Lapshin, Mr. Leslie Urquhart and von Ofenheim, representing Anglo-Russian interests at Baku; Mr. Fred Lane, of the Consolidated Petroleum Company, London; Mr. A. Gukassov, London office of the Caspian Company, and others.

The chairman in a lengthy address said the occurrences on those regrettable "August-September days" had fearfully shaken, if they had not entirely destroyed, a hitherto progressive and most useful industry. About three-fifths of the oil-bearing area was in ruins, while the remaining two-fifths would remain idle until such times as work could be resumed with safety.

At the second sitting of the conference the memorandum of the Baku Producers' Association was read. The producers said, for the second time this year the attention of the world had been rivetted on Baku and its oil fields; for the second time wholesale massacres had taken place, and the last ones had been made more serious by incendiarism and the destruction of oil field property. The calamity bore the stamp of a deep, chronic and rapidly developing trouble. In December there was a strike which reduced the crude output by 30,000,000 poods, and caused a reduction in the average production of wells. In February there was a massacre, during the progress of which residences in the town were fired and pillaged. An epidemic of strikes culminated in a general labour trouble and suspension of work in May. Anonymous threatening letters were posted, there were assassinations, and everyone anticipated a repetition of the February massacres. Finally, the upheaval during August and September dwarfed the February massacres, in regard to duration, the number of victims, and the frenzy of the conflicting parties. There was a systematic destruction of the oil fields by incendiaries and armed bands. The labour movement must be guided into

channels which would be beneficial to the workmen and the industry, while steps must also be taken to suppress acts of savagery on the part of those dregs of the populace from which the perpetrators of massacres, robbery, and incendiarism were chiefly recruited. The residents of Baku and the oil field region were in hourly fear of being robbed and killed, and these, surely, were entitled to claim protection for life and property at the hands of the Government. The producers appealed to the Government to protect the inhabitants against murderers and robbers. The re-establishment of military authority and a law improved and supplemented to suit the changed conditions should form the basis of the action of the Government. If the authorities had done their duty, the February massacres would not have taken place, because they had the means of putting an end to the disorders. The massacres were not prevented; the murderers were allowed to do their work unmolested, and were never brought to justice. The Criminal Investigator at Baku only completed his inquiries in connection with the February massacres on October 19th. His investigations covered 412 cases, and a separate report on each has been sent to the Public Prosecutor. That the criminals went unpunished was one of the chief causes which led to the outbreaks at Erivan, Nakitchevan, Shusha, and other places and precipitated the September massacres. The producers submitted a lengthy list of recommendations. At every sitting there were long discussions, but they were invariably barren of results. At the final sitting when the results were announced it cannot be said that they gave satisfaction to those present. The Government refused to allow the import of residuum duty free, or to indemnify those who sustained loss during the disturbances. While it agreed in principle to advance loans for the re-equipment of the oil fields it stipulated for five per cent. per annum, a mortgage on the properties of those accepting loans, and repayment in twelve years. Other decisions were only interesting to those connected with the home industry.

BAKU STOCKS UP TO JULY 1ST, 1905.

Year.	Crude.		Residuum and other Products.	Illuminat- ing Oils.	Lubri- cating Oils.	Total.
	Oil fields.	Refineries.				
In thousand poods.						
January 1st, 1891	4'775	5'000	15'000	5'346	'756	30'877
" 1892	9'220	11'000	27'000	7'076	1'064	55'360
" 1893	16'280	13'140	32'000	8'192	'708	70'320
" 1894	19'577	14'932	34'353	10'341	'878	80'081
" 1895	9'269	11'789	26'606	5'665	1'254	54'583
" 1896	4'224	29'907	25'122	11'231	1'560	72'044
" 1897	6'372	21'971	47'692	14'357	1'384	91'776
" 1898	4'937	15'335	52'301	13'410	1'681	87'664
" 1899	7'163	12'186	53'024	10'361	2'321	85'055
" 1900	7'152	39'809	38'612	18'112	2'082	105'767
" 1901	9'069	37'324	60'310	22'033	2'639	131'375
" 1902	17'158	56'831	74'225	14'735	3'539	166'488
" 1903	10'150	33'900	83'908	20'065	3'475	151'498
" 1904	8'225	28'828	57'549	24'510	2'330	121'442
" 1905	7'969	35'482	44'445	16'106	3'382	107'384
July 1st, 1905 ...	6'449	25'884	42'325	13'897	2'216	90'771

BAKU PRODUCTION IN FIRST HALF OF 1905.

	Balakhana.	Number of Producing Wells.	Saboonchi.	Number of Producing Wells.	Ramani.	Number of Producing Wells.	Bibit-Eibat.	Number of Producing Wells.	Total.*	Number of Producing Wells.	Spouters.
January	6,371,363	615	15,864,864	551	9,902,302	181	12,893,295	171	45,062,984	1,529	1,271,000
February	6,284,215	624	15,239,180	548	8,559,588	186	12,435,797	177	42,550,189	1,548	1,599,700
March ...	7,078,367	625	17,321,996	552	10,779,129	186	14,604,555	179	49,810,361	1,555	1,850,000
April ...	6,878,479	607	17,226,267	559	8,938,330	182	14,162,366	182	47,232,823	1,543	2,438,400
May ...	5,368,378	623	12,572,719	557	7,521,329	182	13,692,186	181	39,195,468	1,556	612,500
June ...	6,645,420	—	16,484,349	—	9,385,826	—	13,799,542	—	46,342,717	—	1,228,700
Total	38,626,222	—	94,709,375	—	55,086,504	—	81,587,741	—	270,194,542	—	9,000,300

* Including Binagadi and Zabrat production and wells.

BINAGADI AND ZABRAT PRODUCED

	Binagadi.	Number of Producing Wells.	Zabrat.	Number of Producing Wells.
January ...	21,460	10	9,700	1
February	21,709	12	9,700	1
March ...	11,914	12	14,400	1
April ...	14,481	12	12,900	1
May ...	31,706	12	9,150	1
June ...	14,730	—	12,850	—
Total	116,000	—	68,700	—

BATOUM EXPORTS.

The exports from Batoum from January 1st to October 1st (o.s.), 1905, were :—

Illuminating Oils.		Residuum.		Other Products.		
1904.	1905.	1904.	1905.	1904.	1905.	
To Europe	31,268,000	17,531,000	976,000	...	10,356,000	7,464,000
„ East	16,434,000	8,573,000	75,000	...	234,000	310,900
„ Russia	3,373,000	2,334,000	13,000	...	158,000	193,000

Owing to some serious strikes and disorders at the port the export trade was brought to a standstill for several weeks. On October 19th business was resumed, when the *Spondilus*, one of the largest of the Shell Transport and Trading Company's tank steamers, loaded a cargo of 10,000 tons of illuminating oil for the East.

While this book is in the press great quantities of American case oil are being shipped to the Far East. The idea is to prevent Russian oil from regaining a foothold in those important markets and at the same time stop others from securing an advantage during the time of Russia's misfortune. When the Russian fields begin producing again the oil men of Baku and Batoum will find that the Americans have overstocked the Far Eastern markets and that it will be practically impossible for them to regain the position they have lost in that part of the world. They will then be compelled to pay greater attention to the inland Russian markets. Needless to say Russian oil will always be shipped to this country, although events at Baku have encouraged Roumania, Galicia and other producing countries to devote attention to the advantage of refining oil of a quality that will suit the British consumer.

Shipments from Batoum having almost ceased, there has been a rise in the price of oil in this country, the distributing companies having entered into an arrangement, which, being verbal, does not promise to last long.

* * * *

RUSSIAN WEIGHTS AND MEASURES.

The following information should be of value to many who are engaged in the Russian oil business in different parts of the world.

WEIGHTS.

Russian lb. = $\cdot 9028$ English lb. = $\cdot 4095$ kg.
 English lb. = $1\cdot 1076$ Russian lbs. = $\cdot 4536$ kg.
 One kilogram = $2\cdot 2046$ English lbs. = $2\cdot 4419$ Russian lbs.
 One pood (40 Russian lbs.) = $36\cdot 114$ English lbs. = $16\cdot 38$ kg.
 Cwt. (112 lbs.) = $124\cdot 0512$ Russian lbs. = $50\cdot 8032$ kg.
 Metric Centner (100 kg.) = $220\cdot 46$ lbs. = $244\cdot 19$ Russian lbs.
 English ton (2,240 lbs.) = $62\cdot 0280$ poods = $1\cdot 06$ metric ton.
 Metric ton (1000 kg.) = $\cdot 9842$ English ton = $61\cdot 048$ poods.

MEASURES OF LENGTH.

Russian duim = English inch.
 Vershock = $1\frac{3}{4}$ duims.
 Foot (12 duims) = 1 English foot = $\cdot 30479441616$ metre.
 Arshin (3 feet) = $\cdot (7)$ yard = $\cdot 71118696104$ metre.
 English yard = $1\cdot 285714$ arshin (36 duims) = $\cdot 914391428$ metre.
 Metre = $3\cdot 2808992$ feet = $1\cdot 09362355$ yard = $22\cdot 49759792$ vershocks.
 Sazhen (7 feet) = $2\cdot 133291$ metres.
 Verst (500 sazhen) = $\cdot 66269$ English mile = $1\cdot 06678$ kilometres.
 English mile (5280 feet) = $1\cdot 50857$ versts = $1\cdot 6093$ kilometres.
 Kilometre = $\cdot 9374$ verst = $\cdot 6211$ English mile.
 Russian mile (7 versts) = $4\cdot 63883$ English miles = $7\cdot 48746$ kilometres.

MEASURES OF AREA.

Dessiatin (60 by 40 sazhen) = $117,600$ square feet = $2\cdot 6997$ acres = $1\cdot 0925$ hectares.
 Acre = $\cdot 3704$ dessiatin = $\cdot 442244$ hectare.
 Hectare = $\cdot 9153$ dessiatin = $\cdot 4048$ acre.

MEASURES OF CAPACITY (FOR LIQUIDS).

Vedro = $2\cdot 70698$ English gallons = $3\cdot 249$ American gallons = $12\cdot 299$ litres (12,299 c. cm.).

English gallon = $\cdot 3694$ vedro = $1\cdot 2$ American gallons
= $4\cdot 5435$ litres.

Litre = $\cdot 081308$ vedro = $\cdot 228$ English gallons = $\cdot 264$ American gallons.

American gallon = $\cdot 3078$ vedro = $\cdot 8332$ English gallon = $3\cdot 785$ litres.

EQUIVALENT WEIGHTS AND MEASURES OF CAUCASIAN AND AMERICAN OILS.

Caucasian Crude of $\cdot 878$ sp. gr.

Vedro = $26\cdot 34$ Russian lbs.

Imperial gallon = $9\cdot 7$ Russian lbs.

Litre = $2\cdot 144$ Russian lbs.

American gallon = $8\cdot 1$ Russian lbs. ..

A pood occupies 1139 cubic inches = $4\cdot 123$ imperial gallons = $18\cdot 656$ litres = $4\cdot 939$ American gallons.

Caucasian Export Kerosene of $\cdot 825$ sp. gr.

Vedro = $24\cdot 75$ Russian lbs.

Imperial gallon = $9\cdot 139$ Russian lbs.

Litre = $2\cdot 015$ Russian lbs.

American gallon = $7\cdot 617$ Russian lbs.

Pood = $4\cdot 377$ imperial gallons = $19\cdot 9$ litres = $5\cdot 249$ American gallons.

English ton = $271\cdot 49$ English gallons.

(American kerosene of equal volume only weighs $96\cdot 6$ per cent. of Russian export kerosene, *i.e.*, the American is $3\cdot 4$ per cent. lighter than the Russian.)

