hydraulic pressure into parafine wax and oil, vaseline, cosmoline, &c. After these are taken from the residuum, there is a coke left, which contains 90 per cent. of carbon, from which carbon points, used in electric lighting, are manufactured.

The question as to whether petroleum will be found in sufficient quantities in New Zealand to pay for working is one which will yet take some years to solve. Even if large quantities of oil be discovered the expense of erecting plants and appliances for distilling the crude petroleum, and bringing out men to carry on operations, will be considerable. We will have many difficulties to contend against which cannot at the outset be seen. However, if the petroleum be found in large quantities, capital will soon be forthcoming to develop the oil-fields; but it has to be borne in mind that crude petroleum must be produced here at a cheap rate before it can compete in markets with the large supplies coming from America and older countries. The price of crude petroleum in Pittsburgh is given as ranging from 2s. 6d. to 3s. per barrel of from 40 to 42 gallons, whilst the crude petroleum from Boku is only worth, at the wells, from 2d. to 8d. per 42 gallons. Referring to the character of petroleum, Jos. D. Weeks, in making an abstract of the mineral resources of the United States, says, "There are great differences in the character of petroleum. The Franklin crude lubricating-oil is worth four times what the ordinary Western Pennsylvania crude oil brings, while the lower country oils of Pennsylvania, which are used chiefly for illuminating purposes, because of their greater yield of illuminating-oil, brings considerably more per barrel than those of the ordinary upper country oils. It is also a fact that every manufacturer has his own methods and processes of distillation, which he regards as valuable secrets. These methods give varying results, not, however, differing greatly when the same product is sought as the result of distillation. It is also true that the percentage of the different products vary, as one or the other of these products is the chief object of the distillation—for example, distillation having as its chief object the production of illuminating-oil would give a larger percentage of illuminating-oil than would be given at works where the chief article of manufacture was lubricating oil. Owing to these facts, therefore, the percentage of the commercial products derived from the crude petroleum vary greatly at different works from different processes of manufacture.

Plant.

The plant used for oil-boring at New Plymouth is far superior to that which was employed in boring for oil at Gisborne. The whole of the machinery is very compact and working all in line. No bevel-pulleys are used for any purpose. The machinery and derrick are covered in, so that no one can get near the place when the bore is going down. When operations are suspended the place is locked up. The bore was commenced 16in. in diameter and carried down this diameter to a depth of 50ft. with iron stove-pipe tubing, after which a bore was put down 14in. in diameter with stove-pipe tubing for another 100ft.; then a 10in. bore was put down for another 150ft. This was tubed with 10in. thread-pipe; and at the time of my visit they were putting down 9in. thread-pipes, the bore being down to a depth of 340ft. The boring operations differ from those at Gisborne to this extent: that in lieu of a manila cable being used for boring, wooden rods 2½in. in diameter are used, made of American white-ash. These rods are in about 30ft. lengths, and have taper screw ends on one end of the rods, and a corresponding screw-boss on the other. The screwed ends are about 3in. long, 1½in. in diameter at the neck, and about 1¼in. at the extremity of the end, thus tapering in 3in. ⅛in. on each side. The boring-bits are in about 3ft. 6in. lengths. On the top of the bit is fixed by a screw-joint a cross-feathered bar, the feathers having the same diameter as the bit. This cross-feathered bar is for the purpose of keeping the bore straight and perpendicular. On top of this the sinker-bar is jointed on. This is a bar of round iron 4½in. in diameter and 45ft. long, and on the top of this the jar-tool rods are fixed. The sand-pump is from 37ft. to 40ft. in length; but a tube is not used for putting water down to the bottom of the hole as was done at the Gisborne wells, the water being emptied in at the top of the tubing. The walking-beam, with connections, and, indeed, all the appliances, work very true and steady. The whole of the winding and boring machinery is driven by a horizontal steam-engine of about 15-horse power. The manager informed me that the tubing was made in England, but it is inferior to that manufactured in America, the iron being of bad quality. During the time of my visit they were putting in the 9in. tubing, which appeared to be in about 16ft. or 18ft. lengths, each length being screwed together and lowered down in about three or four minutes. From the manner in which this work was being done it showed me that the manager is well acquainted with what is required, and he has all his workmen well drilled as to the post that each has to take in carrying on the operations. To a stranger visiting the works, it would seem as though all employed were working for a wager, having no time to talk, but silently attending to their work. The manager was so busy that he had no time to give me much information as to what rate boring was carried down, but if an accident does not occur it will not be long before they get the present hole down to a good depth. They have tools of every description, and everything at hand to meet emergencies when required.

THE EXPLOSIVE NATURE OF COAL-DUST.

Three Royal Commissions have been appointed to report on the best method to prevent explosions in coal-mines, and the safest explosive to use, namely, the English, Prussian, and French Commissions, each of which has gone fully into the cause of explosions, and the evil effect that dry coal-dust produces in a mine where there is firedamp, showing clearly that it is not safe to use blasting-powder in a mine where firedamp is generated; but they all omitted to experiment sufficiently on the effect produced on a mine with a blown-out shot, where blasting-powder had been used, and the mine was full of dry coal-dust. Experiments recently made by Mr. Henry Hall, one of Her Majesty's Inspectors of Mines for the West Lancashire district, show conclusively that under no conditions should blasting-powder be allowed to be used in a coal-mine. In the event of a blown-out shot there is great probability of an explosion taking place where there is a