

ducing 1,000 tons daily, nearly one and three-quarter miles of development work having been accomplished since operations were commenced rather over a year ago. Besides the main entries which have been driven on the coal, a slope 500 feet in depth has been put down, and 50 rooms are in readiness for coal breaking directly the new tippie is completed, by the first of next month.

LEAD STATISTICS.

We have received from Mr. Julius Matton, of London, a compilation of lead statistics for the years 1901-1903, from which we extract the following tables:—

The world's production of pig lead (according to latest reports obtainable) in English tons:

	1901.	1902.	1903.
United States	260,059	259,780	266,691
Spain	166,792	174,936	172,521
Germany	118,862	136,703	141,558
Australia	95,000	104,000	93,500
Mexico	85,000	95,000	95,000
England	35,134	25,504	30,958
Italy	25,415	25,350	22,239
France	20,690	18,522	19,500
Belgium	18,444	18,650	20,015
Greece	17,502	13,840	13,075
Austria-Hungary	12,009	13,307	13,953
Turkey	2,200	3,622	7,493
Canada	10,300	8,335	8,121
Japan	4,000	4,000	4,000
Sweden	968	826	661
Russia	400	300	400
South America	2,125	225	150
Africa and East India	100	100	165

Total 875,000 903,000 910,000

Monthly average prices of "soft lead," 1903:

	London. per ton.	New York. per lb.
January	£11 6 2	cents 4.12 ¹ / ₄
February	11 14 2	4.12 ¹ / ₂
March	13 4 7	4.48
April	12 8 2	4.62
May	11 16 0	4.37 ¹ / ₂
June	11 8 9	4.26
July	11 7 7	4.21
August	11 2 11	4.23
September	11 3 4	4.41 ¹ / ₂
October	11 2 3	4.50
November	11 2 3	4.37
December	11 3 8	4.32 ¹ / ₂
For the year	11 11 8	4.33 ¹ / ₂

SURVEYING AND LEVELLING INSTRUMENTS.

THE third edition of this notable work, by William Ford Stanley, of the well known London firm of opticians and manufacturers of surveying and drawing instruments has reached us. The volume, which contains 19 chapters, and is well illustrated with drawings and diagrams, deals in the most comprehensive manner with a subject to which the author has devoted forty-seven years of his life in the practical study. The book was originally prepared in consequence of numerous queries that came before Mr. Stanley for reply relative to functional parts of surveying instruments, which bore most frequently reference to optical and magnetical subjects, to the qualities and action of spirit level tubes, and also occasionally to graduation and the qualities of clamp and tangent motions. These matters are fully discussed; the plans of construction of instruments in general use are selected for illustration, and certain constructions that are liable to failure are pointed out. In the third edition of the book note is taken of the recent improvements

made in surveying instruments, consequent upon the greater perfection of modern machinery and the use of aluminum alloys, by which the weight of many parts of instruments is reduced to one-third; and many of the latest types of instruments are here described for the first time.

MACHINERY CATALOGUES.

Mr. W. Stanley Lecky, Canadian representative of the well known British firm of Fraser & Chalmers, Limited, informs us that he has ready for distribution the following catalogues, any of which he will be pleased to supply on request:—General or Index Catalogue, 1904; Steam Boilers and Accessories, No. 203, 3rd ed.; Compressors, No. 202; Baling Tank, No. 206; Roasting, Smelting and Refining, No. 3, 5th ed.; The Frue Vanner; Stamp Mills and Accessories; Crushing Machinery; Winding Engines and Appliances Technical Notes—The Concentration of Ores by Oil; Screening and Concentration.

NEW DREDGER FOR INDIAN GOVERNMENT.

Messrs. Wm. Simons & Co., Ltd., Renfrew launched during the past month, complete with steam up ready for work, the twin screw light draft bucket ladder hopper dredger "Manar," built to the order of the Secretary of State for India.

The vessel is fitted with two sets of triple expansion surface condensing engines, supplied with steam from two steel boilers constructed for a working pressure of 160 lb. per square inch, and powerful manoeuvring winches are placed at bow and stern for manipulating the dredger when at work. Independent hoist gear is provided for controlling the bucket ladder. Ample accommodation is also provided for officers and crew.

The "Manar" has been constructed under the direction of Sir A. M. Rendel, K. C. I. E., Consulting Engineer for the Indian Government, under the direct superintendence of Mr. Seymour B. Tritton, M. Inst., C. E. London, assisted by Mr. Gaze, Resident Inspector.

A. C. ELECTRIC TRACTION FROM GAS POWER.

A somewhat unique departure from established methods in electric traction has recently been undertaken at Warren, Pa. The Warren & Jamestown Street Railway Company is equipping an A. C. single-phase electric railway system to operate between Warren, Pa., and Jamestown, N. Y., for which power will be supplied by gas engines operating upon natural gas. The equipment is now being constructed by the Westinghouse Companies at East Pittsburgh, Pa.

The power station will be located at Stoneham, Pa., two miles from Warren. The initial equipment will consist of two Westinghouse gas engines, each of 500 Brake Horse Power capacity. They will be of the horizontal single-crank double-acting type, direct connected to two 260 kw. Westinghouse generators furnishing current at voltage sufficient for direct use upon the high tension transmission line. The power equipment also comprises a 55 horse power Westinghouse gas engine for operating air compressor and exciter unit. Natural gas will be used, furnished by the local distributing company. In this district the gas has a calorific value of about 1,000 B.T.U. per cu. ft.

Transformer substations, five in number, will be located along the right of way. These will receive the high tension current from the transmission line and reduce the voltage to such an extent as to render it more suitable for use in single-phase motors. The present motive power equipment will comprise four quadruple sets of Westinghouse single-phase motors, each approximately 50 horse power capacity.

An interesting feature of the system is the arrangement for operating the alternating current motors upon the direct current trolley lines within the city limits of the termini.

The Warren & Jamestown Street Railway is not a newly