

Coal in China.

The extent and value of the coal seams recently discovered in Chinese territory are matters of great and growing interest to the coal and the iron industries of Europe. The prospect of establishing railways in that part of the world at no distant date opens up a future fraught with the weightiest consequences to the commercial welfare of the European States.

The fact that every additional piece of information enlarges the extent of the coal fields already discerned, or reveals the existence of others not previously known, leads to the belief that in China we have a future competitor likely to become formidable in more than one of our staple productions. Baron Richthofen has published in a Vienna review some interesting particulars of the most recent discoveries in the search for coal now being diligently carried by geologists of several nations in the Celestial Empire. The Baron has himself explored fourteen out of the nineteen provinces into which China is divided, so that his statements may be accepted as at least approximately true. It appears from his account that not one of the nineteen provinces is wholly without coal; but the chief deposits are in the southern half of Chan-Si, in the South of Hunan, and in the west of Chan-Ting. The seams of Chan-Si alone cover an area of not less than 600 square miles, and contain, according to the Baron's estimate, 730,000,000,000 tons. As the total annual consumption of the world is about 300,000,000 tons, we have here enough to supply the demand for 2,433 years. The quality is that of an excellent anthracite, superior to that of Pennsylvania. In the southeast of the same province there is another basin of scarcely less extent, containing coal of a more bituminous character. This coal is already being largely worked. The produce, which is obtained by a costly system of working, is sold at the pits at a price of which three shillings a ton is about the equivalent. Baron Richthofen is of opinion that when these coal riches have been rendered available by the construction of railways, European capital will be attracted to China, and iron works and factories of all kinds will spring up in the neighborhood of this cheap fuel; and as a consequence the industry of the Western nations will be still further restricted. He might have added that the progress of socialism in Europe will tend powerfully to hasten this state of things by destroying the security of prosperity, and driving capital to seek a safer investment abroad.—*Iron and Coal Trade Review.*

THE HISTORY AND STATISTICS OF AMERICAN WATER WORKS.

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811. LANSINGBURG, N. Y.

Lansingburg, Rensselaer county, New York, in lat. 42° 44' N., long. 73° 44' W., is on the Hudson river, nearly opposite the mouth of the Mohawk river. It is named after its founder, Abraham J. Lansing, who settled at this point in 1771. It was incorporated a village in 1790. The soil is generally clay and the surface is undulating, sloping gradually to the west. Water-works were built by the village in 1884, after plans of P. H. Baermann, C. E., taking the supply from Oil Mill creek, which has drains three square miles, the water of which is impounded by an earth dam forming a reservoir holding 80,000,000 gallons, 265 feet above the town. The water is conveyed by a 16-inch cast-iron pipe to another reservoir holding 15,000,000 gallons at 194 feet above the town. Distribution is by thirteen miles of cast-iron pipes of from 12 to 4 inches diameter, with 315 taps, two meters and 119

fire hydrants. Service pipes are of lead. The ordinary pressure in the village is eighty pounds. The works have cost \$160,000, which is the amount of the bonded debt at 4 per cent. interest. The cost of maintenance in 1885 was \$8,000, and the revenue from water rates, \$4,058.24. The daily consumption is not known. The population in 1880 was 7,432. The works are managed by five commissioners. John Brooks is the Superintendent.

WATER

THE Union Water-Works Company, Little Valley, N. Y. D. F. Rundell and others, incorporators.

THE Abilene Water Co., capital stock \$30,000, has been incorporated at Abilene, Texas.

THE Racine, Wis., Water Company; capital, \$5,000; incorporators, J. E. Dodge, F. M. Fish and J. W. Knight. New gas-works are to be constructed at Fort Edward, N. Y. Address, N. R. O'Connor.

THE Easton Water-Works Co., Easton, Md., has let the contracts for building the works. The cost will be about \$30,000.

THE Cobleskill Water-Works Company, Cobleskill, N. Y. Capital stock, \$25,000. Charles H. Shann and others, incorporators.

CORNING, N. Y., has authorized a system of sewerage. J. J. R. Croes, Consulting Engineer; H. C. Heermans, Construction Engineer. Partly separate system.

EAST ORANGE, N. J., has voted positively to build a system of sewerage. Some method of disposal other than turning into the streams of the neighborhood will be resorted to.

THE Clymer Water Company, West Indiana, and the Clymer Water Company, Indiana, Pa. Capital stock, \$10,000. Treasurer, Henry W. Wilson; Attorney, Geo. W. Hood, Indiana, Pa.

THE Russell Water Works Company has been incorporated at Russell, Kan., with a capital stock of \$50,000. The incorporators are William Blair, W. E. Banks, Thomas Acherman and others, all of Russell.

THE New York Health Board recently concluded analysis of artesian well water used to wash down beef in Chicago slaughter-houses, Swift & Co. and Armour & Co. It was declared unfit for contact with food.

THE City Council of Mitchell, Minn., has awarded the contract for a water-works reservoir, to be completed June 25. Three mains will be laid from the reservoir, furnishing fire protection for the entire town.

THE Palmer, Mass., Water Company at its annual meeting elected officers for the ensuing year: President, C. L. Goodhue; Treasurer, J. H. Gamwell; Clerk, C. K. Gamwell; Directors, James B. Shaw, F. B. Lawton, C. L. Goodhue, J. H. Gamwell and C. K. Gamwell.

CITIZENS of Waterloo, N. Y., propose to organize a water-works company to supply the village. Capital stock \$10,000. The source from which water is intended to be supplied is wells sunk in or near the village, if a supply from such source be found obtainable, or from Seneca lake.

THE Pulaski, N. Y., water commissioners, having accepted the offer of E. D. Smalley, the engineer of the Canastota water works, to make an estimate of the cost of water-works for this village, he has looked the ground over, and made maps and a plan to present to the commissioners before the coming election. It is estimated that the works will cost about \$20,000.

THE St. Louis Board of Public Improvements has appointed June 2d as the day for the opening of bids upon the work and erection of a new high-service engine at the water works. The board has also decided to establish the low-service extension from the Chain of Rocks and approved the plans for the work, and an ordinance was recommended which, if passed, will have the effect of giving the system a thorough test.

BOSTON, Mass.—The committee on drainage has made its first report on the report of the metropolitan commission. The bill provides that the State Board of Health shall have the general care of all inland waters, and may employ such engineers and clerks and other assistants as it may deem necessary; provided that no contracts or other acts which shall involve the payment of money from the treasury of the Commonwealth shall be made without an appropriation; it shall annually, on or before January 10, report to the General Court its doings in the preceding year, recommending legislation and suitable plans for such systems of main sewers as it may deem necessary for the pre-

servation of the public health; said board shall have authority to conduct experiments to determine the best practical methods of purification of drainage or refuse arising from manufacturing and other industrial establishments. It shall from time to time consult with and advise the authorities of cities and towns, or with corporations, firms or individuals, either already having, or intending to introduce, systems of water supply or sewerage, as to the most appropriate source of supply, the best practicable method of assuring the purity thereof or of disposing of their sewage. All such new corporations, or individuals, are hereby required to submit for its advice outlines of their proposed plans or schemes in relation to water supply and disposal of drainage and refuse. Said board shall bring to the notice of the attorney-general all instances which may come to its knowledge of omission to comply with existing laws respecting the pollution of water supply and inland waters, and shall annually report to the Legislature any specific cases not covered by the provisions of existing laws which in its opinion call for further legislation.

ROCKLAND, MASS.—Work has been begun upon the stand-pipe which is to supply the towns of Rockland and Abington. The pipe will be the largest in this section of the country, holding 360,000 gallons and weighing 1500 tons. It is to be made of steel. The water will be pumped through a 16-inch pipe from the Big Sandy pond in Pembroke, five miles distant. The water in the stand-pipe will be 230 feet above the surface of Big Sandy, and 120 feet above the highest point in Rockland. Twenty-two miles of pipe will be laid.

W. H. WHEELER, contractor, and T. J. Pursell, of Portsmouth, O., have an extensive ditch contract in Iroquois county, eastern Illinois. Their contract is for the construction of thirty miles of ditching to drain the farm lands: the ditch is to be 72 feet in width and from seven to nine feet deep. The contract, which was awarded by the State Drainage commissioners, calls for the removal of about 358,000 cubic yards of earth, and will amount to between \$40,000 and \$50,000. They will have two steam dredges at work, and it will take them about eight months to complete the contract. They will probably sub-let a portion of it.

ARTESIAN WELLS IN CENTRAL ASIA.—At the invitation and expense of General Annenkoff, the constructor of the railway to Merv, Herr Grote, with a staff of Russian assistants, has been conducting some successful experiments in artesian well boring along the course of the Transcasian line. The worst part of the new railway route to Central Asia is the section of thirty or forty miles inland of Port Michaelovsk, where the Caspian seems to have receded and left a belt of more or less arid sand. To convey water to the stations and watch-houses along this desert strip, General Annenkoff, it may be remembered, laid down an English pipe-line last autumn. Commencing here, Herr Grote succeeded in reaching water at different places at 70 feet, and subsequent investigations have demonstrated that it will be possible not only to furnish a supply sufficient for the railway, but also for purposes of cultivation.

It is well that this fact should be appreciated by those politicians and officers who overlook the important role that is being played by engineering in the race of empire expansion. Only a short time ago Mr. Charles Marvin stated that the competition between Russia and England was no longer a "conflict between the slow Russian camel of the Asiatic steppes and the swift English steamer, but between the rapid Russian locomotive and the slower English steamer." Yet, completely ignoring the extension by railway of the magnificent line of communication afforded by the Volga and Caspian, Lord Charles Beresford more recently advocated that England should still further handicap herself by resorting afresh to the roundabout Cape route.

In the columns of a military contemporary, again, there has been a controversy between General Kaye and others with reference to the difficulties Russia would encounter in marching from Herat to Candahar, which curiously illustrates the incapacity of officers of the old school to realize that services engineering can render to an enterprising foe. To General Kaye the occasional bits of wilderness lying between Herat and the river Helmund, constitute a tremendous obstacle, and he seems unable to conceive that a waterless march can have its rigors easily and rapidly mitigated by the use of pipe lines and artesian wells, as already employed in Central Asia, and the difficulty done away altogether by covering the barren expanse with a railway.

By establishing a series of artesian wells, and doubling and trebling the expanse of irrigation stretching from the Caspian to Penjdeh, Russia, will very soon secure for herself large local resources, and the effort she is making to do this should be a warning to those who forget what similar activity could achieve between Herat and the Helmund. We question whether in the Russian advance the engineer is not becoming a far more potent factor than the irrepressible Cossack.—*Engineering.*