

REVIEWS.

THE TECHNOLOGIST, OR INDUSTRIAL MONTHLY, FOR 1874.

The January number of this standard journal, issued by the Industrial Publication Company, 176 Broadway, New York, has reached us, and, as usual, it is filled with valuable and interesting information. The table of contents gives a list of nearly fifty important articles, not including mere current items of information, of which there are seven or eight columns. Of these articles nineteen are illustrated, the illustrations including two full-page engravings, printed in colors. In looking over its pages, one is struck with the clearness and simplicity which characterize the descriptions of new machines and processes; the earnestness and vigor of the editorials, and the spiciness of the news items. Those of our readers who are interested in industrial progress, ought by all means to examine this periodical, which may be obtained of any news agent, or direct from the publishers. It is the cheap industrial journal published in the United States, the subscription rate being only \$1.50 per year, or fifteen cents per single number, for a large, thirty-eight-page magazine.

POPULATION AND INDUSTRIES OF KANSAS.—EXTRACTS FROM THE ANNUAL REPORT OF THE KANSAS STATE BOARD OF AGRICULTURE, FOR 1873. By Alfred Gray, Secretary

Judging from these extracts, which in themselves form a large pamphlet of 111 pages, the original report must be an exhaustive blue-book of great importance. The first extract has reference to the census of the State, which was estimated by counting from four to six persons to each vote for Governor at the election in 1872. The result is believed to be reliable and gives a population of 610,863, showing a yearly percentage of gain for three successive years of 22.54. Statistical tables relating to the agricultural products follow, showing the number of acres under cultivation in each township and the average of each principal crop. Then follows a report on silk culture as conducted in Franklin County of that State. The number and value of the live stock in each county is also estimated and suggestive remarks on the subject are added. The report contains, also, directions to intending settlers as to obtaining Government lands and concludes with statements of business, of public interest, transacted during the year by the various railroad companies.

WATER LOCOMOTIVE.

This is a startling and apparently absurd idea, but a French civil engineer, M. A. Huet, advocates its possibility most strenuously, and, what is more, backs up his theory with most recondite and laborious mathematical demonstration. One may, however, prove almost anything by figures, so that any amount of theoretical demonstration does not advance it materially to practical accomplishment.

The idea is, briefly, that it is a mistake for ships to have to force their bulk through the water, meeting thereby the large opposing surface of water and a sliding friction over the whole of their immersed surface. This, M. Huet holds, is a great mistake as if we were to dismount our railway carriages from their wheels and drag them, like sledges, along the rails.

He boldly puts forth the theory that vessels should be mounted on rolling drums, that these drums should give principally the power of flotation, and that they should be driven round as paddles to move the ship forward. We should in this way have a floating locomotive mounted on its supporting wheels or rollers. The vessel would offer no resistance but a rolling one, to motion, and the whole of the supported weight of the ship would be used as useful pressure to give adhesive frictional effect to the rollers. In this way M. Huet affirms that a velocity equal to our trains might be attained at sea. This is certainly a prodigious leap in advance. We have by no means reached our limit of invention yet, at any rate.

It is rumored that rich gold findings are being made on Lake Winnipeg. Several parties are out prospecting.

PROGRESS OF TECHNICAL CHEMISTRY.

Amongst proofs of progress in the above department of applied science is the production of the Salts of Potassa. It was long ago foretold by Chemists that the Salts of Potassa would be obtained directly from the mineral kingdom, instead of indirectly through the ashes of terrestrial vegetation, but the prophecy was not fulfilled until 1861, when the commercial production of Potash fertilizers and Chloride of Potassium began at Stassfurt mine. The following year the mine of Leopoldshall, in the Duchy of Anhalt, was opened. The deposit at these places consists of beds of common salt, interstratified with small beds of Carnalite, the hydrated double Chloride of Potassium and of Magnesium, and Kieserite, the hydrated sulphate of Magnesia.

Beside these are found Kainite, the hydrated double-sulphate of Potassa and Magnesia, Chloride of magnesium, and Sylvine, the Chloride of Potassium, the latter merely in pocket. Existing distributed throughout the deposit are boracite, acid borate of magnesia, chloride of magnesium, tachhydrite, the hydrated double chloride of calcium and magnesium; anhydrite, the anhydrous sulphate of lime, and antracinite, the hydrated double sulphate of soda and magnesia; carnalite kainite and tachhydrite contain small quantities of bromides. In 1867 the yield of potassa salts in the mines was 3,350,000 centners, number of laboratories 16; in 1872, the yield had risen to 10,284,000 centners, and the numbers of laboratories had increased to 33. Eleven hundred miners and three thousand laborers were employed, and the population, only two thousand seven hundred in 1861, had become twelve thousand.

Regeneration of manganese is another of the results of the inventive talent of chemists. As is also the production of kerosene from lignite. The first attempt made in Germany to distil off the oleaginous products of bituminous coal resulted in failure, but more recently a sufficient measure of success has been realized to drive the products of American petroleum out of the markets of the little State of Saxony, and also out of those of the Kingdom of Saxony and of a portion of Austria. This success is ascribed to the employment of one variety of coal only, the lignite, and the adaptation of the process to that variety, instead of, as formerly, endeavouring to distil kerosene from all varieties including bituminous schist, boghead, &c., in similar apparatus. Indeed it would seem that but few of the lignites prove profitable, and these from quite restricted localities. The product may be estimated at 100,000 centners of paraffine, 300,000 centners of kerosene, and 90,000 centners of second quality paraffine. The latter is used in the manufacture of lubricating oils and illuminating gas, and is mixed with wax and stearine in candle making. For the same purpose the first quality of paraffine is used without admixture. It is also employed instead of butter in the beet sugar process, and instead of wax in the making of children's dolls, and the impregnation of the wood of matches.

Artificial madder dye also evidences the important advances making in technical chemistry. Madder, the colouring matter extracted from the plant of that name, the *Rubia tinctoria* of botanists, is largely produced in Germany and France, and an idea of the total value of the product may perhaps be found in the fact that in the French canton of Vaucluse alone, madder yields annually from 7 to 8 millions of thalers. The colour of the extract is due to alizarine, which can be obtained from it in red silky crystals, and this substance two German chemists, Graebe and Liebermann, were able to convert into anthracene, a hydrocarbon derived from asphalt. Before the year 1868, in which they made this discovery had expired, they were able to reverse the experiment and convert anthracene into alizarine. They thus became the founders of a new industry, the manufacture of artificial alizarine, which, since, 1870, has so extended itself, that there are from ten to twelve manufactories in Germany, and parties in England and France have begun the business. In 1872, the yield was 22,000 centners of artificial alizarine paste, valued at four millions of thalers. Gas tar contains about 5 per cent. of anthracene, and is sufficiently abundant to furnish all the alizarine demanded by the dye works. Although the natural madder red still competes with the artificial, yet the competition cannot last long, and it is probable that in two or three years the cultivation of madder will cease.—From the *Polytechnic (American) Bulletin*.