

Average amount of wash-water for period of eight months 3.45%

Table IV.—Average Cost of Operation.

Average cost of filtering 1,000 Imperial gallons during period of excessive turbidity 2.16 cents
 Average cost of filtering 1,000 Imperial gallons during period of normal turbidity 1.4 “
 Average cost of filtering 1,000 Imperial gallons during period of eight months 1.77 “

Table V.—Bacterial Removal.

Month.	Bacteria.		Efficiency. Per cent. removal.
	Raw water.	Filtered water.	
January, 1913	27.0	1.4	98.5
February	2.5	0.5	80.0
March	11,144.0	16.0	99.8
April	4,644.0	20.0	99.6
May	4,172.0	37.0	96.7
June	2,553.0	28.0	99.0
July	7,358.0	21.0	99.7
August	2,199.0	42.0	98.1

THE LINCOLN HIGHWAY.

Thirteen States will be traversed by the Lincoln Highway, the route of which has been definitely announced. They are New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Wyoming, Colorado, Utah, Nevada and California.

Starting in New York City, the Highway passes through Jersey City, Newark and Trenton to Philadelphia, then west to Pittsburg, through the north central section of Ohio, over to Fort Wayne and South Bend, skirts Chicago, enters Joliet, Rochelle, Sterling and other Illinois cities, reaches Iowa at Clinton and leaves at Council Bluffs, passes through Omaha, goes to Denver and north to Cheyenne, west through Green River and Evanston to Salt Lake City, finds its way into Nevada by way of Tippet's ranch, and after reaching Reno, goes to Lake Tahoe, California, finally ending on the Pacific seaboard at Oakland and San Francisco. The directors of the Association have endeavored to select a route of easy grades, yet combining the scenic splendors of the country.

Makers of carbon black at Wilsonburg, W. Va., obtain free power in a novel manner. The product is deposited from the flames of natural gas, and power was originally supplied by a steam boiler and engine. The gas issued at a pressure of 950 pounds from a well 3,000 feet deep. It was suggested that this pressure might be utilized, and accordingly the gas was led in place of steam to the engine, which was thus driven, and acted as a reducing valve, delivering the gas at low pressure to a discharge tank feeding the carbon buildings. The engine, requiring no attendant, continues to give uniform and satisfactory service.

The Canadian General Electric Company, Limited, have just acquired by purchase all the plant and assets of the Stratford Mill Building Company, at which plant in future will be manufactured not only the flour mill machinery heretofore manufactured by the Stratford Mill Building Company, but also the wider range of machinery and equipment as produced by the Allis-Chalmers Company. Mr. William Preston, who has been the president of the Stratford Mill Building Company, will now act as manager of the flour mill machinery department of the Canadian Allis-Chalmers Company.

BELT CONVEYERS.

By Reginald Trautschold, M.E.

(PART II.)

(Continued from page 480, Sept. 18th issue.)

THE operation that presents the greatest difficulty in any belt conveyer system, if wear and tear are to be kept at a minimum, is that of loading the conveyer, for it is at the instant that the load comes in contact with the conveyer belt that the main wear occurs and greatest depreciation of equipment takes place. Loading should always—when practicable—be accomplished through chutes discharging in the direction of conveyer travel, and it is in the design of these chutes that one of the greatest problems of an efficient installation is presented. The slope of the chute should be such that the velocity of the material as it leaves the chute is as nearly as possible the same as that at which the conveyer belt is running. The bottom of the chute should also be provided with an adjustable curved lip, conforming to the trough of the belt and turning upward sufficiently to throw its discharge forward in a plane approaching that of the conveyer belt, thus minimizing the shock of impact as the load strikes the belt and is carried forward by it. The loading chute should always be located slightly in advance of a troughing idler and should be provided with parallel skirt boards extending along the conveyer and parallel to the belt, an inch or so above it, for a distance equal to about twice the distance between troughing idlers—i.e., a troughing idler should be located just back of the chute, one not quite midway along the skirt boards, and one just before the load leaves the confines of the guides. These skirt boards should be separated by a space a few inches less than the width of the belt—less than the section of belt covered with load—and should advisably have triangular cleats attached to their inner sides for the section lying in the path of the material descending the chute—such cleats tend to throw the load towards the centre of the conveyer belt and thus minimize necessary rearrangement of load as it passes from between the skirt boards.

One drawback to what would otherwise be probably about the most efficient and economical mechanical conveying system that could be devised is that belt conveyers are limited as to the inclination at which they can be efficiently operated, necessitating considerable space if any considerable elevation is to be attained; that is, the height through which a load can be raised in a given distance. This limitation is governed to considerable extent by the angle of repose of the material conveyed—particularly the angle of repose of the material on the belt—for just as soon as the inclination of the conveyer is great enough to cause a slippage of the load on the belt disastrous wear occurs and depreciation more than offsets any possible gain of simplicity and convenience of system, etc. The tendency towards agitation of load by oscillation of the loaded conveyer belt as it passes over troughing idlers also augments the harm of excessive inclination of conveyer, so that, with the average class of material handled on such systems, it is dangerous to have the inclination of the conveyer from the horizontal greatly exceed 21 or 22 degrees—equivalent to a rise of about 36 to 37 feet per 100 feet of conveyer. With this one limitation and, of course, the disadvantage that belt conveyers cannot turn corners and must be run, therefore, in one general direc-