

gine is of 2,000 horse-power and runs at a speed of 60 revolutions per minute, and each delivers 32,000 cubic feet of free air per minute at a normal pressure of 18 pounds per square inch. The gas engines were built by the Allis-Chalmers Company and the Westinghouse Machine Company. When the plant of sixteen furnaces is completed there will be no less than thirty-two of these engines with a total horse-power of 64,000.

GAS-DRIVEN ELECTRIC POWER PLANT.

The most interesting feature of the whole establishment at Gary is the huge power house, 105 feet wide and 966 feet long, which provides the electric current for one-half of the complete plant. It is the largest gas-power plant in the world and contains seventeen horizontal twin-tandem double-acting Allis-Chalmers gas engines of 3,500 horse-power, each directly connected to a 2,500-kilowatt generator, fifteen of which are 6,600-volt alternating-current machines and the other two 250-volt direct-current machines. These huge engines are the largest ever constructed for the use of blast-furnace gas. Their cylinders are 44 inches in diameter by 54 inches stroke. Each twin unit carries on a 30-inch shaft a 23-foot 100-ton fly-wheel. The plant also contains two Curtis steam turbine generators for starting and for auxiliary service in case of necessity. Additional gas-electric engines will be provided in two separate buildings, aggregating 60,000 horse-power. Thus the ultimate capacity of the electric power plant will be 120,000 horse-power.

Limitations of space prevent any more detailed description of the many features of interest which are found at Gary. The combined steel plant and city of Gary are the most noticeable instance in America of the rapidity with which a large area of apparently valueless land may, at comparatively short notice, be transformed into a huge center of industrial activity. Not only is about one-half of the plant in operation, but the adjoining city already has a population of 15,000 souls. Four years ago the site was a wind-blown waste of sand on the shores of Lake Michigan.

THE HANDLING AND STORAGE OF OUR HUGE GRAIN CROP.

(Continued from page 445.)

els per hour to cars or boats. It has a rated storage capacity of 2,500,000 bushels; and it may be mentioned here that the elevators of the Armour Company alone are capable of storing 13,500,000 bushels a day. This elevator is constructed entirely of wood, and the square bins, which range in size from 500 to 7,000 bushels capacity, are built of spruce planks, 2 x 4 inches at the top of the bin and 2 x 10 inches at the bottom, laid lengthwise upon each other, and each spiked to the layer below. The whole interior of the main body of the building is built up of a perfect honey-comb of these bins. The bottoms are tapered and finished in spouts to insure a free delivery of the grain in unloading.

The more modern elevators, such, for instance, as those designed by the Metcalf Company and shown in our illustrations, are built of reinforced concrete, the bins being circular in form; are of great strength, and of thoroughly fire-proof construction. The square tower-like building contains the elevating, cleaning, weighing, and conveying machinery. At about the middle height of this building horizontal covered passageways serve to contain conveyor belts, by which the cleaned and weighed grain is transferred to the top of the bins and loaded into the particular bin desired.

The annual shipment of grain to Europe is about 150,000,000 bushels, and as our five thousand bushels from the Dakota farm are destined to cross the ocean, we will trace its course from the Chicago elevator in which it is reposing to its final stowage in the hold of an ocean cargo steamer. At the end of its railway journey to Chicago, the grain passes through similar experiences to those it

(Continued on page 452.)

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NEW BOOKS, ETC.

NELSON'S PERPETUAL LOOSE LEAF ENCYCLOPEDIA. Editor in Chief, John H. Finley, LL.D., President of the College of the City of New York. Associate Editors, William Peterson, LL.D., C.M.G., Principal of McGill University, Montreal, Canada, and George Sandeman, M.A., Edinburgh, Scotland. New York: Thomas Nelson & Sons, 1909. Twelve royal octavo loose-leaf volumes, illustrated with colored plates, plans, and engravings.

In these days, when history is making so rapidly as to call for daily and even hourly editions of newspapers, and science is advancing at such a pace that new periodicals are constantly cropping up to announce developments in specialized branches, the mere task of collecting this mass of material, condensing it, classifying it, sifting out the errors, and finally putting it in such a form as to be of value as a record for the well informed man, is in itself stupendous; but it is disheartening to know, as all makers of encyclopedias do know, that the very day after publication, the work is beginning to grow old and out of date. The mass of information which is crammed between the covers of an encyclopedia is living material, matter that is as alive as the age in which we live. Hence, it is inconstant. Part of it is aging and dying, much of it is developing and expanding and is giving birth to new ideas, and the effort to keep all this material in alphabetical order and keep it abreast of the times has always been a serious problem, which the publication of annual volumes has not solved for the reason that the additional matter published contains only the new facts, while leaving the old and worn-out ideas in the original encyclopedia, where they are liable to mislead the reader. A new departure in this line has just been made in the Nelson Loose-Leaf Encyclopedia, which is so arranged that any facts which may become out of date can be taken out of the very heart of the volume and replaced with new material without in the least affecting the alphabetical order or destroying the arrangement as a book of ready reference. The loose-leaf binding is ingeniously contrived to give the volume the appearance of being permanently bound. Nelson's Encyclopedia was first prepared in permanent binding in 1907. When a year later the loose-leaf edition was published, it was found necessary to make 600 changes in order to bring the encyclopedia up to date. A large staff of editors is employed to keep the present encyclopedia up to the hour, and from time to time new leaves are issued and sent to the subscribers, furnishing them with authoritative information on current topics, and informing them where to insert the matter in the encyclopedia. As an illustration of the up-to-dateness of this system, a set of leaves was issued last month on the death of Governor Johnson and on the Cook-Pearcy controversy. These leaves are temporary, and in March of each year a complete set of leaves of about 500 will be sent to each subscriber to add to his encyclopedia and to replace matter that is out of date. Formerly, a man could obtain better information on the occurrences of the previous decade than those of the current year. With the advent of Nelson's Encyclopedia such is no longer the case. The subjects covered in this work are many, probably a greater variety than is to be found in any other encyclopedia of the same number of volumes. The articles are, therefore, short and concise. The aim of the encyclopedia appears to be to provide general information and to avoid technical language as far as possible, to furnish not merely a record of events, but to give instructions wherever possible that will be of practical value to the reader. Take, for example, the entry "Cycle." Not only is a brief history of the bicycle given, but also instructions to the prospective buyer of a wheel which will enable him to choose the best machine, and hints on the care of a wheel. This strikes us as a rather unique feature, but one that will doubtless be appreciated by many subscribers to this work. The articles are a trifle more brief than one would like to have them, but they are accompanied by carefully selected bibliographies for those who desire to study the subject further. The encyclopedia appears to be an exceptionally good gazetteer, containing many geographical names that do not appear in other works of this kind. A pronouncing dictionary is placed at the end of each volume, so that if a person is in doubt as to the pronunciation of a certain word he can look it up very quickly and without having to wade through the body of the book, where his attention is liable to be diverted by the many interesting subjects which the volume contains.

WILD FLOWERS AND TREES OF COLORADO. By Francis Ramaley, Ph.D. Boulder, Colo.: University Book Store, 1909. 8vo.; 78 pp.

This little volume is intended as an introduction to Colorado plants. It is not a result of book study, but of many summers' work on Alpine heights and on the plains. It will prove of interest to all students of botany, particularly if they live in the State of Colorado.

TABLES AND OTHER DATA FOR ENGINEERS AND OTHER BUSINESS MEN. By Charles B. Ferris, B.S. Knoxville, Tenn.: Published by the University Press. Price, 50 cents.