

SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class matter. Copyrighted, 1893, by Munn & Co.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. LXX.—No. 15.
ESTABLISHED 1845.

NEW YORK, OCTOBER 7, 1893.

\$3.00 A YEAR.
WEEKLY.

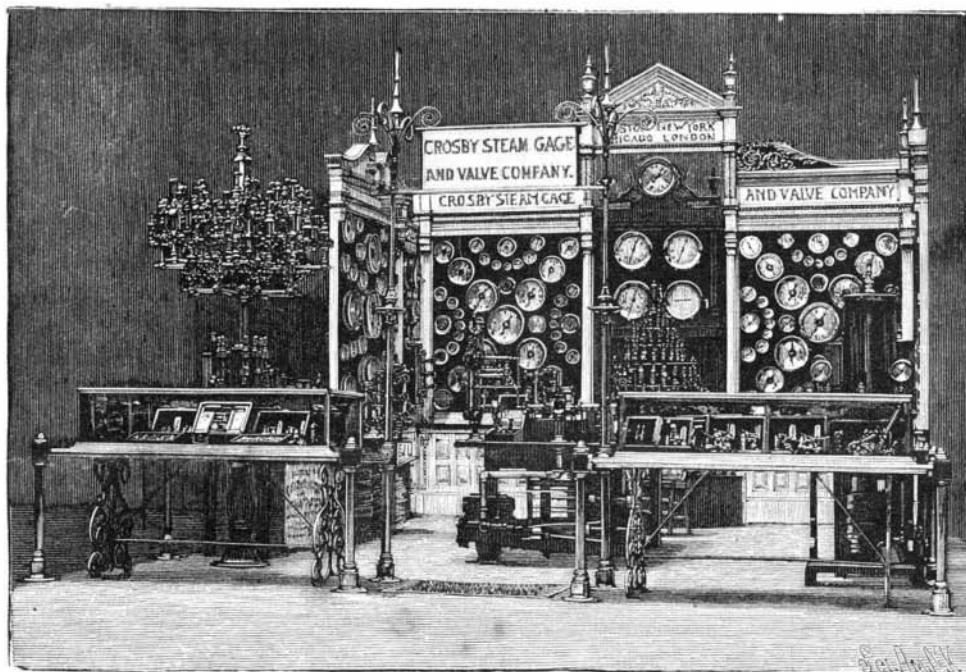
CROSBY STEAM GAUGE AND VALVE CO.'S EXHIBIT.

Beauty of design, excellence of workmanship, and tasteful arrangement are the striking characteristics of the exhibit of the Crosby Steam Gauge and Valve Company at the World's Columbian Exposition.

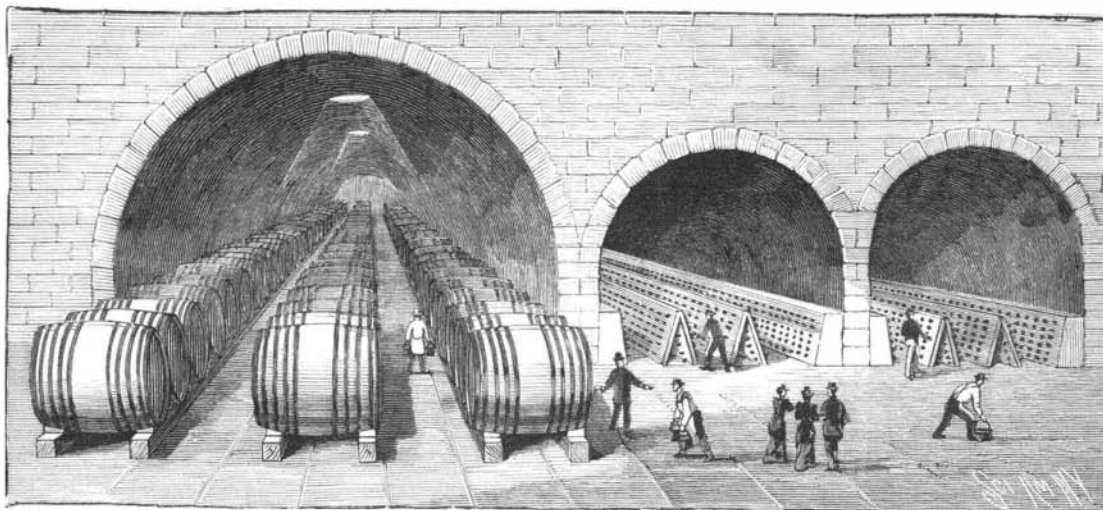
These qualities are evident to the most casual observer and appeal with especial force to the engineer or skilled mechanic, and have from the commencement of the Fair attracted a large and well-deserved share of attention from visitors.

The exhibit contains many important specialties in the line of steam appliances, for which superior merits are claimed, among which may be mentioned the Crosby improved steam gauge, the Crosby pop safety valve and water relief valve, the Meady muffled pop safety valve, the Crosby steam engine indicator, the single bell chime whistle, Bosworth's pump governor and feed-water regulator, Johnstone's blow-off valve, patent gauge tester, safe water gauge, etc.

The hollow double spring in the Crosby improved steam gauge is so shaped and arranged, and the mechanism such, that the vertical as well as the horizontal movement of its free ends is fully utilized; by which ample movement of the pointer is obtained with only half the movement ordinarily required of the spring; consequently a spring 100 per cent stronger than usual can be employed. This constitutes the special feature of the Crosby improved steam gauge and is a very important one, as the use of a stiff spring insures steadiness of the pointer; and as



THE CROSBY STEAM GAUGE AND VALVE CO. EXHIBIT.



UNDERGROUND VAULTS OF THE LAKE KEUKA WINE CO.

only a small movement of the spring is required, a tendency to "set" from getting overheated is practically eliminated. This point of superiority is what has given the Crosby gauge the high reputation which it has held since its introduction, nearly twenty years ago.

The Crosby pop safety valve for locomotive, stationary, marine, portable, and farm engine boilers is a perfect protection from excess of steam pressure. These valves, which are automatic in action, can be relied upon to open at the right time, give ample relief, and close with but slight loss of pressure.

The Crosby water relief valve is for the purpose of relieving all overpressure of water in steam pumps, fire engines, hydrants, hose, and wherever an automatic valve is needed to relieve overpressure of water and prevent damage, which, in the absence of such safety device, would be sure to occur.

The Crosby steam engine indicator is designed to meet the requirements of modern steam engineering practice. The high-speed system of construction in steam engines which greatly prevails to-day renders the old type of indicator well nigh useless. Many details which gave little trouble at low speeds cause errors under the present requirements which seriously affect the results. Every part is perfectly adapted to its particular function, and also to its relation to all the other parts, in size, proportion, and material, and finer results can be obtained with it than with any other instrument. Its superior qualities were duly recognized at the Paris Exposition in 1889, where it received the highest award, a gold

medal, and the identical instrument which received that honor is a part of this exhibit.

The Bosworth feedwater regulator is an apparatus for maintaining an even water line in a steam boiler. This it does with greater precision and certainty than is possible for any fireman or attendant to do. The valves are controlled automatically by



EXHIBIT OF THE LAKE KEUKA WINE CO.



SAFETY STEAM APPLIANCES, ETC.—J. E. LONERGAN & CO., OF PHILADELPHIA.

THE WORLD'S COLUMBIAN EXHIBITION—ENGINEERING SPECIALTIES—THE LAKE KEUKA WINE CO.

positive forces, acting independently of each other, and adjustable within wide ranges of power.

The Johnstone blow-off valve can be moved entirely from its seat, so that there is a straight way opening through the valve body. The sliding of the valve under pressure maintains its surfaces and its seat in close contact, and if any scale or other foreign matter intervenes, tending to impair such contact, it is destroyed or displaced by attrition of parts when so operated.

The patent gauge tester is a very simple and accurate machine for testing gauges of all kinds, from the lowest to the highest pressure. These machines are made and tested with extreme care and nicety, and are preferable to a mercury column in every point of comparison. They are a necessity in all establishments where many pressure gauges are used.

The original single bell chime whistle is manufactured only by this company. This whistle has three compartments in one cylindrical bell, giving three tones which harmoniously blend into one and produce an agreeable, far-reaching sound.

In this exhibit may be seen also all the various gauges made for special uses, such as hydraulic, for hydraulic presses; vacuum; compound, showing both pressure and vacuum; combination, for waterworks, showing both pressure of water and the height of column; ammonia, for use in refrigerating or ice manufacturing plants; chemical, for use on chemical engines; ordnance, for use on pneumatic gun carriages for measuring the high pressure suddenly produced in the recoil chamber when the gun is discharged; gas governor, to regulate the flow of gas to a vulcanizer or other vessel or boiler; pyrometer, to show both the pressure and temperature of the steam; duplex air brake, for showing both the pressure on the train and in the reservoir; altitude, for showing both the pressure of steam and the height of water in the tank or reservoir in hot water heaters; standard test gauge; engine register or counter, engine room clock, etc.

The exhibit comprises many other articles not specially mentioned, either of a special or staple character, all of which are manufactured or controlled by this company, and in all of which good construction and nice adaptation to their respective uses are apparent to the trained eye and sense.

The main office and works of the company are at Boston, Mass., and the branches in New York, Chicago, and London, England.

LUBRICATORS AND SAFETY STEAM APPLIANCES AT THE FAIR.

The exhibit of J. E. Lonergan & Co., of 211 Race Street, Philadelphia, in Machinery Hall, presents a fine display of self-oilers and steam cylinder lubricators, grease cups and patent safety steam appliances for railroads, machinists, and mill use, etc. The firm are owners and manufacturers of Lynde's patent government regulation pop safety valves for marine, stationary, locomotive, and all steam boilers; also Lonergan's patent adjustable sight-feed oil cup, and Lonergan's cylinder sight-feed attachment. A new automatic crank pin oil cup is shown, which is perfectly adjustable to feed light or heavy oil, and feeds only when crank is in motion, stopping absolutely when crank is not moving. The display with the above named articles also includes a large variety of goods, all of their own manufacture, such as injectors, steam engine governors, gauge and cylinder cocks, steam and vacuum gauges, steam traps, low water alarms, damper regulators, etc. An illustrated descriptive pamphlet of these goods will be sent to applicants.

THE LAKE KEUKA WINE COMPANY EXHIBIT.

Among our first page illustrations is one representing the exhibit of the Lake Keuka Wine Company at the World's Fair, while another picture presents a view in the still wine and champagne vaults of the same company at the place where the wine is made, on Lake Keuka, Steuben County, N. Y. The grapes grown on the shores of this lake have long had the highest reputation for wine-making purposes, in this respect standing on equality with those produced in the most favored localities of France and Germany. To this is to be attributed principally the prosperity and extent of the wine-making industry of Steuben County, a business which has been developing for the past thirty years.

The Lake Keuka Wine Company, with headquarters at Hammondsport, N. Y., at head of the lake, has long had an enviable reputation for their still wines, in barrels, kegs, or bottled, and their special brand of champagne, "Keuka Extra Dry." The absolute purity of their wines can always be depended upon, and their port wines made from black grapes, including the Concord, Clinton, Isabella, Oporto, etc., have a fine, high color, which comes entirely from the grapes themselves, leaving no sediment or deposit in the bottom of the bottle, as is so often found in compounded wines. Their sherris, their St. Julien claret, the dry and sweet Catawbas, and other wines and brandies made by them, all alike have this characteristic purity. Their champagne is made according to the French process of fermentation in the bottle.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico. \$3 00
One copy, six months, for the U. S., Canada or Mexico. 1 50
One copy, one year, to any foreign country belonging to Postal Union. 4 00
Remit by postal or express money order, or by bank draft or check.
MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U. S., Canada or Mexico. \$6.00 a year to foreign countries belonging to the Postal Union. Single copies, 10 cents. Sold by all newsdealers throughout the country. See prospectus last page. (Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, to one address in U. S., Canada or Mexico, on receipt of seven dollars. To foreign countries within Postal Union, eight dollars and fifty cents a year.

Building Edition.

THE ARCHITECTS AND BUILDERS EDITION OF THE SCIENTIFIC AMERICAN is a large and splendid illustrated periodical, issued monthly, containing floor plans, perspective views, and sheets of constructive details, pertaining to modern architecture. Each number is illustrated with beautiful plates, showing desirable dwellings, public buildings and architectural work in great variety. To builders and all who contemplate building this work is invaluable. Has the largest circulation of any architectural publication in the world.

Single copies 25 cents. By mail, to any part of the United States, Canada or Mexico, \$2.50 a year. To foreign Postal Union countries, \$3.00 a year. Combined rate for BUILDING EDITION with SCIENTIFIC AMERICAN, to one address, \$5.00 a year. To foreign Postal Union countries, \$6.50 a year. Combined rate for BUILDING EDITION, SCIENTIFIC AMERICAN and SUPPLEMENT, \$9.00 a year. To foreign Postal Union countries, \$11.00 a year.

Spanish Edition of the Scientific American.

LA AMERICA CIENTIFICA E INDUSTRIAL (Spanish trade edition of the SCIENTIFIC AMERICAN) is published monthly, uniform in size and typography with the SCIENTIFIC AMERICAN. Every number of La America is profusely illustrated. It is the finest scientific, industrial trade paper printed in the Spanish language. It circulates throughout Cuba, the West Indies, Mexico Central and South America, Spain and Spanish possessions—wherever the Spanish language is spoken. \$3.00 a year, post paid to any part of the world. Single copies 25 cents. See prospectus.

MUNN & CO., Publishers, 361 Broadway, New York.

The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO. Readers are specially requested to notify the publishers in case of any failure, delay, or irregularity in receipt of papers.

NEW YORK, SATURDAY, OCTOBER 7, 1893.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agricultural inventions, Fire extinguishment, and others with their respective page numbers.

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 927.

For the Week Ending October 7, 1893.

Price 10 cents. For sale by all newsdealers.

Detailed table of contents for the supplement, listing sections like BIOGRAPHY, CIVIL ENGINEERING, COLUMBIAN EXPOSITION, etc., with page numbers.

PROTECTION AGAINST TRAIN ROBBERS.

One of our correspondents suggests the use of electricity as an auxiliary to Winchester and shot guns, for protection of express cars and the locomotive against train robbers. This might prove effectual if the current could be brought under control so as to avoid killing or injuring friends as well as foes. This suggestion seems to be a very good one and is worthy the attention of electrical inventors.

We make a further suggestion of the use of hot water from the locomotive for the protection of the engineer and fireman, of baggage and express men. By means of suitably arranged jets under control of the engineer, fireman, baggageman or expressman, without doubt a very warm welcome could be given to train robbers. No doubt some arrangement of pipes and valves and jets could be devised which could thoroughly protect the engineer and fireman and the several baggage or express cars.

THE BROOKLYN INSTITUTE.

The Brooklyn Institute of Arts and Sciences is a collection of societies composed of people interested in various branches of art and science. Under the able directorship of Prof. Franklin W. Hooper, the institution has risen from a small and struggling handful of persons to an association numbering over 2,700 members. For the annual dues of \$5, each member receives tickets to more than four hundred lectures, each ticket admitting two persons to the evening lectures and one to the afternoon. There is something for every taste, and the majority of the lectures have crowded audiences. It is impossible to estimate the educative force of such an institution, which is in fact a university for the people. In addition to the lectures, the institute maintains an art and architectural school, with summer art schools in the Adirondacks and in the Shinnecock Hills of Long Island; a biological laboratory is also maintained in summer at Cold Spring Harbor, Long Island. The Legislature of the State of New York has empowered the city of Brooklyn to expend \$300,000 on a museum building near the park. This building will be leased to the Brooklyn Institute at a nominal rent, to house its collections and afford a meeting place.

A SUGGESTED SCHOOL OF FIRE EXTINGUISHMENT.

Mr. Simon Brentano delivered a very able paper on "A School of Fire Extinguishment" at the twenty-first annual meeting of the National Association of Fire Engineers, held at Milwaukee, August 22 to 25, 1893. According to the author, the settlement of this country has been followed by fires of unparalleled magnitude, which may be regarded as a natural consequence of the rapid growth of the country. Proper building laws either do not exist or are disobeyed; furthermore, the rapid accumulation and concentration of values is not usually followed by a corresponding increase in the equipment and personnel of the fire department. It is conceded that fire extinguishment is accomplished as much by mental as by brute force. It is a popular belief that every man who is able-bodied is fit to fight fire, but this is erroneous. In our great cities fire extinguishment is taken up in many cases as a last hope, and as a recompense for political support. It is very unfortunate that in most cities the office of chief engineer is looked upon as an important center for partisan purposes and political influence. To the victors belong the spoils, and every change of municipal government sees the removal of the head of the department, and frequently of many of the subordinates. We have in mind a certain Eastern city where the fire chief has been in the position for years, although most of his time is spent in amusement away from the city. Removals from office in the fire department, whether of chief or fireman, should only be made for incompetency, or where there is every reason to believe that the service will be improved. The status of the volunteer fireman is not satisfactory. Too many men are enrolled as members of a volunteer fire company solely to escape local taxation, jury duty, or both; and who avoid active service by the payment of a nominal fine. A State law should be framed defining the position of the volunteer fireman, his qualifications for enrollment, and to provide severe penalties for non-attendance at fires. A law should also be passed providing for an annual State inspection of apparatus, etc.

What we need is a school for fire extinguishment, where systematic training can be given in the science and methods. Such a school would dignify a calling until it reaches the stage of a profession, and would render life and property more secure. The firemen of the United States are, without doubt, the best in the world, but there is still abundant room for improvement.

CRIMINALS are usually of weak physical organization. In 1885, 67 per cent of the men in French prisons and 60 per cent of the women were sent to the hospital at some time during incarceration.