

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT No. 261 BROADWAY, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year postage included... \$3 20 One copy, six months postage included... 1 60

Clubs.—One extra copy of THE SCIENTIFIC AMERICAN will be supplied gratis for every club of five subscribers at \$3.20 each; additional copies at same proportionate rate. Postage prepaid.

Remit by postal order. Address MUNN & CO., 261 Broadway, corner of Warren 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, postage paid, to subscribers. Single copies, 10 cents. Sold by all news dealers throughout the country.

Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year postage free, on receipt of seven dollars. Both papers to one address or different addresses as desired.

The safest way to remit is by draft, postal order, or registered letter. Address MUNN & CO., 261 Broadway, corner of Warren street, New York.

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number contains about one hundred large quarto pages, profusely illustrated, embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information; (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circulation in all commercial places throughout the world. Address MUNN & CO., 261 Broadway, corner of Warren street, New York.

NEW YORK, SATURDAY, OCTOBER 27, 1883.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agricultural inventions, Another balloon experiment, Beef tea, Science of, etc., with corresponding page numbers.

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 408,

For the Week ending October 27, 1883.

Price 10 cents. For sale by all newsdealers.

Table listing sections I through VIII, including CHEMISTRY, ENGINEERING AND MECHANICS, TECHNOLOGY, ELECTRICITY, GEOLOGY, NATURAL HISTORY, MEDICINE AND HYGIENE, and MISCELLANEOUS, with page numbers.

SUCCESSFUL TREATMENT OF CHOLERA.

The rapidity with which this dread disease accomplishes its work renders any treatment most acceptable which is likely to prove successful, and hence the value of the recent communication of Dr. John Chapman to the Journal de Medecine, of Paris. Believing "that the proximate cause of all the phenomena of cholera, before the stage of reaction, is hyperæmia (active sanguineous congestion), with consequent excessive action, of the spinal cord and of the ganglionic or sympathetic nervous system," the characteristic features of the doctor's treatment consisted in the application of heat to the general surface of the body as persistently as possible, and, simultaneously, the application of cold by means of a spinal ice bag along the whole of the spinal column which is coextensive with the spinal cord, and that part only, during the presence of vomiting, purging, cramps, or algidity. After the symptoms have been subdued and reaction established, the reaction is controlled, if it becomes necessary, by the application of heat along some part or the whole of the spine.

At Southampton, in 1865, five patients out of seven recovered under this treatment, and of the two fatal cases one was an habitual drunkard and the other a woman aged 73, and who had been living at the starvation point up to the time she was attacked. Each case presented in a decided form the cardinal symptoms of cholera, namely, vomiting, purging, cramps, and excessive cold of the surface of the body.

With this treatment 28 per cent proved fatal, and with the ordinary methods 62 per cent proved fatal. The variations of temperature were from not lower than 32° Fah. to not, necessarily, higher than 120°.

FUSIBLE SAFETY BOILER PLUGS.

These handy contrivances are in use generally, their office being to give notice of lowness of water that may be dangerous. They are usually made of "composition"—brass—quite hard, and have a drilled hole from end to end, the entire length being sufficient to pass through the shell of the boiler and project far enough beyond the inside surface to be above the sediment or scale. The lower end is formed into a bolt head, and the shank is threaded and is screwed into a tapped hole over the fire-box, in the crown sheet. The Locomotive sustains the rule of the United States Steamboat Inspection service as to the fusible filling, which shall be of pure Banca tin.

To this filling there may be objections, and possibly objections may be found to any fusible composition. It is possible that the "life" of easily fusible metals is destroyed under certain circumstances. At all events, it can be readily substantiated by facts that easily fusible plugs have refused to act under the most exacting circumstances after having been in use two years—sometimes less.

There is a remedy in removing and refilling the safety plug once in six months or once a year. But perhaps a better method would be to discard the use of brass—composition—and substitute wrought iron, of a similar character to that of the boiler plate. Tin is the core to be fused. It is surrounded by brass, a compound of which tin is an important component. With the action of heat there may be a chemical action that destroys or impairs the fusibility of the tin; experience seems to point this way.

The recommendation of the Locomotive that the core for receiving the fusible filling should be tapered from the inside of the boiler to the outside of the plug, the larger diameter being inside the boiler, is a reasonable one, and will commend itself to engineers.

PREPARING FOR THE ICE CROP.

At this time of the year many of our farmers turn their attention to making preparations for gathering their annual crop of ice. The plans for building ice houses differ widely in the various sections of the country, and in many instances are controlled by the wants and financial ability of the builder. The double walled, with the space filled with sand or sawdust; the solid thick wall of brick or masonry; the two walls, each only a single brick thick, with an intervening air space; those on the surface, those half below, and those completely buried with the exception of the roof—all these and many more find strong advocates. In most of the cases the houses are erected by one who follows his own free will, aiming to suit his own convenience, taste, and ideas of architecture.

But it would be well to pay more attention to the pond or lake from which the ice is to be taken than is generally done. The fact that water will not, by freezing, free itself from impurities which endanger health is being widely recognized, and a close examination of the pond itself and of the land that drains into it will certainly result in much benefit and may prevent disease. If the ice is to be taken from still water, the decaying vegetable matter at the bottom should be removed, especially from under the part to be cut; and if the water has a current it should be removed for a considerable distance above, so that the gases will not be carried down to the place of cutting. The gases resulting from decomposition partly escape, but much remains and is liable to rise at any time; besides, the chemical action is not wholly stopped by the cold, but continues to a certain extent all winter. The ascending bubbles are caught and imprisoned in the ice, their foulness remaining with them until set free in the pitcher of water during the following summer. Well authenticated cases of sickness have been caused by

ice water, the ice having been taken from ponds where incoming water flowed over beds of decaying sawdust.

That the drainage from barnyards is likely to prove harmful is self-apparent, and it is hardly necessary to state that it should be kept out of the ice pond, yet there are many barns located directly on the bank, near the very edge. Because in times past the gantlet has been successfully run is a poor excuse for still inviting the danger. The washing from a pigsty is undoubtedly the worst of the kind, and it should never be so situated that any part of its filth can by any possible path find its way into a body of water used for drinking purposes during either the summer or winter. The habit of placing vaults on the banks of a small stream cannot be too strongly condemned, and although they may be below the spot from which water or ice is taken, and so save the owner, they menace his neighbor, who may be many miles down stream. If quite near the pond the land upon which they are built should be examined, lest the contents find entrance through the soil. The germs of disease are liable to be transmitted from them.

It is always a safe rule to discard ice from water that cattle refuse to drink. But this test is by no means sufficient, as the clearest and most sparkling water may have an enemy to health lurking within it. What is better is a critical examination of all possible sources of contamination and the effectual barring out of those likely to prove objectionable. This search should not only cover the immediate vicinity of the pond, but should extend for some distance up each stream emptying into it.

WAGES IN FRANCE AND GERMANY.

An article furnishing some valuable information about the wages paid in the different trades in Paris recently appeared in the Revue des Deux Mondes. In that gay capital, strikes are the luxury of well paid workmen, as this means of improving their condition is distrusted by those who live from hand to mouth. Apprentices in the jewelry and silversmith trade, as soon as they begin to work on their own account, receive 4s. a day; experienced workmen from 12s. to 24s. per day. Type setters get from 6s. to 12s. per day, and pressmen generally something short of this. Wood engravers vary from 6s. to 12s., but those who rank as artists earn from 12s. to 24s. In the building trade there is, practically, an average price paid by all contractors.

The city is the great employer of skilled labor of this kind, and pays stonecutters 10s. for 12 hours' work in summer, and 8s. for 8 hours' work in winter. Masons receive 6s. in summer and 5s. in winter. Carpenters get 7s. in summer and 5s. in winter; and tinsmiths, marble masons, painters, and glaziers about the same, with higher rates for those engaged in artistic branches, such as fresco and other decorations. Wages have advanced from 25 to 60 per cent., owing to the good example set by the city. Wood carvers get from 10s. to 12s. per day, upholsterers the same, and German and Italian workmen on interior decoration from 2s. 6d. to 4s. Machinists earn from 4s. up, according to employment and ability. The ordinary day laborer, in all trades, gets from 2s. 6d. to 4s. a day, and foreigners who arrive by shoals manage to save something to take home.

The number of regular workmen in Paris is estimated at 200,000, those living by occasional jobs number 75,000, and the beggars and vagabonds 15,000. It is estimated that 74 per cent. of the working population earn 4s. per day, 22 per cent. earn from 3s. to 4s., while 4 per cent. earn less than 3s. So prevalent are strikes in Paris that there are, on the lists of those receiving charity, five times as many mechanics of the best paying trades than those who receive the least remuneration. In the same trades women receive from 20 to 40 per cent. less than men, and in flower making, embroidering, dress-making, and the like, there is a dull season to tide over, for which they must save enough.

Many industries pay women only 2s. a day, due largely to competition in all kinds of sewing in prisons, convents, and charities. There are nearly twice as many women registered as recipients of charity as men, the total being upward of 40,000 women, of whom 5,000 are day workers, 2,298 servants, 1,500 sewing women, 1,200 dressmakers.

In Germany the average weekly wages, the working day being 12 hours all through the week, paid to Berlin stone-masons vary from 15 to 28 marks (a mark is about 25 cents of our money); to turners about 20 marks; gold and silver artificers, according to the class of work upon which they are employed, from 12 to 30 marks; beltmakers, workmen in foundries, 12 to 18 marks; locksmiths, 15 marks; smiths, 15 to 24 marks; workmen in machine factories, from 17 to 31 marks; watchmakers and soapmakers, 18 marks; tanners, 15 to 18 marks, linen and calico weavers from 7 to 18 marks; cloth weavers from 10 to 20 marks; carpetmakers, 15 marks; joiners and kindred trades, 15 marks; butchers, 12 to 20 marks; brewers, 21 to 31 marks; tailors, 6 to 15 marks; female dressmakers, 7 to 12 marks; shoemakers, 12 marks. The wages in South Germany are about the same as those in Berlin, but the cost of living is much less.

THE Memphis cotton seed mills, which, owing to a lack of the seed, are operated only four or five months annually, are to be consolidated. As it is, they are unable to pay cotton growers enough to induce them to ship the seed, and much of it is consequently used for fertilizing purposes. By consolidating, the mill owners hope to raise the price of the oil and to pay producers such prices as will keep the mills supplied.