

SCIENTIFIC MUSEUM.

New Photographic Process.

The London Athenæum has received a communication all the way from Patna, in the East Indies, from a Mr. C. J. Muller, on a new process of photography.

"A solution of hydriodate of iron is made in the proportion of eight or ten grains of iodide of iron to one ounce of water. This solution is prepared in the ordinary way with iodine: iron turnings, and water. The ordinary paper employed in photography is dressed on one side with a solution of nitrate of lead (15 grains of the salt to an ounce of water). When dry, this paper is iodized either by immersing it completely in the solution of the hydriodate of iron, or by floating the leaded solution. It is removed after the lapse of a minute or two and lightly dried with blotting-paper. This paper now contains iodide of lead and protonitrate of iron. While still moist, it is rendered sensitive by a solution of nitrate of silver (100 grains to the ounce), and placed in the camera. After an exposure of the duration generally required for Talbot's paper, it may be removed to a dark room. If the image is not already out, it will be found speedily to appear in great strength, and with beautiful sharpness, without any further application. The yellow tinge of the light may be removed by a little hyposulphite of soda, though simple washing in water seems to be sufficient to fix the picture. The nitrate of lead may be omitted, and plain paper, only treated with the solution of the hydriodate of iron, and acetic acid, may be used with the nitrate of silver, which renders it more sensitive. The lead, however, imparts a peculiar calorific effect. The red tinge brought about by the lead may be changed to a black one by the use of a dilute solution of sulphate of iron—by which, indeed, the latent image may be very quickly developed. The papers, however, will not keep after being iodized."

Nutmegs Indigenous to California.

One day last May, says the Alta Californian, we were presented with a very fine specimen of nutmeg by one of the delegates to the Whig Convention, who assured us very complacently that it was a native of California. We as complacently received it, supposing it was an assurance based upon Mrs. Opie's license, when the gentleman reiterated the fact, and confirmed it with the information that his brother had gathered a number of them from some nutmeg bushes that were growing a few miles from Placerville. Another gentleman who was standing by declared that he had seen many of them, and that great crops could be gathered with little difficulty in the fall season. We concluded that we would make the matter a subject of a paragraph upon our return, but a fear of being badly "sold" induced us to wait for further evidence. Some time after, Col. Forman assured us that he had seen some that were plucked during the formative stage of the spice, whilst the nutmeg was in a pulpy condition. We still hesitated to announce the aromatic as indigenous to California, but inasmuch as we have since been informed by Gov. Bigler that he saw a large quantity of them growing last summer, and that he had sent for some of them for special cultivation, we deem it very safe to announce it as a new resource of California.

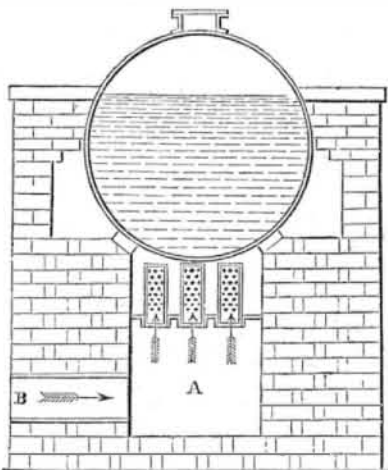
Salmon Fishing.

A Marysville (California) paper gives the following account of the manner in which the Indians catch salmon:—

We witnessed a new and exciting kind of sport yesterday morning. Salmon of huge dimensions, and in great numbers, accompanied by thousands of the smaller fry, were then struggling over the shoals in the river opposite our city. Thither the Indians promptly repaired with their spears, where they at once commenced an indiscriminate slaughter. They were captured in large numbers and in the following manner. A small barbed spear is attached to a straight pole some twelve or fifteen feet in length. On the fish being wounded, its struggles immediately detach the spear from the pole, but they are made fast together by a strong cord, some eighteen

inches in length, by the aid of which they are safely towed to the shore. The taking and securing was performed by the Indians with great skill and dexterity, and excited the curiosity of hundreds who were watching their operations from the river bank.

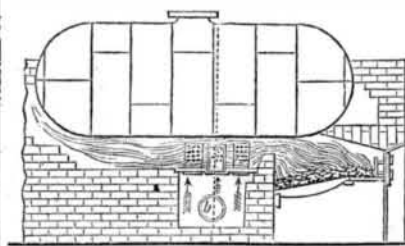
On Boilers.—No. 7.
FIG. 14.



ARGAND FURNACE.—Figure 14 is a cross section of a boiler and furnace, and fig. 15 is a longitudinal section. It is the invention of a Mr. Williams, of Manchester, Eng., and an account of it was published a few years ago in a pamphlet. It is designed for consuming the smoke. Every cubic foot of coal gas requires 10 feet of atmospheric air to effect its entire combustion, and every ton of coal is capable of giving off 10,000 cubic feet of gas, which, under the conditions just stated, would have to be supplied with 100,000 cubic feet of air; that in ordinary furnaces, air cannot be admitted without cooling down the furnace. It is a desideratum to admit this air, and so attain the combustion of the gas; and many plans of admitting air to furnaces have been tried.

A chamber is formed behind the bridge of about the breadth of the area of the back of the bridge, and the same width, the depth being regulated by the level of the ash-pit. In the mode of setting the furnace here represented, it may be observed that it is only one of many that may be adopted to accommodate the form and position of different boilers, as well as their size, or the object for which they are intended, whether for power or for steaming. The plan, however, is selected from its bringing at once before the eye the action of the furnace when seen through a spy-hole in the

FIG. 15.



flue, as well as for the appearance of this arrangement being exceedingly striking and beautiful. Its operation would be thus:—The chamber being air-tight, and covered over with an iron plate, air is admitted through a pipe or other opening, *b*, or *B*, fig. 14. The air now rises, and takes the course of the arrows, enters a row of perforated pipes, quite open at bottom, and fitted into collars in the iron roof of the chamber. The tops of all the pipes are closed, while all round they are studded over with $\frac{3}{4}$ inch holes, 1 inch apart; the air, therefore, escapes through these holes, and nowhere else, in the form of small jets. At every charge of fresh coal on the fire, the first product is, not smoke, but a very large body of crude, impure coal gas, the unconsumed portion of which, as it passes the bridge, meeting the air, mingles with it, and instantly inflames, being encompassed with a hot gaseous atmosphere. The effect then is, that each jet of air seems to be a common gas flame. To those who are not familiar with the fact of flame from a jet of air in gas, it may be interesting to quote the observations of Professor Brande on this subject:—"I fill a bladder with coal-gas and attach to it a jet, by which I burn a flame of that gas in an atmosphere of, or a bell-glass filled with, oxygen, of course the gas burns brilliantly, and

we call the gas the combustible, and the oxygen the supporter of combustion. If I now invert this common order of things, and fill the bladder with oxygen, and the bell-glass with coal-gas, I find that the jet of oxygen may be inflamed in the atmosphere of coal-gas, with exactly the same general phenomena as when the jet of coal-gas is inflamed in the atmosphere of oxygen."

The front section of the furnace shows the air-chamber, *A*, with the front bridge removed, and three rows of tubes set in the iron roof of the chamber. *B* is the air-flue, which has a regulating slide door on the outside. It will be observed, that the air is obtained independent of the ash-pit, and may be conducted to the air chamber by front or side air-flues, or by sheet or cast iron pipes.

For the Scientific American.

Knowledge Contained in the Scientific American.

MESSRS. EDITORS.—Not long since I attended a scientific lecture before a Lyceum, in this place, delivered by a gentleman from Boston, the subject being "The Lost Arts of the Middle Ages;" I could anticipate the lecturer verbatim, as it seemed to have been wholly compiled from the Scientific American, as published on page 315, Vol. 3. I speak of this to show the result of reading your paper, which I have constantly studied since the commencement of Vol. 3 up to the present time; the reading of one volume of it attentively is equivalent to three months' schooling. It should grace the library of the professional man as well as the mechanic; every young man should make it his touchstone of science, and not only prize it for its scientific information, but for its literary merits. J. G. S. Reading, Mass., 1851.

Black Noses.

A resolution has been introduced into the Kentucky Legislature, which provides "that the keeper of the Penitentiary shall procure a suitable chemical dye, such as will stain the cuticle or outer surface of the skin perfectly black, so that it cannot be washed off, or in any way be removed, until time shall wear it away, and nature furnish a new cuticle or surface; and that with this dye he shall have the nose of each convict painted thoroughly black and renew the application as often as may be necessary to keep it so, until within one month of the expiration of his sentence, when it shall be discontinued, for the purpose of permitting nature to restore to the feature its original hue, preparatory to the second advent of its owner into the world.

Restoring to Life.

We have seen quite a number of notices about a young man in France, who was restored to life by the transfusion of blood, after being frozen up in the Alps for a month. This story, like a great number about persons being consumed by spontaneous combustion needs confirmation. When we see it done there will be time enough for believing it, not till then.

LITERARY NOTICES.

HARMONIA SACRA.—This work is a new collection of Anthems, Choruses, Trios, Duets, Solos, and Chants, for opening and closing public worship, dedications, and for singing societies. The Episcopal Church Service is added. It is edited by Edward L. White and J. E. Gould, and published by Oliver Ditson, Boston, and Gould & Berry, New York. We commend this book to choirs and families who love—and who does not love—the sacred melodies. No music is so lofty and inspiring as that which is termed "sacred;" it has a most ennobling, harmonizing, and sweetening influence on all circles where it is practiced in the right spirit. The selection of pieces in this book, exhibits good taste and great knowledge of music.

CLOVERBROOK, or Recollections of our Neighborhood in the West. By Alice Carey. J. S. Redfield, publisher, Clinton Hall, N. Y.—The contents of this interesting book are drawn from pastoral life, where elements are ever at hand for the eloquent pen; there is always something touchingly sweet in every association of rural life, whether amid the forests and uncultivated prairies of the West and South, or on the rigid hills of the North. Our authoress possesses the happy faculty of touching the tenderest spring of feeling, and conveying in beautiful eloquence the various aspects of our social being. This book will be found exceedingly interesting for the winter evenings.

THE UNIVERSAL PHONOGRAPHER.—A monthly journal devoted to the dissemination of Phonography and to Verbatim Reporting, with practical instruction to learners. Printed in Phonography. E. Webster, Editor; Fowlers & Wells, publishers, \$1. The first number is now issued; it is intended to promote the interests of the advanced phonographer, and forms an instructive book for beginners. Its pages are devoted to correspondence, original essays, and selections from the choicest literature of the age. A knowledge of this subject enables us to take down, with rapidity, all we hear spoken, and the present work constitutes a cheap instructor.

THE SCIENTIFIC AMERICAN To its Friends and the Public.

Commencing a new year, we take the opportunity to express our grateful acknowledgments to the patrons of the Scientific American for the deep interest manifested in its success. We aim to furnish a journal not only popular, but eminently practical in the several departments of Chemistry, Mechanics, Engineering, and Manufacturing. Without employing the ordinary appliances, such as local and general canvassers, we have mainly depended upon voluntary subscriptions, allowing the character of the journal to find its way to the regard of individuals. Our general expectations have not been disappointed, for out of the large list of cash-paying subscribers, whose names are familiar to us from a long association, we recognize many active energetic friends, whose influence we yearly profit by.

We are grateful for all favors, and as our success is centred in the support of that valuable class whose labors are not only enriching and adorning, but elevating the character of our country, we must still claim their active and co-operative sympathy. For the small sum of two dollars we are furnishing an Encyclopedia of the Arts and Sciences, covering over 400 pages, richly illustrating the progress of invention and discovery throughout the world. Considering that this sum is one-fourth less than the cheapest English publication, it may not be necessary to state that a large subscription list is required to sustain it.

The fact of its success is no longer predicated upon doubt; but, that we may be enabled to carry out our future designs, an increased subscription list will be necessary. We anticipate, from the continued support of our friends, that we shall be able to advance the Scientific American, in point of circulation, to a position second to none in this country; and we promise a journal not inferior in its character, size, and ability to any other.

The views promulgated through its columns have received the approbation of the American press, and it is a source of gratification to us that it has gained, and still is gaining a strong foothold in Europe, and is quoted as the leading American Scientific Journal. A recent London paper says, "it is excelled by few periodicals," and proceeds to regret that the English tax upon literature does not permit so cheap and valuable a work to circulate within the reach of the laboring and producing classes, whereby they may become, not mere machines, but, like most of our American Mechanics, intelligent, influential citizens. No land is so highly favored as our own in respect to educational privileges—none where all the appliances are so easily and cheaply obtained—a cheap press and a system of free education, are the elements which enter largely into our National character. A people to be free and happy must of necessity be intelligent. We should not esteem our blessings lightly, but strive to improve them. It is unquestionably true that men, practically scientific, are among the most useful class in a community, and our greatness as much depends upon them as upon any other class. The statesman, the lawyer, the minister, and the farmer, have each their appropriate work, but in the great scheme of internal improvement, the mechanic, the man of science, is wanted.

We offer these suggestions as entirely relevant to our present subject, and urge our mechanics to become readers; and, if consistent with their feelings, subscribers to the Scientific American, for we feel assured that in fifty-two numbers they will find information worth to them infinitely more than the amount paid for it. It is difficult to maintain a good Scientific Journal at so small a price, as many can sorely testify from experience; and had we not a clear field at the commencement, and a tolerable capital, the Scientific American would not now enjoy its present position.

Through our extensive facilities as American and Foreign Patent Agents, we are enabled to furnish our columns with a most complete summary of all the new improvements; and having agents located in London and Paris, we are early notified of changes in Foreign Patent Laws affecting inventors' interests. We hope to improve the value of the Scientific American by constant and unremitting care, and to secure a continued and increasing patronage from the public.

We hope our friends are not forgetting to exercise their usual kind offices, but are continuing to recommend their neighbors to subscribe and to form clubs for the new year.

Postmasters, being authorized agents for the Scientific American, will very generally attend to forwarding letters covering remittances.

MUNN & CO.,
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INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—

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N. B.—The public are particularly warned against paying money to Travelling Agents, as none are accredited from this office. The only safe way to obtain a paper is to remit to the publishers.