

with the center plate, E, constructed in the manner and for the purpose set forth.  
Third, I claim the flue or opening, L, from the front plate, H, to the top plate, I, constructed in the manner and for the purpose set forth.

**COOKING STOVE.**—James Spear, of Philadelphia, Pa. Patented July 7, 1857: I claim, first, The combination of the cone damper, J, with the smoke-pipe, H, and the top plate, D, constructed in the manner and for the purpose set forth.

Second, I claim the combination of the head or deck collar, L, with the cold air pipe, G, and the smoke-pipe, H, constructed in the manner and for the purpose set forth.

**MACHINE FOR MAKING AXES.**—Jonas Simmons, of Colones, N. Y. Patented March 1, 1853: I claim the groove, G, the arm, X, with the tool, T or T2, in combination with each other, substantially in the manner and form and for the purpose set forth in the specification.

DESIGNS.

**PARLOR COOKING STOVE.**—David Hathaway (assignor to Fuller, Warren & Co.), of Troy, N. Y.

**COOKING STOVE.**—A. C. Barston, of Providence, R. I.

INVENTIONS EXAMINED at the Patent Office, and advice given as to the patentability of inventions, before the expense of an application is incurred. This service is carefully performed by Editors of this Journal, through their Branch Office at Washington, for the small fee of \$5. A sketch and description of the invention only are wanted to enable them to make the examination. Address MUNN & COMPANY, No. 37 Park-row, New York.

Science of Electric Conductors.

MESSRS. EDITORS:—I understand, from what has been published on the subject, that the reason why the electric current is retarded in an ocean cable, and why telegraphing is so slow under water, is owing to the cable being formed with a wire or metallic sheath outside of the gutta-percha insulating material. It is said that this construction of cable converts it into a long Leyden jar, that becomes so charged as to resist the subsequent impulse of the electric currents required for making words and signs. If I am right, then this resistance will be avoided by dispensing with the outer wire shield, and making the inner wire stronger, by Mr. Allan's plan, as noticed in the last number of the SCIENTIFIC AMERICAN. R. R.

[While Mr. Allan's cable seems to embrace a correct principle for decreasing the resistance by enlarging the size of the conducting wire; it contains no feature for preventing induction entirely, although he does not use an outer metallic sheath. Our correspondent is mistaken in reference to his views as to the cause of the resistance—called induction—in submarine cables. This will exist in all cables having a metallic wire inside, and an insulator like gutta-percha, or any other such substance, between the wire and the water. A Leyden jar is formed by surrounding an insulating substance, like glass, with a conductor on each side, and arranging them in such a manner as to receive electricity. The gutta-percha of the telegraph cable is the substitute for the glass in the Leyden jar; the wire inside is the metallic conductor, and the water outside being also a conductor, it converts the cable into a long narrow Leyden jar, although no wire sheath may be used. The electric jars now employed for experiments are coated inside and out with metallic foil, but the principle is the same whether water or metal is used for the conductor. There is no known principle whereby the rapid transmitting character of a submarine cable can be improved, but by enlarging the interior conducting wire. A most gross violation of scientific principles, was committed in making the Atlantic Cable with a very small conductor, and the reason we will endeavor to explain. A small wire on a long circuit requires electricity of great intensity to overcome the resistance; this intensity causes induction in the same proportion. If we double the diameter of a conducting wire, its mass is quadrupled; it has four times the conducting capacity. With such a wire, the intensity of the electric current can be lowered one-fourth, and the inductive resistance will be thereby diminished in the same ratio.

We have thus explained the law in relation to induction in submarine telegraph cables, in such a manner that all may understand it. From these remarks it will be apparent, that the reports which were propagated a few months ago, about Hughes' and

other instruments being capable of transmitting messages rapidly through the Atlantic Cable, were entirely devoid of truth. Neither rapid nor correct messages can ever be sent through long lines of submerged wires, unless these are of large diameter and well insulated. We have seen it stated in a contemporary that a deep sea cable is now being manufactured for Professor Rogers, at Baltimore, and that its whole diameter will only be one quarter of an inch—the wire being a very small copper conductor. Such a cable will be constructed upon the most unscientific principles and must prove a failure. This is a subject with which many men, professedly scientific, appear to be perfectly ignorant.

Coal Oil for Lubricating Machinery.

As practical information is the most reliable, we take pleasure in publishing the following, as nothing on the subject of such an experimental character has been presented to us before:—

MESSRS. EDITORS:—As you are devoting some attention to coal oils in the columns of the SCIENTIFIC AMERICAN, it may interest some of your readers to have the practical experience of one who, for over two years, has used the "lubricating oil."

My plan is to submit everything to a practical test claiming to be an improvement, and happening to be in Louisville, Ky., at the time of the receipt of the first barrel, I procured a small quantity, and used it upon light machinery, where it was entirely satisfactory. A short time after, when getting heavy machinery, I was told that it would not work well on any but light machinery, but on testing it on an engine-shaft with 3,500 pounds on it, I found it to work just as well as on the lightest machinery. After a continued use for fifteen months on the same machinery, I find it perfectly free from gum, the polished portions wiping off as clean as though they had not been oiled. Journals becoming hot from inattention have been run until they were cool with nothing applied but the coal oil. In every respect, my experience pronounces it superior to the best sperm for oiling machinery. J. L.

Smith's Mills, Ky., March, 1859.

Our correspondent's experience, however, does not meet all the conditions of proof in regard to the superiority of such oil. We believe the only correct method of testing oil is by the machine adapted for the specific purpose, called the "oil-tester."

Graphite for Timber.

MESSRS. EDITORS:—I have read many articles in your paper on "the preservation of timber," upon which subject I submit the following. In regard to the proper period for cutting, the writer has not such knowledge as would authorize him to speak decisively, and he will therefore leave that point to the better informed.

But the proper period for cutting being determined, and if the logs be allowed to soak until the decaying influences within shall have been extracted, timber can be preserved against the injurious action of the atmosphere, by being properly covered by that mineral carbon, graphite. This mineral, being the purest carbon, is an anti-septic of the strongest character; it adheres well, and is insensible alike to heat and cold, to acids and alkalis; and it neither contracts nor expands under the influence of weather. It will exclude moisture and worms, for worms will no more attack graphite than they would charcoal. Roofs painted sixty years since with graphite, do not require repainting. A post properly covered with graphite and planted in the earth with graphite close around it, would last indefinitely, if properly prepared before painting. If the paint be properly made and properly applied, it will form a coating as bright and polished and smooth as burnished steel, and if thus applied to the bottoms of vessels, neither grass nor

barnacles will adhere, and the vessels will glide smoothly through the waters.

The French Government having, by experience, found this mineral to be the best preservative of iron from rust, the Marine Department has issued a general order directing ordnance to be covered with it. Graphite is the basis of the "Lacker" which is used in our navy; the less there is of anything else in it, except graphite and pure linseed oil, the better. P. G.

Philadelphia, March, 1859.

Unreliable Recipes

MESSRS. MUNN & Co.:—Having got a recipe out of a recipe-book for making blue ink, and being curious to try the experiment to make it, I tried it but found it did not answer.

The recipe runs as follows: "Dissolve indigo in sulphuric acid, and dilute it with eight times its weight in water." I mixed all up as stated above and found the acid to leave the paper white all around the writing, and the following day the water was at the top and the indigo at the bottom of the bottle.

Can you inform me through your correspondence column, how I can mix it so as to make it come out right? And oblige,

Yours respectfully,

H. D. WILSON.

St. Louis, Mo., March 16, 1859.

[We publish this for the purpose of giving a few words of advice, as we frequently receive letters of this character. A very great number of the recipes and processes described in books, are unreliable. Their authors appear to have been mere collators, not practical chemists—hence their ignorance of the subjects which they treat of. Our correspondent can make good blue ink from sulphate of indigo, if he neutralizes the acid it contains with chalk. The following is the proper method of making it:—Take four ounces of strong sulphuric acid, and add gradually to it an ounce of finely pulverized good indigo, stirring the mixture well for two or three days. Now add four ounces of water, then chalk, until effervescence ceases. The clear liquid is now poured off, a little dissolved gum added, and the ink is fit for writing. The fibers of cotton or linen of which paper is made, have no affinity for the sulphate of indigo, hence the failure of our correspondent's ink. A blue ink superior to that described can be made by dissolving ground Prussian blue in a weak solution of oxalic acid, and adding a little gum arabic.

The Climate of Australia.

There are days, and, in some years, whole weeks together, of delightful weather, cool and bracing as the spring in England, but more exhilarating. Excepting about twenty-five extremely hot days, and sixty disagreeable wet and cold days, the weather throughout the year is indescribably pleasant, the air is balmy and bright, scarcely a cloud is visible, and the sun looks down from the deep blue sky in unveiled splendor. Day and night are of equal length throughout the year. The sun never remains above the horizon more than fourteen and a half hours, or less than ten and a half; and as twilight does not linger in these latitudes, the changes from day to night and from night to morn, are to Englishmen unpleasantly abrupt. The nights are enchanting. The southern constellations shine forth from the hard dark heavens in unrivaled brightness, and the halo-ed moon pours her chastened radiance on the plains and hills with suchrefulgence that everything for miles around is distinctly visible. The light of both the sun and moon is more intense than in Britain. I should say the difference is as five to three.—F. Lancelott, Esq.

ALCOTT'S Concentric Lathes for Turning Chair Rounds, Hoe Handles, &c., are no longer sold by us. Parties wishing to purchase these lathes must, in future, order them of S. C. Hill, No. 12, Platt street, this city.

Bottles to Prevent Poisoning.

A bottle to prevent accidental poisoning has recently been patented in England. Its design is peculiar, and as it is intended solely to contain poison, there is no danger of mistaking the character of its contents. The bottles are provided with an entirely new contrivance, the effect of which is to make it impossible to pour out the contents otherwise than very slowly. The very deliberate and cautious action which is produced will, it is believed, prevent anyone from taking over-doses of medicine; while it is difficult to imagine a case in which a person could pour out and take the whole contents of one of these bottles in mistake for something else.

Insoluble Silicate for Wood.

There can be no doubt but the silicate of soda applied to wood renders it incombustible, and were it not soluble in water, and liable to be washed off with rains, it would be well to coat all wooden structures with it. To apply it for such purposes, and to make it insoluble is a desideratum. This can be done as follows:—Soak the articles to be coated in the silicate of soda, or if they are too large to do this conveniently, then apply it with a brush, so as to fill all the pores up. When dry, wash it with a solution of the chloride of calcium. This causes an insoluble silicate of lime to be formed in the pores of the wood, which adheres to it, and also the chloride of soda (common salt), which is washed away.

Literary Notices.

NEW AMERICAN CYCLOPEDIA, VOL. V.—CHA-COU.—D. Appleton & Co., New York.—In noticing this work, as each volume makes its appearance upon our table, it is somewhat difficult to avoid making use of nearly the same expressions that we have employed on former occasions, as each new volume only tends to confirm the high opinion we have already formed of it, and strengthens our faith in its able editors. In the present volume, the "Life of Henry Clay," by Horace Greeley, (as we learn from an appended list of contributors) is one of the best articles. It is a model of biographical writing, and the political and personal are so well blended that the reader takes the one with the other, and enjoys them both; rising from the perusal not with an impression of Clay as a statesman, orator, or man, but with an idea of him as a whole. This, we think, is the aim of true biography. The articles on Chemistry, Chromium, and other subjects, are well written and up to the times, which is rather a rarity with what may be called "dictionary science." If the New American Cyclopaedia keeps as good as it is at present, during its growth to completion, no American need be ashamed of its national title, but rather point with pride to many new features which grace its pages, the best of which is its living biography. We should advise all who possibly can to become possessed of it, for it is a truly reliable work, and may, as a hour that would otherwise be wasted, be read over its pages, cutting its growth, as the bee wanders amid the flowers, enjoying the beauties but accumulating the useful.

THE ANNUAL OF SCIENTIFIC DISCOVERY: A YEAR-BOOK OF FACTS IN SCIENCE AND ART.—Edited by David A. Wells: Gould & Lincoln, publishers, Boston. A portrait of Professor O. M. Mitchell decorates the volume for 1859 of this important annual. We are not aware that there is any work published on this continent which contains so much varied and useful information as the one before us. It forms a complete library within itself of scientific knowledge, and by its aid we are enabled to trace the progress the sciences make in battling with the storms that ever assail the mariner who ventures on Sir Isaac Newton's Ocean of Truth. The magazines and periodicals of the whole world are made to contribute any record of a discovery that may appear through their columns, and from our examination of the book we should say that few, if any, facts had escaped the eye and attention of the editor. An obituary of persons eminent in science for 1858 is added, and a list of books, pamphlets, &c., on matters pertaining to science, and published in the United States during the same year, making it exactly the book that every one wants and should obtain.

THE AMERICAN JOURNAL OF EDUCATION.—Edited by Henry Barnard, L.L.D., published at Hartford by F. B. Perkins, and in New York by F. C. Brownell, 413 Broadway.—Our public and private educational arrangements are undeniably very good; but like all sublimary affairs, they might be better, and to collect information concerning other systems, to compare, select and suggest improvements, is, we believe, the object of this quarterly. We say below, because our opinion is founded on the contents of this number and not on the prospectus, and very efficiently and ably does it fulfill its mission. It is illustrated with steel engravings, and is, without exception, the best purely educational publication in the Anglo-Saxon tongue.

PECK'S ELEMENTS OF MECHANICS.—Published by A. S. Barnes & Burr, John street, New York.—This is a neat and excellent elementary work, by Professor Peck, of Columbia College, and is intended for colleges, academies and high schools. It is a clear and able exposition of the principles of mechanical philosophy, and is just such a class-book as has long been a desideratum for certain grades of scholars in our institutions of learning.

MECHANICS AND ENGINEERS' BOOK OF REFERENCE AND FIELD BOOK.—A new edition of this able and useful book—edited by Prof. Hackley, of Columbia College, and Chas. Haslett, C. E., published by W. A. Townsend & Co., of this city—has just been issued. We are really glad to see it, as this is a good indication that it is appreciated as it deserves to be. It is formed for the pocket, and with it an engineer becomes a walking encyclopedia of valuable information.

THE DEMOCRATIC AGE.—Edited by C. Edwards Lester, 41 Park-row, New York.—The current number of this able magazine contains many excellent articles, "Our New Home in Italy" and "Prescott's Histories" being about the best. The number of small articles is very great, and they are all interesting and well written.

NORTH BRITISH REVIEW.—Published by Leonard Scott & Co., Gold street, New York.—The number for this quarter of the above periodical is very able and interesting. Its leader is on French Algerine literature. It contains a review of De la Rive's "Electricity," and several other accomplished essays.