

Scientific Museum.

Scientific Memoranda.

IODINE.—M. Chatin finds that iodine may be detected in the three kingdoms of nature:—water, plants, and animals, all affording by analysis very decided indications of its presence. He has detected it also in several lead ores and in graphite. It appears, says M. Chatin, that, in the ancient world as in the new, the presence of iodine is evident,—and the proportions in which it is found in the vegetable debris hidden in the soil, afford the geologist means for ascertaining the distribution of water in ancient days. Thus a coal which is rich in iodine ought to prove that the vegetation had been developed in a marshy land,—and those coals which do not contain iodine, that it was formed from plants of a more decidedly terrestrial character.

CAUSES OF GOITRE AND CRETENISM.—Doctor Grange, a learned Physician of Paris, was commissioned some time ago by the government, to pursue, in France and other countries, inquiries into the causes of *goitre* and *cretenism*. His official report has just appeared, and will be deemed by the medical faculty a valuable document. After Bibliographical researches embracing Europe, America and the East Indies, respecting the existence of those affections, and from his own extensive observation, he has come absolutely to the conclusion that they are independent of latitude, altitude and climate and even of circumstances of habitation, poverty, and so forth. Their presence appears to be connected with that of magnesia in food or drink; their absence often proceeds from the *iodine* which the article consumed offers to chemical analysis. Dr. Grange estimates that there are in France four hundred and fifty thousand persons afflicted with *goitre*, and from thirty-five to forty thousand with *cretenism*. Females are more subject to the disease than the other sex. In Savoy there are at least a hundred thousand sufferers. In some localities the substitution of spring for well-water has sufficed to banish *goitre*. The Doctor recommends marine salt—ioduret of potassium cisterns of proper water, and so forth; and he thinks that much can be done by government towards the cure and future security of the populations among whom the distemperature is found.

REMARKABLE PRESERVATION.—An officer of our Navy on his voyage to China, writing lately to his friend in Washington City, relates the following singular occurrence:

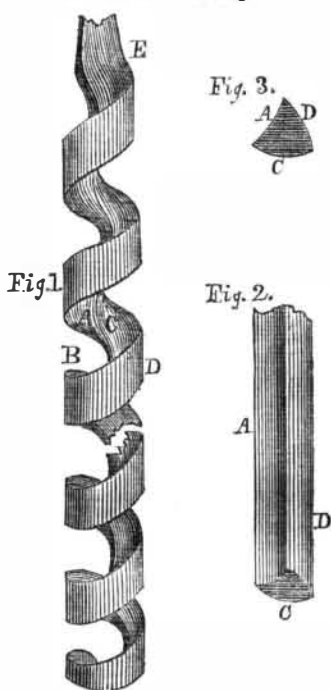
"A singular and (to the party concerned, at least) highly interesting circumstance occurred about the time we were off the Cape of Good Hope. From the time that we reached the cooler latitudes of that region we were constantly surrounded by birds, and sometimes in great numbers, whose exquisitely graceful movements on the wing was a constant source of admiration to us all. One morning, when even a greater number than usual, including several large albatrosses, were following the ship, the startling cry was heard of "man overboard," and it proved to be an unlucky Irishman, who had got to the forepart of the vessel to throw a dirt swab overboard, and Paddy-like, had dropped himself into the water instead of the swab. We were soon hoisted, and a boat lowered to go in search of the man, for whom they looked in vain, until they rowed, as a last hope, to a spot round which all the birds were suddenly observed to cluster, where they found the poor fellow in a state of insensibility and exhaustion. Around him the birds were hovering with discordant screams, and, strange to relate, two great albatrosses had seized him by his clothes, thus keeping him from sinking, whilst several were picking at his head and face! When the boat reached him he was unconscious, and had ceased all exertions, so that he doubtless owed his life to these birds. The patent life buoys, as is usually the case, did not reach the water, although the port-fires burned and smoked away furiously.

WASTE LAND.—There is enough in this country. But we generally suppose that in

Great Britain almost every acre is cultivated or in some way turned to profit. Prof. McLaing informs us that of 11½ millions of acres in Scotland, susceptible of tillage, 5½ millions only are cultivated. And the reason for this ought to be a lesson to us against selling our public domain to non-users. He says that this 6 millions of acres, if divided into small farms and given to actual workers, would well sustain a farming population equal to the whole number that now subsists on the cultivated land. In England the waste land, though less, is very great. The number of acres cultivated but unproductive, is probably lower and would exceed belief; to say nothing of commons, wastes, lanes not required, fence spaces, field corners, &c., that economy might turn to account.

The best thing the land owners in Britain can do, is to erect a greater number of small farms than she now has.

Clark's Patent Auger.



This improvement is the invention of Mr. William N. Clark, of Chester, Middlesex Co., Conn., and was secured to him by patent in January, 1845. We are thus particular about the date, as it has been stated to us that there are a great number infringing his rights, which is very wrong, for he is a sincere and ingenious mechanic. The improvement is on the auger known as the "single twist."

Figure 1 is a view of the auger broken off, but showing its form; figure 2 is the form of the material before it is twisted, and figure 3 is a section of the material.

The inner surfaces of the twist of the common auger are convex; this form is objectionable, as it breaks the chip and causes the fragments to work in between the outside of the auger, and rendering it necessary to withdraw it frequently in the process of boring, to clear it of the chips. The auger is also liable to be injured by such frequent removal, the pressure being such as to act upon the twist so as to derange it. The improvement consists in making the upper inner surface, A, of the twist of the auger, B, concave, so that the auger of any desirable length works easily and freely, raising the chips continuously through the cavity to the top of the hole without breaking the chip or leaving any fragments to work between the outside of the auger and inner surface of the hole, and thereby overcoming entirely the evil of clogging and the frequent withdrawal of the auger during the process of boring. The hole made by it is smooth and accurate, and the time and labor of the operator is much abridged. This principle of construction may be applied to the *bit* and *gimblet*, A being the inner concave surface, C the convex surface, and D the outer surface. The claim of this patent is the mode of making a single twist ship auger, the bit and gimblet, with the upper inner surface, A, of the twist, concave, as above described, for the object set forth.

We publish the following certificate to show how this improvement is estimated by one well qualified to judge of its merits. Com-

munications about rights, &c., may be addressed to the patentee at the above mentioned place.

U. S. NAVY YARD, Brooklyn, Jan. 27, 1848. Having proved the Ship Auger patented by Mr. Wm. N. Clark, by testing its capacity for boring, I can safely assert that it is the best article of the kind I have ever used, and therefore recommend it to all ship builders as a superior article.

JOHN M. WEEKS,
Foreman of Navy Yard.

For the Scientific American.

Some Peculiar Properties of Water and Air.

Water seems to retain only a certain bulk of air; a slight elevation of heat in cold water occasions an expansion of its air, and produces a surplus of bulk, which is set free: a relief of pressure will have the same effect. Water that has been heated to the boiling point, on cooling again, does not readily absorb its former bulk of air, and consequently it is a quicker conductor of heat, will freeze sooner than that which has not been heated, and, it would seem, must be better for tempering steel.

The atmosphere will also take up water in proportion to its warmth; hence the variability of temperature produces rain and dew. Warm earth thrown up to the cold air will produce an opaque vapor; the reason is, the cold air is warmed on the wet earth, and this absorbs a portion of moisture, which rises, becomes cool, on mingling with the cold air, and is given out again visible like fog; and it is by the same rule that drops of water collect on a tumbler of cold water in a warm summer's day.

But this rule appears to be reversed, or at least varied, when above the boiling point. Take a kettle of cold water, fill a vial with the same, and invert it under the water, heat moderately up to the boiling point, and you may observe the operation of water and air by a change of temperature; as the water begins to warm, its surplus bulk of air begins to escape and occupy the upper part of the vial, and before the water boils, the air and vapor will have forced all the water out of the vial by their lively expansion. Immediately above this degree of heat the affinity of water or steam and air appears to be reversed, as may be argued from the result of my experiment with steam from a boiler; and I think we may account for the dripping of stove pipes in cold weather, when nothing is used for fuel but dry coal, upon this principle; the draft of air, though cold, contains a portion of vapor which is heated, so that separation from the atmospheric air and carbonic acid gas takes place, and as it flies along to where the pipe is cool, it condenses on the upper portion of the pipe and runs down. That steam and air may separate by heat, is nothing more than reasonable; for a separation is produced by heat between many other combinations in the same way and for the same reason; that is, one ingredient is rarified and made lighter than the other; and the reason for the change of property between air and its vapor by an elevation of heat, is undoubtedly on the same principle by which their affinity is overcome. By reference to the gravity of the respective gases of water and air, it will be seen that water brought into the gaseous state, so as to possess the same independent elasticity of atmospheric air, must necessarily become lighter, and possibly as much lighter as the difference between the amount of weight of the gases that belong to each separate composition.

For some reason air has a tendency to impart elastic properties to water; and it is evident that the air of water will generate steam even under a great pressure, sooner than heat alone; and from this fact it is evident that the reason why water does not all take the elastic state at once, like gunpowder, is simply because the air of the water is a slow conductor of heat, and must be heated to a certain point before the elastic properties are imparted to the water.

A. C.

It is estimated that the gold and silver imported into the United States, from various parts of the world, over and above the exports, during the last three years, amounts to one hundred millions of dollars.

The average price for gas, charged by all the gas companies of Britain is \$1,50 per 1,000 cubic feet.

LITERARY NOTICES.

DICTIONARY OF MECHANICS AND ENGINE WORK.—Number 20 of this work, published by D. Appleton & Co., Edited by Oliver Byrne, is a very excellent number; it contains an illustrated description of Vogel's ingenious Harness Machine, taken from No. 6, Vol. 4, Sci. Am. It is not so well done as in our columns—two important engravings having been left out by the editor: this reminds us that excellent harnesses by this machine are made at Matteawan. It also contains engravings and a description of the Prussian Rifle, or "Zund Nadel," taken from page 124, Vol. 5, Sci. Am. The editor says that Jenning's Patent Rifle is the simplest of breech-loading firearms, but this rifle is far more complex than Sharp's, which was published in No. 25, Vol. 5, Sci. Am. It also contains an illustrated description of Barber's Metallic Grist Mill, published in No. 7, Vol. 4, Sci. Am. As the public may not be aware that any of our editorial lucubrations are contained in this work, we merely refer to those things so that the — may have his due.

NEWTON'S PRINCIPIA.—Mr. Daniel Adee, No. 10 Fulton street, this city, has issued another beautiful edition of Newton's great work, "The Principia." For a long time the "Principia" was kept far out of the reach of the mere English Scholar, as if Newton had written it exclusively for the classical student and philosopher. It was a scarce book when first printed in the Latin language; it is now, thanks to the spirit of an American publisher, printed in our mother tongue, and should find a place in every family library.

THE PRE-ADAMITE EARTH.—Who has not heard of this great work, by Harris, the author of the Great Teacher? Its fame is world-wide, but until now its availment to many particular American readers of useful books, has been out of the question. To Messrs. Gould, Kendall & Lincoln, of Boston, the well-known publishers, the public are indebted for a new, beautiful and cheap edition of the work. Its title conveys an idea of its nature; its object is to teach "that there is a theology in nature which is ultimately one with the theology of the Bible." Its field is geology, and embracing views respecting which there has been much of what is termed infidel and christian controversy and conflicting opinions, it is at the present moment something with which professors of religion, at least, should not be ignorant.

HOLDEN'S DOLLAR MAGAZINE, for November, contains a portrait of Louis Philippe and a review of its character. It is a good number. Publishing Office No. 109 Nassau street, N. Y., by Fowler & Dietz, and Hothkiss & Co., 13 Court street, Boston.

MECHANICS

INVENTORS
AND
MANUFACTURERS.

The Best Mechanical Paper
IN THE WORLD!

SIXTH VOLUME OF THE
SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

It is published weekly, as heretofore, in *Quarterly Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ORIGINAL ENGRAVINGS, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "AMERICAN REPERTORY OF INVENTIONS."

TERMS—\$2 a-year; \$1 for six months.
All Letters must be Post Paid and directed to
MUNN & CO.,
Publishers of the Scientific American,
128 Fulton street, New York.

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—

10 copies for 6 mos., \$3 15 copies for 12 mos., \$22 10
10 " 12 " \$15 20 " 12 " \$28

Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.