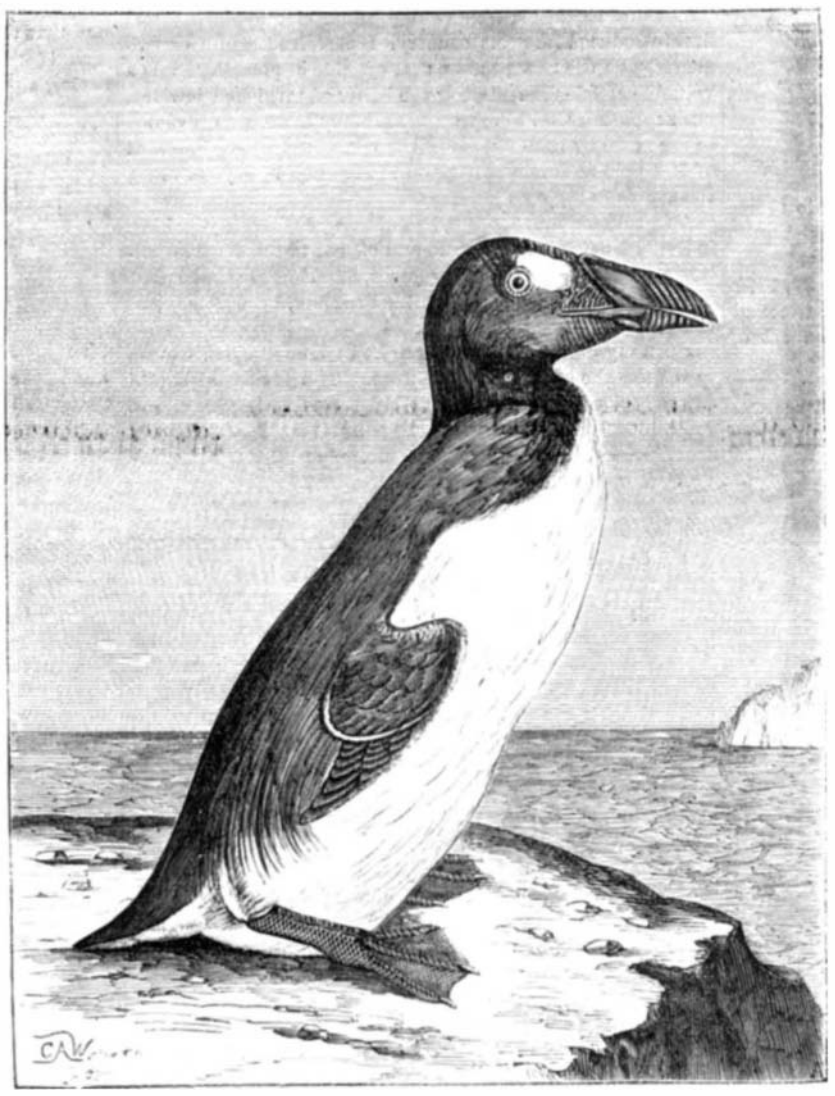
NATURAL HISTORY---THE GREAT AUK.

BY PROFESSOR JAMES ORTON, IN THE AMERICAN NATURALIST.

The recent addition of a specimen of this rare bird to the Smithsonian Museum, is an event worthy of record. There are now three specimens in the United States; the one just mentioned, another in the Academy of Natural Sciences, Philadelphia, and a third in the Giraud cabinet in Vassar College. The last is the most perfect specimen, and certainly possesses the greatest historical value, as it is the one from which Audubon made his drawing and description. It was caught on the banks of Newfoundland.

The Great Auk or Gare-fowl, fortunately for itself did not live long enough to receive more than one scientific name—*Alca impennis*. It was about the size of a goose, with a large head, a curved, grooved, and laterally flattened bill; wings rudimental, adapted to swimming only, approaching in this respect the penguins of the southern hemisphere. The toes are fully webbed, the hind one wanting; the plumage is black, excepting the under parts, the tips of the wings, and an oval spot in front of each eye, which are white. It was an arctic bird, dwelling chiefly in the Faroe Islands, Iceland, Greenland, and Newfoundland. "Degraded as it were from the feathered rank (said Nuttall), and almost numbered with the amphibious monsters of the deep, the auk seems condemned to dwell alone in those desolate and forsaken regions of the earth." But it was an unrivaled diver, and swam with great velocity. One chased by Mr. Bullock among the Northern Isles, left a six-oared boat far behind. It was undoubtedly a match for the Oxfords. It was finally shot, however, and is now in the British Museum. "It is observed by seamen," wrote Buffon a hundred years ago, "that it is never seen out of soundings, so that its appearance serves as an infallible direction to the land." It fed on fishes and marine plants, and laid either in the clefts of the rocks or in deep burrows a solitary egg, five inches long, with curious markings, resembling Chinese characters. The only noise it was known to utter was a gurgling sound. Once very abundant on both shores of the North Atlantic, it is now believed to be entirely extinct, none having been seen or heard of alive since 1844, when two were taken near Iceland.

The death of a species is a more remarkable event than the end of an imperial dynasty. In the words of Darwin, "no fact in the long history of the world is so startling as the wide and repeated extermination of its inhabitants." What an epoch will that moment be when the last man shall give up the ghost! The upheaval or subsidence of strata, the encroachments of other animals, and climatal revolutions—by which of these great causes of extinction now slowly but incessantly at work in the organic world, the Great Auk departed this life, we cannot say. We know of no changes on our northern coast sufficient to affect the conditions necessary to the existence of this oceanic bird. It has not been hunted down like the Dodo and Dinornis. The numerous bones on the shores of Greenland, Newfoundland, Iceland and Norway, attest its former abundance; but within the last century it has gradually become more and more scarce, and finally extinct. There is no better physical reason why some species perish than why man does not live forever. We can only say with Buffon, "It died out because time fought against it." From the *Lingula prima* to the Auk, genera have been constantly losing species, and species varieties; types and links are disappearing.



Unhealthfulness of Iron Stoves.

Considerable discussion having arisen as to the permeability of cast iron to gases, and to their morbific effect in ill-ventilated rooms, the conclusions of Gen. Morin, as given in a report to the French Academy, will be read with interest.

The experiments extended over a year, and were performed at the "Conservatoire des Arts et Metiers," in Paris, being terminated in February, 1869.

His conclusions are as follows:

1. In addition to the immediate and grave inconveniences arising from the facility with which stoves of the ordinary metals attain a red heat, cast-iron stoves, at a dull, red heat, cause the development of a determinate but very variable amount of carbonic oxide, a very poisonous gas.

2d. A similar development takes place, but in a less degree, in sheet-iron stoves raised to a red heat.

3. In rooms thus heated, the carbonic acid naturally contained in the air, and that derived from respiration, may be decomposed, and produce carbonic oxide.

4. The carbonic oxide may arise from several different, and, sometimes, concurrent causes, as, the permeability of the iron to this gas, which passes from within outward; the direct action of the oxygen of the air upon the carbon of the iron heated to redness; the decomposition of the carbonic acid in the air by its contact with the heated metal, and the influence of organic dust naturally contained in the air.

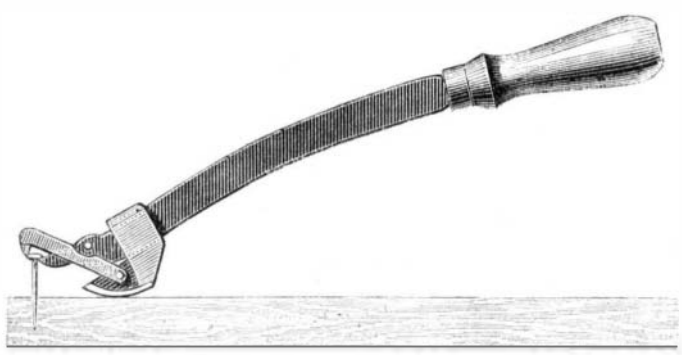
5. The effects observed in a room lighted by four windows, and two doors, one of which is frequently opened, would be made manifest and grave in ordinary rooms, without ventilation, in consequence of the presence and decomposition of various kinds of organic dust therein present.

6. Consequently, stoves and heating apparatus in cast or sheet iron, without interior linings of fire-bricks, or other refractory substances, which will prevent their becoming red-hot, are dangerous to the health.

MM. St. Claire Deville and Troost have shown that the air in contact with the external surface of a cast-iron stove may become charged with a proportion of carbonic oxide equal to ·0007 to ·0013 of its volume. Experiments on rabbits show that carbonic oxide has the property of expelling a part of the oxygen contained in the blood; and that the small amount of ·0004 will cause the expulsion of ·45 of the oxygen of the blood. Though sheet-iron stoves are less dangerous, on this account, they are not so harmless as Dr. Carret supposes, as they are open to the grave objections of the sudden elevation of temperature of their external surface, and of then decomposing the carbonic acid of the air. It has long been admitted as a fact in science, that iron, at a red heat, decomposes carbonic acid, takes a portion of its oxygen, and transforms it into carbonic oxide. The experiments showed that the amount of carbonic oxide formed was notably less in a moist than in a dry air; this justifies the common use of vessels filled with water on stoves and furnaces.—*Annual of Scientific Discovery.*

IMPROVED IMPLEMENT FOR DRAWING NAILS.

We copy from the *English Mechanic* a description of an invention whereby nails, spikes, or brads driven into packing cases, flooring, or other timber or woodwork may be drawn or extracted therefrom in such a manner that they will not be broken, bent, or twisted, and unfitted for further use, and so that the wood will not be split or otherwise injured by their extraction.



The implement (a side view of which, showing the position of the parts with regard to the nail being extracted, is given) consists mainly of two hooks or claws so arranged together, and in combination with a lever and adjustable curved shoe, which forms the fulcrum of the said lever, that in drawing a nail, they can be first forced into the wood below the head of the nail, and then by a proper movement of the lever made to grip the nail and draw it from the wood, the curved shoe sliding towards the nail as the same leaves the wood, so that the nail is drawn out in a direction parallel or nearly so with its axis, and is thereby extracted without being broken, bent, or twisted.

The Production of Sulphur in California.

According to the *Alta California*, the production of sulphur and manufacture of its compounds in California are rising in importance. The chief supply of the world is obtained from the sides of Mount Etna, in Sicily, and that State used the Sicilian brimstone until lately. Now the sulphur works on the shore of Clear Lake produce four tuns a day, as much as the coast can consume. The freight from the Mediterranean, the increased charge on account of the combustible nature of the material, and the necessity of keeping large stocks on hand, so as to prevent any disturbance of trade in case a cargo should be delayed or lost, give decided advantages to the home manufacture.

The Sicilian brimstone cannot be had in California for less than four cents per pound, and the domestic article is sold for three and a half cents. Clear Lake occupies the crater of an extinct volcano, and the evidences of volcanic action are abundant in the vicinity. The triangle formed by the lake, the Geysers, and St. Helena—each about twenty-five miles from the other two—abounds with volcanic scoria, trap, lava, obsidian, tufa, warm springs, and other remains of eruptions, and signs of subterranean heat at no great distance from the surface.

The sulphur bed of Clear Lake is about eight miles from the southern end, on the eastern shore, only a few hundred yards from the water. There is a bank resembling ashes, in which there are numerous alkaline and sulphur springs, and, also, vent holes from which sulphurous fumes escape. These holes are surrounded by beautiful crystals of pure sulphur deposited from the fumes rising from below. The earth, containing about fifty per cent of sulphur, is placed in an iron retort, which is heated to a high temperature, so that the sulphur is driven off in fumes into a receiver, where it settles in a liquid form, and runs out into pine boxes, two feet long and a foot square. It is as pure as the Sicilian brimstone, but the latter comes in sticks, which are more convenient for handling, when small pieces are wanted.

The lump sulphur is used chiefly for making powder and sulphuric acid, which last is employed in making blue-stone, giant powder, nitric acid, and muriatic acid, and in refining gold and silver. The consumption of sulphuric, nitric, and muriatic acid on the coast, amounts to 2,000,000 lbs., and the entire demand is supplied by home manufacture.

Lately the production of flowers of sulphur has been commenced at Clear Lake. The fumes passing off from the retort instead of being carried into a small hot receiver as for brimstone, are led into a large cool chamber, in which they condense into a flaky, snowlike condition. This form of sulphur will be needed in large quantities next spring and summer, as a cure for the mildew which attacks the vines and did great damage in many of the vineyards last year.

The Lower Lake *Bulletin* says: There are no less than eight new mines of quicksilver and sulphur now being opened up in this vicinity (southern part of Lake County); the three mines of these minerals now in daily operation employ over 300 men. With eight more in practical operation, nearly 900 men and several millions of dollars in property valuation will be added to this part of the country. And these are not possibilities, they are probabilities. The mineral is there; men are employed there now in running tunnels and holding the ground, and time will develop them.

A Strong Cement for Iron.

To four or five parts of clay, thoroughly dried and pulverized, add two parts of iron filings free from oxide, one part of peroxide of manganese, one half of sea salt, and one half of borax. Mingle thoroughly, and render as fine as possible; then reduce to a thick paste with the necessary quantity of water, mixing thoroughly well. It must be used immediately. After application, it should be exposed to warmth, gradually increasing almost to white heat. This cement is very hard, and presents complete resistance alike to a red heat and boiling water.

Another cement is to mix equal parts of sifted peroxide of manganese and well-pulverized zinc white, add a sufficient quantity of commercial soluble glass to form a thin paste. This mixture, when used immediately, forms a cement quite equal in hardness and resistance to that obtained by the first method.

TEST FOR ARSENIC.—A new and very delicate test for arsenic has been discovered by Bettendorff. Its sensibility is so great that it is said to be capable of detecting one part of arsenic in a million parts of solution; and the presence of antimony does not affect it. In order to apply this test, the arsenious, or arsenic liquid is mixed with aqueous hydric-chloride (hydrochloric acid), until fumes are apparent; thereupon stannous chloride is added, which produces a basic precipitate, containing the greater part of the arsenic as metal, mixed with stannic oxide.