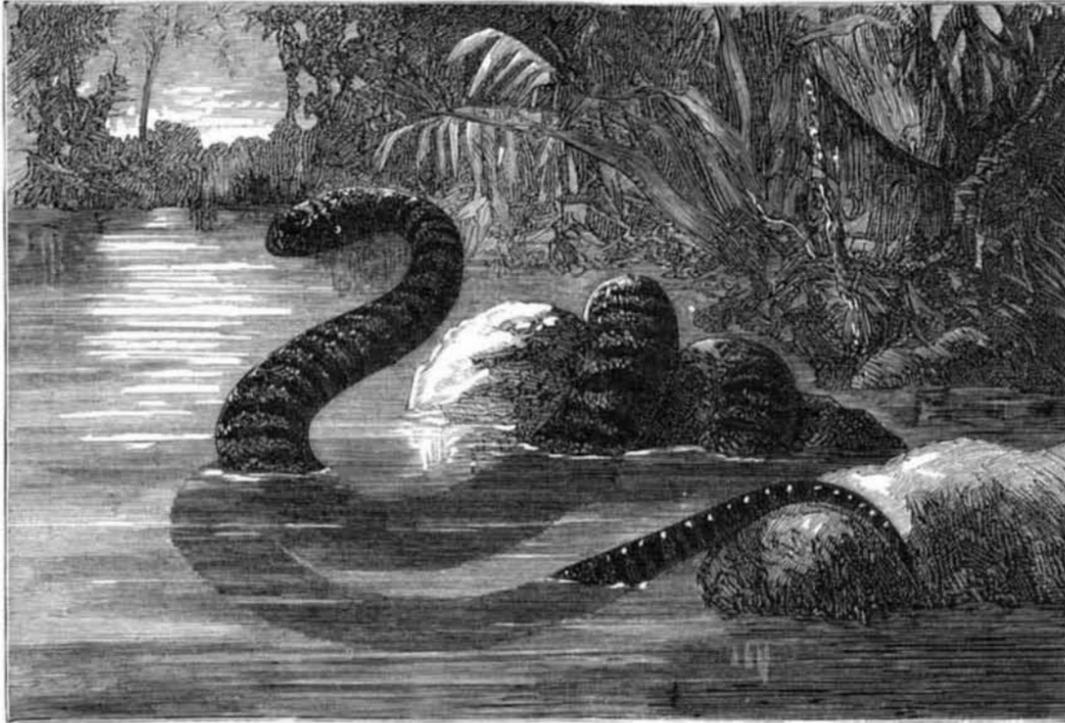


THE BANDED CHERSYDRUS.

The achrocorde or banded chersydrus is a curious aquatic serpent found in the bottoms of marine creeks and mouths of rivers on the borders of the sea, in the vicinity of Malacca, the bay of Manilla, Coromandel, Java, Sumatra, New Guinea, and generally along the coast of southern Asia. The fishermen frequently catch them on their lines, not willingly, as the fangs of the reptile are provided with a deadly poison. It is distinguished from other serpents by being almost entirely free of scales. The body is covered with grain-like particles inserted in the thin and wrinkled skin. Those on the back project slightly in the center, and those on the stomach are pointed. The median line is marked out by two or three ranges of scales placed at angles. The nostrils can be closed with a membranous fold. The tail is flat and compressed, resembling an oar blade. The body is generally banded with black and white oval rings, the tail is spotted with white, and the small head is brownish. Some specimens have yellow or brown bands. They are classed by some among the sea serpents, and by other among boas.



THE BANDED CHERSYDRUS.

Preservation of the Dead.

The corpse of the great Italian republican, Mazzini, was petrified by the method invented by Señor Gorini, of Lodi. Recent travelers say that it proves entirely successful, the features of the eminent agitator presenting no visible alteration, and the expression well preserved, as he reposes in his tomb, which is open to the inspection of visitors. Señor Gorini has not revealed the secret of his method, but has taken measures to give it to the public at his death.

STORKS EATING YOUNG RABBITS.

Our engraving represents a hungry stork making his breakfast off of an unfortunate young rabbit. It is not often that the bird captures such large prey, but probably, while searching the thick grass with its bill partly open, as is its curious habit, it encountered the rabbit and pounced upon without stopping to consider the difference between young rabbits and field mice. The latter, together with snakes, toads, frogs, and large insects, constitute the stork's ordinary food. The unhappy victim is not gorged instantly, but is carried off to the margin of some pond where its captor shakes it and beats it with its bill until it is reduced to a proper condition for easy swallowing. Then the meal is dispatched in a gulp or two, and the bird, which possesses an enormous appetite, resumes its hunting. The stork's favorite food is eels, which it captures with great dexterity. No spear in common use for taking that fish can more effectually secure it between its barbs than can the stork's mandibles. A small eel, despite its lightning movements, has no chance of escaping when once aroused from its lurking place by a stork.



STORKS EATING YOUNG RABBITS.

In Europe the stork attaches itself to man and his habitations, building huge nests on tops of houses, and tamely walking round the streets. It especially parades about fish markets, where it finds no lack of subsistence in the offal.

EDUCATION, as defined by Aristotle, means an agency for the implanting of sound and virtuous habits. Nothing else would satisfy him for a moment.

Testing Lubricating Oils for Acids.

That a small quantity of fatty acid in oil renders it unfit for lubricating purposes is too well known to need repeating, but how to ascertain its presence before irreparable injury has been done is a more difficult problem. Dr. Wiederhold proposes the following simple method of testing for acids, namely, its action upon sub-oxide of copper, or red

oxide. If the red oxide is not at hand, the copper scale or ash of the coppersmith may be employed, as it contains this sub-oxide. Either of these substances is placed in a white glass vessel, and covered with the oil to be treated. If the latter contains a trace of acid, or any resinous acid from rosin oil, with which it may have been adulterated, the oil soon turns green, and that too nearest the copper scales. A gentle heat hastens the reaction, which, in the cold, requires from 15 to 30 minutes. The test is extremely delicate, and cannot result in any doubt or error to those who use it for the first time. The author states that it is superior in accuracy, reliability, and simplicity, to any method previously known, so that an oil which is not turned green by the copper scale can unhesitatingly be pronounced absolutely free from acid. If there be but little acid present the green color

is fainter, by more acid, intenser, and if rosin has been added it is bluish. The chemical reaction is this: The free vegetable and fatty acids separated the sub-oxide into oxide and metallic copper; the former then combines with the acids to form greenish blue salts, that dissolve more or less in the oil and impart their color to it. The oxide of copper does not answer as well as the sub-oxide.

BRASS castings shrink $\frac{1}{8}$ th inch to the foot, in cooling.

Peace and Prosperity in Holland.

The Department of State has received a report on the social and political condition of the Dutch from the Minister of the United States to the Hague. As an illustration of the carefulness and steadiness of the Dutch, the Minister says that there has not been a bank failure in Holland during the last forty years, and that the paper money of the banks during that time has been equal to gold. In regard to fire insurance companies, there is no such thing as a failure on record, and, while the rate of insurance does not average more than half of one per cent, the companies are in the most flourishing condition, realizing twelve to sixteen per cent per annum. First class railroad travel is only one cent per mile, and yet the roads pay good dividends. Pilfering officials are scarcely ever heard of, and when they shock the nation by turning up, they are severely punished and forever disgraced. No free passes are granted, and managers and directors have no power to pass anybody over the roads free. All must pay the public rates. Dishonesty of any kind, or failure in business, means public dishonor, and utterly bars the dishonest from any future public consideration. Four millions of people live within an area of 20,000 square miles, a fact unprecedented in any other country; and all appear to be happy, prosperous, and contented. The secret of this prosperity lies in

the fact that all live within their income, and that industry and honesty are principles so firmly established that their violation is looked upon as an outrage on the national characteristics.

Cape of Good Hope International Exhibition.

It has been officially announced from the Cape that a second International Exhibition is to be opened in Cape Town in April, 1878. It appears that the success of the first exhibition was sufficient to cause a demand for a repetition on a larger scale, especially as regards machinery, implements, and other matters employed in agriculture. This subject was, therefore, laid before the Assembly, a committee was appointed to examine the petition and statements presented, and in reporting thereon it recommended the Government to subscribe a sum not exceeding a thousand pounds, in aid of the coming exhibition: "It being of opinion that the enterprise and energy which has accomplished so much for the colony should be encouraged and assisted," ending with the recommendation above quoted as "in return for the advantages already derived."

During the last few years there has been a marked increase in the commerce of the Cape, for it appears that the imports of the colony increased in value from less than two millions sterling in 1866, and little more than two and a half millions in 1871, to £5,731,319 in 1875, while the exports had grown in the same time from two and a half to nearly four and a quarter millions; and as there are no manufactures of any importance carried on in the colony, the exports consisting of raw material, horses, cattle, and sheep, copper, ore, tallow and skins, and from Natal, sugar, arrowroot, pineapples, indigo, coffee, etc., there seems no probability of this rapid growth of the trade with our South African colonies being arrested.

The figures referring to reports given above do not include diamonds, which are principally sent in letters or parcels, and of which there are no custom house returns; the

amount to the present time is estimated at about twelve millions.

The exhibition of the coming year is introduced under the special patronage of Sir Bartle Frère, Governor of the colony. Its programme includes almost every article of export: Class 1. Preserved meats, fruits, vegetables, etc., condiments, preserves, wines, beer and spirits, corn, flour, etc. Class 2. Chemicals, perfumery, medicines, surgical appliances; oils, soaps and candles, paints, colors, inks, varnishes, glue, starch, blue, black lead, etc.; surgical and dental instruments and appliances; tanning matters, disinfectants, insect destroyers, etc. Class 3. Furniture and upholstery of all kinds; glass, porcelain, earthenware, household utensils, and small wares of all kinds; sewing, washing, and other domestic machines; toys and games; writing-desks, work-boxes, etc.; shop fittings, show cases, etc. Class 4 includes all kinds of clothing and fabrics, watches, plate, and jewelry. Class 5. Vehicles, tents, and anything connected with traveling, emigration, and camp life. Class 6. Tools, cutlery, and needle goods. Class 7. All the machinery and materials of construction. Class 8. Agricultural implements and materials of all kinds. Class 9 is devoted to science and education, and includes books, maps, printing machinery, etc., instruments, apparatus, and materials. Class 10 embraces tobacco, cigars, etc.; aerated water apparatus, beer engines, etc.; ropes, cordage, boats, etc.; fire extinguishers, and papier maché ornaments.

The Wreck of the U. S. Steamer Huron.

The United States steamer Huron, an iron gunboat of 1,020 tons measurement, recently, during a heavy storm, ran ashore at Kitty Hawk, on the coast of North Carolina, some 35 miles south of Norfolk, and was totally wrecked. Out of 138 persons on board, but 34 are known to have been saved. The disaster occurred during the night, and only about twelve hours after the ship had sailed from Norfolk. The cause seems to have been the entanglement of the vessel in a shorewise setting current which carried her nearer land than her navigator supposed her to be. The heavy sea prevented accurate sounding, and the dense fog rendered the shore invisible, so that the first intelligence received of the ship's peril was her contact with the bottom, which was followed soon after by her bilging.

The large proportion of lives lost will give rise to the question of what means of safety the vessel was provided with, and why the same were not of more avail. It seems that there were a few cork jacket life-preservers—articles of great rarity on board of a man-of-war—but beyond these there were a small balsa life-raft, which proved of little utility, and the boats, which were of none, as they were unable to live in the surf. Although the wreck was quickly known to people on shore, and a large crowd gathered on the beach, no method of communicating with the wreck was at hand; while the crew of the stranded vessel, although abundant time seems to have been afforded, were unable to get a line ashore. Although numerous devices have been suggested for sending ropes to land from wrecks, notably by kites, it would seem that still simple means of communication are necessary. A new adaptation of men-of-war's cutters as unsinkable and uncapsizable life-boats would be of utility. The arrangement must be such that the space in the boat necessary for transportation of men, provisions, etc., is not cumbered with large air cylinders or similar devices, nor must the arrangement be such as will interfere with the ordinary every-day use of the boat. A life-preserving jacket, which might also serve as a waterproof dress in bad weather, might also be a useful device, and if such were invented, of slightly appearance and capable of easy storage, the Navy Department could be asked to consider the propriety of its being made a part of the regulation uniform outfit of naval seamen.

AN EASY METHOD OF PRODUCING BAS RELIEFS.

The production of patterns from which to cast ornamental articles is confined to a class of artisans who, by long experience in carving and modeling, have attained great excellence in workmanship. An amateur, while he may not hope to attain to such excellence, and cannot expect to produce, by the usual processes and with limited practice, such exquisite articles as may be seen in many of the city shop-windows, may, if he possesses even a modicum of artistic taste and skill, do something in that direction for both pleasure and profit, by observing the following directions:

The articles required to carry out the process are some thin sheets of semi-transparent wax,* a knife having a narrow, dull blade, and the printed or drawn design of the form to be produced. The backing, or surface on which the relief is made, may be of any of the materials of which patterns are commonly made.

Having given the backing the required form and located thereon the position of the relief, a sheet of wax is laid over the design and the extreme outline of the figure is traced on the surface of the wax with a dull point. The wax is now laid upon a smooth board and cut upon the line just made with the knife, the blade being slightly warm. The wax thus cut is now placed on the foundation or backing, and fastened by heating the knife blade quite hot and touching the wax at several points, so as to cause it to melt and adhere to the backing. Supposing this piece of wax to have the thickness required in the thinnest portion of the relief, another sheet is laid upon the design and traced within, and

a small distance from, the outline of the design. It is cut and laid upon the first piece and made to adhere by pressing it down slightly.

Fig. 1.



Fig. 2.



Another sheet of wax is traced within the outline of the second, and cut and placed upon the two already secured to the backing, and so on until the design is produced in what might be termed the *rough*. This stage is illustrated in Figs. 1 and 2, which are respectively front and edge views, which give the idea of the arrangement of the several sheets.

Fig. 3.



After the sheets are placed upon one another in the manner first observed, the edges may be burnished down by the rounded back of the knife, or by any smooth rounded implement, which must be slightly warmed.

Superfluous wax may be removed by scraping when cold, and indentations and interstices may be filled by adding a little wax. A scroll design is shown in Fig. 3.

When the model is to be reproduced in metal cast in sand

Fig. 4.

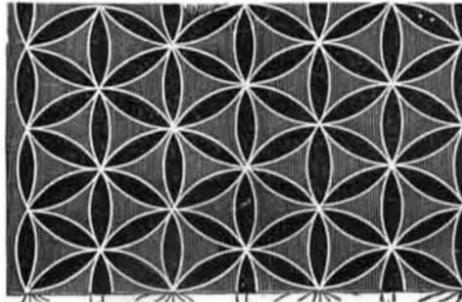


Fig. 5.

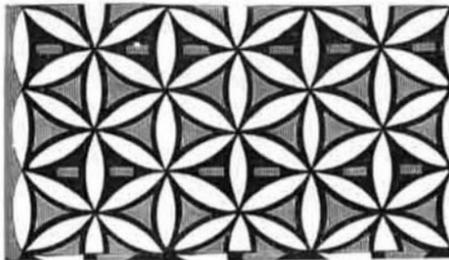
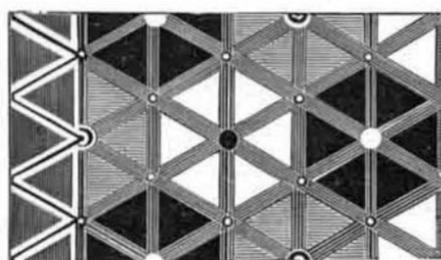


Fig. 6.



moulds, the wax should be slightly varnished with pattern varnish; but when the design is to be produced in plaster, a mould of plaster may be taken from the model after it has been oiled.

A bas relief may be made in this way from a profile photograph or from an engraving.

The process may be employed to advantage in ornamenting patterns for the coarser and heavier kinds of work.

Figs. 4, 5, and 6 represent surfaces ornamented in this manner.

The process is applicable to bas relief ornamentation only, but it is capable of considerable development. G.M.H.

The Sense of Beauty.

There is nothing which more distinctively marks true progress in education than the increasing breadth of view which is taken of the whole subject. Gradually we are discovering that man needs not merely the knowledge contained in text books, and laid down in the various courses of study, but much that must be gleaned from other sources; that he has not only one set of faculties to be developed, but many; and that true culture includes the careful nurture of every part.

Among the hitherto neglected powers of our nature is the sense or perception of beauty. We all have this in its germ, but few of us ever think it worth our while to cherish and improve it. Yet there is scarcely one of our faculties that is so amply provided for in the external world as this. Beauty pervades the entire universe. Mountains and valleys, forests and meadows, skies and oceans are full of it. The more we explore Nature the more do we discover of her loveliness. Science is every day revealing new beauty by her discoveries, and every accession of knowledge opens up charms of which we had never dreamed. Only a small portion of creation can minister to the necessities of the body, and that portion can only be made available by toilsome labor; but the sense of beauty has but to awaken to its own need to find the whole universe waiting to pour upon it the richest supplies. In most cases our desires far outrun their possible fulfilment, but in this it is just the reverse. Here it is the inner sense that needs developing to respond to the wealth of beauty that awaits its recognition. It is as if, in an exquisite palace, filled with choicest pictures and statuary, and adorned with everything that taste could suggest to make it attractive, the inhabitants were partially blind, and could barely distinguish one article from another, much less comprehend the loveliness by which they were surrounded. The world is full of beauty that we barely see, or seeing yet fail to understand or to enjoy.

It may, however, be questioned whether, after all, it is so important that this sense should be quickened and sharpened into keen appreciation. It does not help a man to earn his living, or to grow rich; it does not give him standing in society or political power; it does not add to his stock of knowledge, or enable him to fight the battles of life with any more success. It is true that it does not directly promote these results, though through its culture some of them may be indirectly aided. Yet these are not the only things in life worth pursuing, though in our materialistic age we are apt to think so. The joy that beauty confers is of itself no mean or trifling thing. Pure and innocent pleasures are the best safeguards against unwholesome excitements. He who early learns and retains the habit of enjoying external beauty, and letting its influence sink deeply into his nature, will not be greatly exposed to temptations of a gross or sensual nature. Beauty is eminently refining, purifying, ennobling. As the eye which perceives it is the most delicate and sensitive of all the bodily organs, so the inner sense which responds to it is the most tender and refined of all the faculties. To cultivate and develop this sense is then to exalt the pleasures, to purify the desires, to refine the feelings, to ennoble the aims. No one can expand and intensify his sense of beauty without being a better man, and breathing out a sweeter influence than before. It may be, as Socrates declares, that outward beauty is but the emblem of expression of what is lovely, grand, or noble in the unseen or spiritual world. Certain it is that they are closely akin, and they act and react upon each other with the most perfect harmony.

Whoever is imbued with the sense of beauty will involuntarily create it around him. It will give a grace to his demeanor, a fitness to his words, a harmonious proportion to his conduct. Good taste and consistency will shine in his domestic arrangements and in his business affairs. Unconsciously, by his intercourse, he will develop the same power in others. Partaking of his pleasure and enthusiasm, they also will respond to the beauty around them with fresh joy and fervor. Let us, then, no longer neglect the culture of this important part of our nature. Let us open our eyes and our hearts to receive all the beauty that they are capable of taking in; let us welcome its pure delights, and hasten to shed them on others: let us give it a place in our daily life and thoughts, and let its presence ever dwell in our homes, to bless and purify them.—*Phila. Ledger.*

A Mammoth Barrel Factory.

The Standard Oil Company is constructing at Pittsburg a factory for the manufacture of barrels for its own use. The building will be 300 feet square, and supplied with the latest improved machinery for making barrels, with a capacity of turning out 5,000 to 7,000 barrels a day. The establishment, it is calculated, will cost about \$50,000. In connection with this immense coöperation there is being erected a huge agitator, to be used in completing the process of refining oil, and to which the oil will be conducted by means of pipe lines, and barrelled. These establishments will have the effect of making the locality an extensive shipping point.

* For complete directions for making sheet wax, see SCIENTIFIC AMERICAN SUPPLEMENT, No. 17, "Casting, etc."