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NATURAL HISTORY.

THE SWORD-FISH.

The more we examine the works of Providence, the more full of wonder they seem to be. The contrivance which is shewn in the formation of every animal, so that its form may suit its nature and its habits, the climate in which it lives, and the situation to which it belongs, shews indeed the work of an Almighty hand. This is seen in every animal which breathes; though we are often too thoughtless to consider it; and often, indeed, through ignorance, we do not understand it. Whenever we examine attentively any one of the creatures which move upon the earth, we find that there is sufficient cause to excite our admiration of its great Maker; and it is with this view that a little attention to the natural history of animals may be made so useful as well as so agreeable a study.

The sword-fish is a very large and powerful animal, often growing to the length of twenty feet, and upwards. He has no teeth and no scales, so that, notwithstanding his size, he might, on these accounts, appear a defenceless animal; and hardly able to procure for himself a prey sufficient to sustain a body of such large dimensions. He is however furnished with a wonderful weapon, which makes him a very powerful and very formidable creature. This weapon is, in fact, the upper jaw lengthened out to such an extent as to form a hard, strong and sharp sword. With this weapon these fish are able to attack larger ones than themselves, and even the whale stands in awe of the sword-fish. We may judge of the power of this animal by the following account:—

In the year 1725, some shipwrights, when repairing a ship, found part of the sword of one of these fish. It had passed through more than eight inches of the timber. The workmen declared that they could not, by less than eight or nine strokes, drive an iron pin of the same dimension to the same depth; and this had been done by one stroke of the sword-fish, without any shock being felt by the persons in the ship.

There is, in the British Museum, a large piece of timber from the bottom of a ship, with the sword of this fish quite through it. The ship was an East Indiaman, (the Leopard.) The fish was killed by the violence with which he drove himself against the vessel.

It is said that the sword-fish and the whale never meet without coming to battle, and that the sword-fish generally begins the quarrel. If the whale can get a blow of his tail to take effect upon the sword-fish this

usually finishes him at once; but the sword-fish generally contrives to avoid this stroke, and to plunge his weapon into the sides of the whale. When the whale sees a sword-fish darting at him, he dives to the bottom of the water, and the sword-fish follows him; and then he rises to the surface, and thus the battle goes on and lasts for a long time. The whale has so much fat and blubber upon him that he does not suffer from his wounds so much as we should expect.

COMMON THINGS.

No. 5.—SALTS.

The ocean is one vast store of mineral substances in the state of solution. The most abundant mineral in this great liquid deposit is common salt, which is supposed to constitute about one twenty-eight part of the whole ocean. Numerous other salts, such as glauber salts, epsom salts, salt petre, alum; indeed there is reason to believe, that every mineral which is soluble in water, is contained, in greater or less quantities, in the briny deep.

Besides the ocean, where common salt is found in such quantities as to keep it from putrefaction, mines, hills, and even mountains, are composed of the same useful substance.

In Poland, the salt mines have been worked for three or four centuries at least. They are now carried to a great depth, and extend several miles under ground. They are entered by six shafts five or six feet in diameter, which lead to various accommodations beneath, such as chambers, chapels, and altars, ornamented and supported by pillars, the whole being constructed of salt.

Beneath these mines are numerous springs and streams, not only of salt, but of fresh water, which supply the numerous hands engaged in them. In some instances hydrogen gas is formed in such quantities in these mines, as to produce disastrous explosions.

Though the salt mines of Poland, and the neighbouring countries, are more numerous and have been longer wrought, than any other in Europe, they furnish this useful and necessary material in much less abundance at present, than those of Cheshire, in England. The science, skill and enterprize of the English, not only furnish their own tables with salt as they do with most other articles of sustenance and luxury, but they place 'Liverpool salt' upon many of our tables, and even upon those in the vicinity of the salt mines of Poland.

In Spain, the deposits of salt rise into

hills and even mountains, of great elevation and extent. The same useful and necessary substance is found in great quantities in Africa, frequently dispersed through the soil.

In North America, the deposits of rock salt have not been discovered in many instances rising above the surface of the ground, but beneath the surface it must be extensively diffused. Salt springs are discovered in numerous places, in different parts of the country. Some of these springs are upon, or within a few feet of the surface; others are procured by perforating the earth five or six hundred, and in some instances eight or nine hundred feet, from which depth the salt water rises from a source probably not well understood, and discharges itself in a stream upon the surface, in sufficient abundance to supply extensive manufactories of this article of domestic and political economy.

In some of the natural deposits of rock salt, it is found sufficiently pure for use, and requires only to be reduced to a powder; in most instances, however, it is first dissolved in water and then evaporated. When the material is procured from springs or the ocean, the manufactory of it is little more than evaporation, which is produced both by the sun and artificial heat.

In the West Indies, and many places upon the coast of America, where water for the manufactory of salt is taken from the ocean, the evaporation is effected by the heat of the sun. The brine is let into artificial ponds or vats, where it is exposed to the rays of the sun, until the evaporation precipitates the salt into crystals in the form of cubes, that being the shape in which the muriate of soda, (common salt) crystallizes.

The process of crystallizing common salt is different from that of most other salts:—As hot water dissolves very little more of common salt than cold water, it can be crystallized, or brought into a solid state, only by evaporation; of most other salts, such as glauber salts, (sulphate of soda) epsom salts, (sulphate of magnesia) alum, (sulphate of alumine) copperas, (sulphate of iron) blue vitriol, (sulphate of copper) and many others; hot water holds in solution much larger quantities than cold water. Consequently, as hot water which is saturated with any of the last mentioned salts becomes cool, it throws down the mineral which is dissolved in it, in the form of crystals of different shapes, each salt having a form of its own, where it crystallizes.

Taking advantage of these different principles in crystallization, the manufacturers of salt form, from water taken from the ocean, common salt during the summer, by evapora-

tion, and during the winter they procure glauber and epsom salts, by the other process of crystallization, or by reducing the water from a warmer to a colder state.—The crystals of alum, copperas, blue vitrol, and some other salts, are formed by heating sulphuric acid, or the liquid which dissolves them, to a high heat, and then suffering it to cool, when abundant and beautiful crystals are formed, each taking the shape which the Creator has established for it, without the slightest variation either in the number of sides or the angles.

In the language of chemical science, the term salt has a much more extensive meaning, than in common language. When chemists speak of salts, they mean all substances, composed of acids, combined with alkalies, earths or metallic oxids. This definition of salt embraces a very numerous class of substances. Pearlash, (carbonate of potash) limestone, (carbonate of lime) gypsum, (sulphate of lime) white lead, (carbonate of lead) chrome yellow, (chromate of lead) and numerous other substances, not commonly known by the name of salts, belong to this class of bodies.

THE ARTS.

SOURCES OF POWER.

Gravitation, heat, and contraction of muscles, are the only sources of power, commonly resorted to, for mechanical operations in any of the arts of life.

The power of water arises wholly from gravitation; the earth draws the water upon the wheel which it moves, as it falls, carrying the wheel with it.

Power or motion gained by wind or steam originates with heat.

Animal strength originates in the singular power which all animals possess, of contracting their muscles at pleasure, and by that means moving their limbs or bodies in any direction, and applying the strength their Creator has thus given them to give motion to any machine, or to perform any operation they may choose or be directed to. When the power is once gained, either from gravitation, heat, or animal strength, it can be applied with pleasure to the wheel, lathe, saw, loom, spindle, drill, carriage, boat, vessel, ship, plow, or any other instrument or operation necessary to keep in progress the whole circle of civilized and refined arts.

To be Continued.

MISCELLANEOUS.

THE COON-SKINS.

In the country of — there dwelt in the year —, no matter about dates and places, for I am not writing a dissertation on chronology, nor geography, but—but what shall I say? If I put down 'meta-

physics' my piece will be put down at once, as a dark, intricate, unintelligible matter, that nobody understands. If I say 'morals,' it will be voted dull, prosing, dry—and laid aside. If 'politics,' there will be anticipation of the bank question, or some other questionable affair, and the Magazine may possibly be thought in danger of explosion from the admission of such inflammatory stuff. If I speak of 'manners,' I fear a classification with certain foreign tourists, which would be foreign from my inclination.

What then? My readers may find metaphysics, morals, politics, and manners in the article, if they can; but my intention is, simply, to write a *simple* story.

In the county and year, therefore, which I have not mentioned, there lived three boys; which circumstance, though the county was small, may not be considered, in the whole, very singular. These boys, however, used to hunt their horses and cattle on the same prairies, go to the same school, when there was any to go to, attend the same meeting, and hunt deer, turkeys, prairie fowls, and raccoons in company.—It may be added, that they were 'forted' often in the same blockhouse, and endured together the hardships and perils of a frontier settlement during an Indian war.—Thus they grew up, side by side, and were associated in all the sports and efforts of youth, until the days of manhood led them by different paths to the pursuit of the usual objects which present themselves for man's ambition.

A few years after they were separated—though not so widely as to lose sight of each other in the mean time—an election took place in the little county which I have not named, of such general interest, as to make it worth while for some of the leading men in the state, of commanding influence at this particular point, to attend. A judge of the circuit court and the attorney-general of the state were accordingly seen on the day of election busily engaged among the electors, exerting their talents, learning and personal influence with great effect, on the opposite sides of the pending question. It is no part of my business to say which succeeded, or which was most powerful in ability or in popularity. They were honourable men, and were respected as such.

In the course of the day, and while these gentlemen were standing near each other, a shabbily dressed fellow, bearing substantial marks of improvidence, poverty and degradation came reeling up towards one of them, and with a knowing and somewhat sarcastic leer, cried out, 'I say, Sam, has you and George ever settled it about them 'ere coon-skins?' A hearty and general laugh was the consequence, in which the dignified officers joined, it is believed, with as hearty good will, as any of the company; all of whom understood the allusion to the scenes

of youth as well as the parties themselves.

Here were the identical three boys, who had grown up together on the spot where they were now standing. And they were standing among those who had seen them grow up, or had grown up with them; every individual, perhaps, knowing them as intimately as members of a large family are known to each other. And they knew the difference! Two of these boys were now operating with efficiency on the mass of mind around them—the other only receiving impressions and acting under extraneous influence. Two of them high in standing and high in office—The other sunk to the bottom of society.

What made the difference?

Not talents. It is believed that in native intellectual power, the hunting-shirt boy was fully equal to his school and play-fellows.

Not literary advantages. They fared alike in childhood and youth—all enjoying all the 'schooling' that could be had in the county. And when they were grown to manhood, the same advantages were within the reach of all three—and in an equal degree. I must correct myself here. The least cultivated had, it is believed, the means of obtaining an education in a greater degree than either of the others; and would have had fewer difficulties to meet and overcome.

Not wealth. The advantage was altogether on his side.

Not strength of constitution. They at least had nothing superior to him in this respect.

Not family. All were respectable; but he had the decided advantage, if it be an advantage, to have friends in prominent stations. His father was extensively known and stood high, having at one time occupied a judicial office; his brothers two or three of them, were popular members of the Legislature, &c. They had to win their way without such help.

Not ambition. His was equal to theirs.

Not industry. So far as labor was concerned, he would perform as much as they.

What then made the difference? It was TEMPERANCE.

POPULAR SUPERSTITIONS.

Continued.

A person with a stick of phosphorus once wrote upon the wall of another's bed-chamber, 'This night thou must die.' When the person entered his bed-chamber the light of the lamp prevented his observing the light of the phosphorus; but as soon as the lamp was extinguished, he beheld the warning words glaring from the wall. But he happened to be acquainted with the nature of phosphorus, laughed heartily at the attempted deception, and quietly fell asleep. The experiment, however, was hazardous

and wicked, for an ignorant person, and one of sensitive nerves, might thus have received an irrecoverable shock.

The following account of a case of unnecessary alarm is given by Scott. The agency of philosophical principles was employed in the deception. 'At a certain old castle, on the confines of Hungary, the lord to whom it had belonged, had determined upon giving an entertainment, worthy of his own rank, and of the magnificence of the antique mansion which he inhabited. The guests of course, were numerous, and among them was a veteran officer of hussars remarkable for his bravery. When the arrangements for the night were made, this officer was informed there would be difficulty in accommodating the company in the castle, large as it was, unless some one would take the risk of sleeping in a room supposed to be haunted; and that as he was known to be above such prejudices, the apartment was in the first place proposed for his occupation, as the person least likely to suffer a bad night's rest from this cause. The major thankfully accepted the preference, and having shared the festivity of the evening, retired after midnight, having denounced vengeance against any one who should by any trick attempt to disturb his repose. A threat which his habits would, it was supposed, render him sufficiently ready to execute. Somewhat contrary to the custom in these cases, the major went to bed, having left his candle burning, and laid his trusty pistols carefully loaded upon his bedside.

'He had not slept an hour when he was awakened by a solemn strain of music. He looked out. Three ladies fantastically dressed in green, were seen at the lower end of the apartment, who sung a solemn requiem. The major listened sometime with delight. At last he grew tired. "Ladies," said he, "this is very well, but somewhat monotonous, will you be so kind as to change the tune." The ladies continued singing. He expostulated, but the music was not interrupted. The major began to grow angry. "Ladies," he said, "I must consider this a trick, for the purpose of terrifying me, and as I regard it as an impertinence, I shall take a rough mode of stopping it."—With that he began to handle his pistols. The ladies sung on. He then got seriously angry. "I will wait but five minutes," he said, "and then fire without hesitation." The song was still uninterrupted,—the five minutes were expired. "I still give you leave, ladies," he said, "while I count twenty." This produced as little effect as his former threats. He counted, one—two—three—accordingly, but on approaching the end of the number, and repeating more than once his determination to fire—the last members, seventeen—eighteen—nineteen—were pronounced with considerable pauses

between, and an assurance that the pistols were cocked. The ladies sung on. As he pronounced the word twenty, he fired both pistols against the musical damsels—but the ladies sung on. The major was overcome by the unexpected inefficacy of his violence, and had an illness which lasted more than three weeks. The trick put upon him, may shortly be described by the fact, that the female choristers were placed in an adjoining room—and that he only fired at their reflection, thrown forward into that in which he slept, by the effect of a concave mirror.'

Here the plain and well known laws of the reflection of light, accounts for the whole appearance. But, suppose the deception had never been explained, what reasoning could ever have satisfied the man, that the room was not in reality haunted. It would have been one of the most conclusive ghost stories, that ever was heard. Had he rose from the bed to investigate, the ladies would merely have withdrawn from before the mirror, and the apparition would have vanished; and by again resuming their place, as he laid down, the vision would again have appeared before him.

The writer once knew a young man, who in sultry summer nights, rose from his bed to walk his chamber. As he rose he observed distinctly a man on the opposite side of the room. He was much alarmed and stood still for a moment, looking at the man, and then softly slipped down behind the bed to watch his movements. As he stooped, the man stooped; when suddenly the young gentleman burst into a laugh, to find that he was watching his own reflection in the looking-glass. A person of feebler courage, or of nervous excitability, would have screamed 'a ghost,' and would have forever declared that he could not discredit the evidence of his own senses.

We will mention another circumstance to show how easily a person may be deceived, by an occurrence, which is capable of a perfectly natural explanation. An aged lady had long been sick, and was near her death. One afternoon, as she was sitting in her room with a young lady, a friend who was her constant attendant, the whole room seemed suddenly illuminated. The room faced the east. The sun was far down in the west, and could not shine into it.—"What is that?" said the aged lady. They both looked, and beheld the strange light glittering upon the wall. Three successive times the mysterious illumination appeared and vanished. A few moments after, some one of the family entering the room, the aged lady remarked, "I have just had a warning, which tells me I am very near my end—a truth which certainly did not need any supernatural attestation." Had the sick lady seen the vision alone, there would have been no difficulty in attributing it to a disordered imagination. But the young

lady beheld it also, and she was one not easily alarmed. There was no way in which the occurrence could be explained, and there it rested. The aged lady felt perfectly satisfied, that she had been warned to prepare for death, and she made her preparation accordingly, and in a week or two died. She left the world entirely convinced that she had witnessed a supernatural vision. You might as well have attempted to reason her out of the belief of her own consciousness, as to have reasoned away the reality of this apparition. A week or two after her death, the writer called at a house where some college students roomed, and found them amusing themselves, by casting reflections with a large looking-glass into the houses of the village. In an instant, the whole mystery of the apparition was explained. These young men had thrown a reflection three times into the room, and thus had given it apparently a supernatural illumination.

To be Continued.

WEEKLY MIRROR.

FRIDAY, MARCH 27, 1835.

NEW BRUNSWICK.—*The Legislature of N. B. was prorogued on the 17th instant, some collision took place between the Legislative Council and the House of Assembly, the consequence was, the Lieut. Governor had to close the Session, regretting, as he says, in his speech that they had made no "appropriation for the year."*

CANADA.—*Quebec papers received by the last Mail, state that the House of Assembly had declined doing business, and that many of the members had marched off to their respective homes.*

UNITED STATES.—*Congress has risen after adopting the Resolutions recommended by the Committee on Foreign Relations given in our last.*

FRANCE.—*The Courier de Lyons states that the principal merchants of that city, trading with the United States, had held a meeting, at which they drew up and signed a letter to the Chamber of Commerce of Lyons, whereby, after expressing their conviction that the American nation did not participate in the resentment of the President, and would disapprove of the bitter and threatening terms used towards France in his Message to Congress, it calls upon the Chamber of Commerce to take upon itself the defence of the immense interest the commerce and manufactures of Lyons have, in seeing the question between the two countries brought as promptly as possible to a pacific decision.*

FOUND,

A bunch of small KEYS. The owner may have them by paying expences.—Apply to the Printer.

March 27.

POETRY.

The last number of the *Edinburgh Review* contains some critical remarks on *Poems*, written by a mechanic, commonly called the *Sheffield Brazier*. The following extract or comparison of the outward and visible glories of the CREATOR is eminently fervid and beautiful.

God said, 'Let there be light!' Grim darkness felt HIS might,
And fled away;

Then, startled seas, and mountains cold
Shone forth, all bright in blue and gold,
And cried, 'Tis day! 'tis day!

'Hail, holy light' exclaim'd
The thund'rous cl'ud that flam'd
O'er daisies white;

And lo, the rose, in crimson dress'd,
Lean'd sweetly on the lily's breast,
And blushing, murmur'd, 'Light!'

Then was the skylark born;
Then rose the embattled corn;

Then floods of praise
Flow'd o'er the sunny hills of noon;
And then, in stillest night, the moon

Pour'd forth her pensive rays.
Lo, heaven's bright bow is glad!
Lo, trees and flowers, all clad
In glory bloom!

And shall the mortal sons of God
Be senseless as the trodden clod,
And darker than the tomb?
No, by the *mind* of man!
By the swart artisan!

By GOD, our sire!
Our souls have holy light within,
And every form of grief and sin
Shall see and feel its fire.
By earth, and hell, and heav'n,
The shroud of souls is riven!

Mind, mind alone,
Is light, and hope, and life, and power!
Earth's deepest night, from this blest hour
The night of minds is gone!

SELF-MADE MEN.

The late Professor HEYNE of Goettingen was one of the greatest classical scholars of his own, or of any age. He succeeded the great John Mathias Gesner as Professor of Eloquence at Goettingen, an office, which he held for fifty years, and in which, by his publications, and the attractions of his lectures, he placed himself nearly at the head of the classical scholars of his age. Yet the first thirty-two or thirty-three years of his life, he spent in almost incessant struggle with the most depressing poverty. His father was a poor weaver with a large family. Heyne says 'that he has often seen his mother return home, on a Saturday evening, from an unsuccessful effort to sell the goods, which his father had manufactured, weeping and wringing her hands.' He entered the University of Leipsic with but four shillings in his pocket, and nothing to depend

upon except the small assistance which he might receive from his godfather, a parsimonious old gentleman, who scarcely ever wrote to him, except to inveigh against his indolence—often actually addressing his letters on the outside 'To Mr. Heyne, Idler, Leipsic.' During all this while he allowed himself only two nights' sleep in a week.

EPICETUS, the celebrated Stoic Philosopher, was born a slave, and spent many years of his life in servitude. This was the fact also with ÆSOP, PUBLIUS SYRUS, and TERENCE.

The Abbe HAUY, who died in Paris, a few years since, celebrated for his writings and discoveries in *Chrystallography* attained his distinguished elevation in spite of every disadvantage of birth.

WINKELMAN, one of the most distinguished writers on classic antiquities and the fine arts, that modern times have produced, was the son of a shoemaker. He continued to keep himself at College, chiefly by teaching some of his younger fellow students, while at the same time he, in part, supported his poor father at a hospital.

ARNIGIO, an Italian Poet, of the sixteenth century, of considerable genius and learning, followed his father's trade, of a blacksmith, till he was eighteen years old.

BENEDICT BAUDOUIN, one of the learned men of the sixteenth century, worked for many years at his father's trade, that of a shoemaker; and in the course of his life published a very elaborate work, 'on the Shoemaking of the Ancients.'

The celebrated Italian writer, GELLI, when holding the high dignity of Consul of the Florentine Academy, still continued to work at his original profession of a tailor.

METASTASIO was the son of a common mechanic, and used when a little boy to sing his extemporaneous verses about the streets.

The father of HAYDN, the great musical composer, was a wheelwright, and filled also the humble occupation of a sexton, while his mother was at the same time a servant in the establishment of a neighboring nobleman.

The father of JOHN OPIE, the great English portrait painter, was a working carpenter in Cornwall. Opie was raised from the bottom of a saw-pit, where he was employed in cutting wood, to the Professorship of Painting, in the Royal Academy.

The parents of CASTALIO, the elegant Latin translator of the Bible, were poor peasants, who lived among the mountains of Dauphiny.

Dr. JOHN PRIDEAUX, bishop of Worcester, obtained his education by walking on foot to Oxford, and getting employment, in the first instance, as assistant in the kitchen of Exeter College.

Sir EDMUND SAUNDERS, chief justice of the court of King's Bench, in the reign of Charles II., was originally an errand boy at the Inns of court.

FOR THE MIRROR.

Why is smoking like a torn coat?
Because its a bad habit.

Why is an auger like a large pig?
Because its a great boar (bore.)

Why is a person who frequently gives parties like an Inn-keeper?

Because he keeps a house of Entertainment.
X.

QUESTIONS ON COMMON THINGS,
Nos. 3 and 4.

What two ingredients constitute carbonic acid?

Why is it called carbonic acid, and why is that term more appropriate than fixed air or choke damp?

When is carbonic acid most healthful, when taken into the lungs, or the stomach?

How does it affect life to breathe pure carbonic acid? and does it increase or destroy combustion?

Where is carbonic acid found at all times, and what operation in nature and the arts are constantly producing it?

From what mineral or rock, do the manufacturers of soda water procure this acid for their use?

Which is most common, carbonic acid, or vinegar?

From what substance is vinegar formed? In the process of fermentation, which is first formed, vinegar, or alcohol?

What acid is formed from the distillation of wood; and is it most like vinegar, or sulphuric acid?

What two simple substances compose sulphuric acid, and how is it formed?

What are the names of the three most important alkalies?

What effect have alkalies upon acids?

What alkali is combined with nitric acid to form salt petre?

What alkali is united with muriatic acid to form table salt?

What alkali is used to make hard soap, potash, or soda? and what is used for soft soap?

What acid and alkali are united to form glauber salts?

When acids and alkalies are combined, do they become rarer, or less corrosive?

If an accident occur from an acid, what substance will be most likely to correct it?

If a person should drink a solution of potash, what substance might he take to prevent the evil he was exposed to?

When spots are made, or the color destroyed in a garment by an acid, what substance will restore it?

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