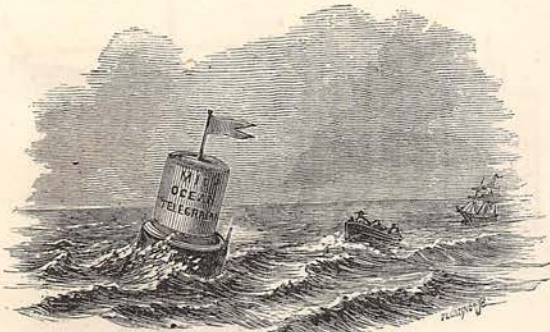


## THE GATHERER.

## Telegraph Stations in Mid-Ocean.

There are many occasions on which it would be highly useful if we could communicate with ships during the course of their voyages. Cargoes, for example, are often sold afloat; and much time would be saved if instructions as to their ultimate destination could be conveyed to ships in mid-ocean, instead of making them call at some particular port "for orders," as is the present practice. If men-of-war, also, could be communicated with, we might from the shore control naval and strategical movements; and in cases of accident how serviceable it would be if, amidst the waste of waters, a ship could send word home as to her exact position and the nature of her disaster, and thus procure assistance.

It is not surprising therefore to find several naval Powers directing their attention to the practicability of establishing telegraph stations far out at sea, by which messages might be sent along the line of some main cable to the terminal point on shore. One invention for establishing communication in this way consists of a hollow sectional column, with a base-plate attached



FAR AT SEA.

by a ball-and-socket joint. This column is lowered into the water and anchored fast to the ground. The branch telegraph cable is then coupled to the main cable, and carried along the column to the surface of the water, to be there connected with instruments on board passing ships.

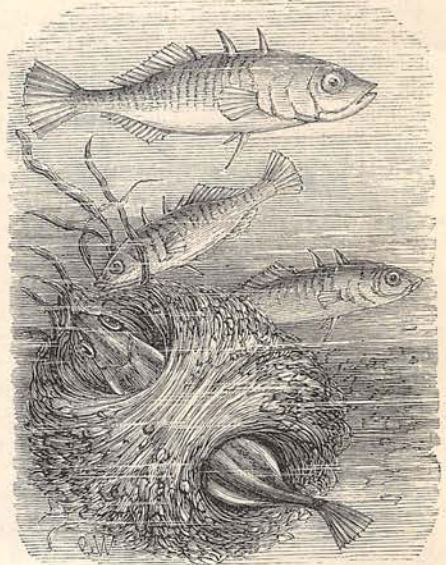
## A River of Ink.

Among the wonders of nature in Algeria, there is a river of genuine ink. It is formed by the junction of two streams, one flowing from a region of ferruginous soil, and the other draining a peat swamp. The waters of the former are, of course, strongly impregnated with iron; those of the latter, with gallic acid. On meeting, the acid of the one stream unites with the iron of the other, and a true ink is the result. The banks of the united stream would be, of all places in the world, the one for a colony of authors. Fields of esparto grass, for paper-making, might be sown in the neigh-

bourhood; the paper-mills might be turned by the inky flood, and geese might be reared to supply quill pens. The members of the republic of letters would there do nothing all day long but sit dangling their feet in the water, and occasionally dipping in their pens—a peaceable crew, except perhaps when they would plague each other by reading long extracts from their unpublished works.

## Nest-building Fish.

Our feathered friends have long been noted for their ability in the nest-building line, but fish have never been credited with giving much attention to this species of architecture. One of the most common, however, of our British fish, the little stickle-back, is an ingenious builder of nests; it is in this way conspicuous among fish. The stickle-back's nest consists of extremely minute pieces of straw and sticks, selected to resemble the colour



STICKLEBACKS AT HOME.

of the ground at the bottom of the water. Its circumference is rather more than that of a shilling, and it has a top or cover, with a hole in the centre, about the size of a small nut, in which are deposited the eggs or spawn. This opening is frequently concealed by drawing little fragments of straw over it, but this is not always done. The nests are built at the bottom of not very deep water. On some coasts the stickle-back gets into pools at the highest water-mark of the tide, and builds its nest there. These pools being unconnected with the sea, except at spring-tides, the young fish get the full benefit of the heat of the sun.

When the young are hatched, they form the sole care of the male fish, who looks well after his juvenile sticklebacks, till they are grown up and able to shift for themselves.

But let no one, after reading these particulars, carry away the impression that the stickleback is nothing but an amiable housekeeper and watchful father. Far

from that : a more vicious, irritable little creature does not exist in any pond, river, or ocean under the sun. He is much given to fighting, and his battles are sometimes in defence of home, but most often they are only to indulge a disposition which is pugnacious in the highest degree.

#### The Secret of Pure Water.

There are few localities so highly favoured that they can boast of a constant supply of pure water. And yet there is nothing of such importance for health's sake; indeed, if we were wise, we would think no pains too great to secure it. The following ingenious method of obtaining water, about which one cannot entertain a shadow of suspicion, is suggested by the correspondent of a contemporary. It is a plan which may be carried out by any one who has a fire always burning. A large wrought-iron boiler is enclosed at the back of the kitchen grate. From the top of the boiler there rises perpendicularly about a foot of  $1\frac{1}{2}$ -inch iron pipe, with an elbow at the end. To this is screwed a length of about ten feet of 1-inch pipe, which terminates in a coil of about twenty feet of  $\frac{3}{4}$ -inch tin pipe—not a difficult article to obtain. The coil, or "worm," is fixed in an oaken tub filled with cold water and placed in a corner out of the way. Whenever the water in the boiler gives off steam, water gently trickles from the extremity of the worm, which, for the sake of convenience, is provided with a gun-metal cock. The flow continues all day, and the water is collected in jugs for use. That intended for the table is emptied into a simple glass aerating apparatus, that keeps up a constant stream of carbonic acid gas. In this way, with a very little attention, and by keeping the reservoir and the water caraffes cool, one can have at all times an abundant supply of, to all intents, cold spring-water of the most perfect attainable purity.

There is a simple cheap way of obtaining pure water for drinking purposes, not so thorough-going as the plan just described, but of great use at odd times. Get a glass funnel—the size being regulated by the quantity of water to be filtered—a few French circular filter-papers, and some pure fresh-burnt animal charcoal. Lay a table-spoonful of charcoal on one of the papers, and you can then boast the possession of an excellent charcoal filter, the charcoal of which can be renewed at any time at an insignificant cost. When using a fresh lot of charcoal it is necessary to return the first pint or two of water that passes through, as it will have carried dust along with it.

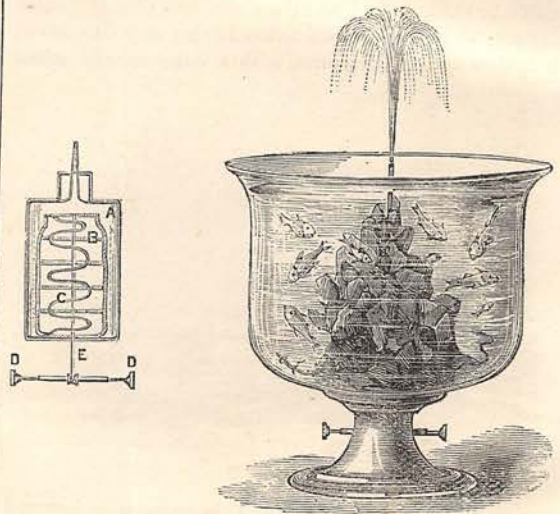
#### Electric Penmanship.

One of the most curious novelties shown at the International Exhibition at Philadelphia is a manifold letter-writer, invented by a well-known electrician of Newark, New Jersey. It consists of a tube not unlike a pencil-case; the point resembles that of an ever-point pencil, only instead of lead there is a needle. This miniature electric engine is connected with a battery by a small wire. The tube is held perfectly straight whilst the words are being traced, and as this

is being done, the needle, moved by the electricity with great rapidity, punctures the paper; it is said to make fifty small holes in a second. This converts the paper into a stencil-sheet, which is then placed in a frame. An inked roller is passed over it, to fill the fine perforations with ink; a sheet of paper is next laid below the written paper or stencil, and the roller is again passed over it once or twice, and thus a perfect facsimile of the writing is obtained. These facsimiles can be produced at the rate of four or five per minute, and one writing or "stencil" will suffice to print a thousand copies. When the punctured paper is worn past usefulness, it is a simple matter to prepare another. The cost of charging the small battery weekly is only a penny; the complete apparatus costs £7. Its size is very convenient; one could pack it away in an ordinary writing-desk.

#### Playing-Fountains for Everybody.

There are few sights so refreshing as that of a fountain throwing its water high into the air, and we have here to show how, by a contrivance patented by Mr. Herman Schildberg, this pleasing spectacle may be introduced into every home. We have represented



A PLEASANT FOUNTAIN.

the fountain in connection with an aquarium, but it might, by the effort of a little ingenuity, be constructed to stand alone, or in the centre of a case of ferns, or surrounded by flowers and ornaments. The rockwork of the aquarium conceals a hollow case A (see engraving). Inside the case A, is fitted an india-rubber bellows B. The bellows contains a spiral spring C, and is wound down by a cord E, passed round the axle D D. When the bellows is brought down, the water enters the case A, by a small valve, opening inwards, placed on the top. On the spring being released, the bellows is gradually expanded, and the water is driven out through the jet, to a height in proportion to the force of the spring. Springs of this kind are to be bought capable of lifting ten or even fourteen pounds, which will be more than sufficient for the purposes of ordinary in-door fountains. The

principle of the fountain reminds one very much of that of the ordinary carriage-lamp. It is to be added that a small tap may be placed in the jet-pipe to regulate the height, or to suit a different kind of jet.

#### A Buried Quotation.

In the following sonnet are buried two well-known lines from Tennyson's "In Memoriam"—one word in each line:—

#### THE APPROACH OF MIDNIGHT.

'Tis evening, and within the dells the birds  
Trill forth their sweet good-nights, and better still  
The warblers of the night begin to fill  
The woods with melody. Long have the herds  
Of lowing cattle sought their well-loved shade  
Beneath the trees; and now the grim owl peers  
Forth from his crannied nook—lost all his fears,  
For better time than this to make his raid,  
He knows can never be, since far and wide  
The busy world sinks fast to sleep and rest.  
Soon have the moonbeams ris'n above the crest  
Of snow-white cloud 'neath which they loved to hide;  
And now at length bathed in soft silv'ry light,  
We wonder all if this be truly night.

G. W.

#### Machine Power for Home Use.

Domestic reformers have always kept a sharp lookout for machines likely to be made available for household work, and it seems not improbable that, one of these days, many of our household labours will be accomplished for us simply by turning a handle to set a few wheels in motion. In the meantime we have to record two inventions which promise something in this direction.

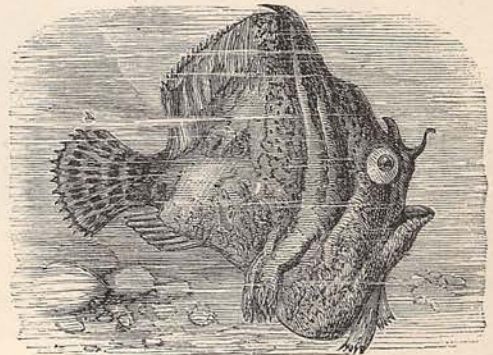
The first is a miniature under-shot water-wheel, capable of application to sewing machines, and other apparatus of a like character. The wheel is a very narrow one, with a groove, divided at regular intervals into buckets and compartments. A cap is fitted on at the point where the water is let in, and, closing the compartment at the other end, water-packs it. The stream flows through a narrow aperture, and provided there is sufficient pressure in connection with the water-supply, the wheel goes round merrily, and may be made to set in motion all sorts of machinery.

The next invention is a domestic steam-engine, patented by M. Roser, of Paris. It is described as "adapted for all sorts of domestic purposes, and for hand-turning, watch-making, machine-sewing, stamping, embossing, hand-printing, and the like." The boiler is composed of two concentric cylinders of iron plate, the inner one containing a serpentine of sheet metal with the furnace underneath, while the space between the cylinders forms a steam chamber. The flue is surrounded by a feed-cistern, so that the waste heat is utilised in raising the temperature of the feed-water. These little engines are made of various sizes, ranging from  $\frac{1}{3}$  to 2 horse-power. One shown in the Maritime Exhibition was  $\frac{1}{2}$  horse-power. Steam can be got up in a surprisingly short space of time—within

twelve minutes, it is said, after setting light to the fire. The engine just mentioned cost for fuel, when in full work, only about a halfpenny an hour.

#### Fish Walking on Dry Land.

If in this country one met a troop of fish walking along a dusty road, he would perhaps be justified in thinking that the age of fairy tales had come again, when frogs wooed kings' daughters, and birds held sage conversations on every tree. In some foreign lands, however, walking-fish are common enough. We have in the illustration a fish found in the seas around Ceylon, of so grotesque an appearance that it looks more like a wild dream of the artist than a representation of a living object. This singular creature is one of a group in which the carpus form arms that support the pectoral fins, and thus enable the fish to walk along the ground almost like a quadruped. On the rocks of Ceylon, washed by the surf, there are other little walking-fish which run up the wet stones with the utmost ease and rapidity. By the aid of the pectoral and ventral fins and gill-cases, they move over the damp sand, ascend



AN EASTERN BEAUTY.

the roots of the mangroves, and climb up the smooth face of the rocks in search of flies. Many of the fresh-water fish of the same island possess the power of leaving their native element, and returning to it again after long pilgrimages on dry land. When the pools they inhabit get low in the summer season, they start off and, led by an as-yet-unexplained instinct, shape their course through the grass to the nearest considerable body of water. The fish most often seen on these excursions is a species of perch. It grows to about six inches in length, the head is round and covered with scales, and the edges of the gill-covers are strongly denticulated. Aided by an admirable apparatus fitted by nature to its head, the little creature issues boldly from its native haunts, and proceeds on a toilsome march to a new habitation. The expedition is made generally at night or early in the morning, whilst the grass is wet with dew. In its distress, however, it is sometimes compelled to move by day, and Mr. E. L. Leyard records that on one occasion he met a number of them travelling along a dusty road under a broiling sun.