

WORKERS OF WONDER

SOME INVENTIONS AND DISCOVERIES LATELY MADE

Photography May Now be Successfully Done Under Water—Electricity as a Fertilizer of Land—Miscellaneous Notes of Progress

DR. BOUTON, A French savant of considerable renown, has invented a process to utilize photography on the bottom of the sea, or at least several thousand feet below the surface of the ocean, and is now engaged in experiments of that kind in the Mediterranean, opposite Banyuls-sur-Mer, a town of France, near the Spanish frontier, which is known as one of the French zoological stations.

The accompanying illustration is made from a photograph taken by the doctor's assistant and representing him in the act of utilizing his newly invented apparatus.

He wears the usual diver's suit, with extra heavy leaden shoes to his feet, so as to steady his gait under water, if we may call it so. The neighborhood of Banyuls-sur-Mer was inhabited by



PHOTOGRAPHING AT THE BOTTOM OF THE SEA.
Drawn from a Photograph Taken Under Water.

the ancient Romans of the imperial period, and ruins of Roman villas and other splendid buildings, that once stood on the strand of the sea, are now found at the bottom, having slid into the water hundreds, if not a thousand years or longer ago.

Dr. Bouton tells us of the beauties of the old time splendor, which his photographic apparatus revealed to him. "There is a palace niche, half covered by blue mud and fragments of mineral particles, sits a gigantic cuttle fish," he says, "glaring at me with large eyes, and emitting the dark liquid, which gave him the name of 'ink fish,' as the magnesium light strikes him. Fishes and animals belonging to all the invertebrate groups, far too numerous to specify, ply about my head and body. Pelagic algae are abundant everywhere. There are mollusks, fishes, that seem to consist only of head and tail, and others formed like snakes. My foot stumbles over reef building and organ pipe corals, dead and alive, rich in color and of exquisite architecture, and surrounded by small fishes with peculiarly elongated snouts, whose bodies are red and blue."

The pictures produced by Dr. Bouton by this process, which, by the way, in the main does not differ very much from the ordinary instantaneous process, have created a sensation among the savants of Europe, who hope that another Challenger expedition, like that sent out by the British government in 1873, may be started, equipped with the photographic instruments of Dr. Bouton's invention. Such an expedition, having at its disposal electric lights and photography, would undoubtedly attain results for the good of science such as never have been dreamed of before.

The doctor intends to publish a number of photographic maps of the floor of the sea in colors, an undertaking that ought to be encouraged by all favoring the highest class of scientific information and education. He says that the taking of pictures in deep water is not more dangerous than ordinary divers' experiments, and advises young men, fond of scientific exploration, to make a trial of it at the bottom of rivers.

"Sea mice are everywhere, but, unlike their sisters on land, creep instead of run along the floor of the sea. This is a peculiar animal, about five inches long and one and a half broad, its back thickly colored with silky hair of brilliant iridescence, forming a mottled felt work. The head has luminous eyes. The shells and skeletons of innumerable animals and fishes, generally speaking, form the deposits on the bottom of the sea, intermingled with volcanic mud, red and blue clay and coral branches."

Hollow Spars Create an Industry

The use of hollow spars for boats designed to attain great speed has introduced a new and novel industry requiring workmanship of the finest character. The stick for this purpose is required to be of exceptionally fine and straight grain, and, after being roughly shaped, is split longitudinally from end to end; the center of each of the halves is then hollowed out, and a greater or less amount is removed, according to the intended location of the spar, the upper spars being much the lighter; these hollows run nearly the length of the spar, great care being essential to have them follow the taper of the outside of the spar exactly, to insure uniform thickness at every point—of course when this has been done and the two halves of the spar replaced in their original position, a circular hole is left in the center of the spar, running nearly the whole length, and following its taper

from end to end. After this the two halves are fastened in place again by means of wooden dowels, which fasten the split together, being placed alternately on either side of the central hollow, and both dowels and split are carefully glued. These dowels vary in size with the size of the spar, but are usually as long as they can be made without piercing its outside surface. They are placed slightly nearer the center hollow than the outside, in order to give them all the length possible. In small spars the glue and the dowels suffice, but in large ones metal bands on the outside are added.

Water Platinum

Experiments made with the water-platinum pyrometer on the boilers of the Pacific mills, Massachusetts, have exhibited some important practical results. It was found that in the heart of an anthracite coal fire the temperature "marked" 425 degrees, while at the bridge wall it was 1,341 degrees, 893 at the entering tubes, and 373 at the leaving tubes. In this case, twenty pounds of air were supplied per pound of coal, usually, however, this amount being greater and having the effect of reducing the temperature. The method of making the tests was to heat platinum balls in a crucible placed at the point where the temperature is desired, these, when heated, being removed and submerged in water. The weight of the platinum being known, and the weight of the water, it is easy to figure from the specific heats of the water and platinum, and the increase in temperature the water shows by immersing the balls, just how high the temperature of the balls must have been.

Microbes on Post Cards

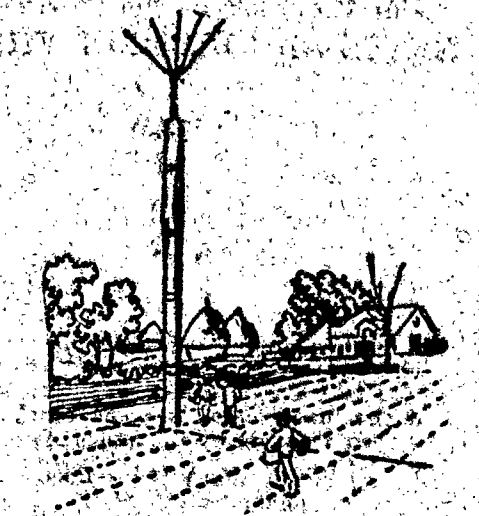
The latest scare in microbes has been started by Prof. Uffelman of Boston, who infected a letter with cholera bacilli and put it into a post bag. When the letter was taken out twenty-three and a half hours later, the bacilli were still alive. Bacilli were also found living on post cards twenty hours after infection. The micro-organisms were found to die rapidly when placed upon coins. A fly-charged with cholera bacilli was afterward placed upon some beef. A little later the meat was found to be swarming with bacteria. A finger was infected with cholera bacilli and dried. One hour later the finger was rubbed on some roast meat and numerous bacilli developed, subsequently. The moral of all these experiments is obvious.

Fertilizing by Electricity

Electricity has been utilized in France by Brother Paulin, a Catholic priest, in the promotion of the growth of vegetables and vines with decided success. It is not the electricity of the dynamo and battery that has done the work, but nature's own, as generated in the atmosphere a slight distance from the earth by the meteorological phenomena of storms, rain and wind. The invention promises to be especially valuable for growing vegetables and fruits in the vicinity of large towns.

A French paper gives particulars regarding this very promising discovery. The electricity is obtained by erecting a resinous pole forty or sixty feet in height, and higher if possible, supporting an insulated galvanized iron rod terminating at the top in five branches of copper. At the bottom this collector of electricity communicates with a system of iron wires spaced six feet apart, which distribute the foundering gold throughout the whole extent of arable soil to be influenced.

In the accompanying picture the conducting wires are shown upon the surface of the earth in order to show their arrangement. It is really they are buried at such a depth as to not interfere with the work of culture. Such an installation will last for several years. The apparatus operates as long as the wires withstand rust and still permit the passage of the



THE ELECTRICAL VENTILATOR.
electric current. The apparatus is called the geomagnetifer. A height of fifty feet is suitable for thirty acres.

Horse Power of a Whale

An interesting study of the horse power of the whale has been made by the eminent anatomist, Sir William Turner of the University of Edinburgh, Scotland, in conjunction with John Henderson, the equally eminent Glasgow shipbuilder. The size and dimensions of a great whale stranded several years ago on the shore at Longridgy furnished the necessary data for a computation of the power necessary to propel it at the rate of 12 miles an hour. This whale measured 80 feet in length, 20 feet across the flanges of the tail, and weighed 74 tons. It was calculated that 145 horse power was necessary to attain the speed mentioned.

A Bad Break

Briggs-Travers got himself into a scrape when he went to church last Sunday.

Griggs—How was that?

Briggs—The man across the aisle put a peker chip in the contribution box by mistake, and Travers said he would raise him.

BRIGHT BOYS

Friend Father Tell Stories to Illustrate the Character of Their Race

"Huh!" said the first benedict. "I don't suppose there is a boy quite as bright as mine in the whole city of Buffalo. The other night we had ice cream for dinner. Now, he usually likes ice cream, but this particular lot seemed to be too cold for him. What do you suppose he did? Why, he went and put on his overcoat and cap and mittens and then ate it. Thought that if he was warmer the cream wouldn't be so cold. See? Speaking about bright boys."

"Well," said the second benedict, "I've got a bright boy, myself. He's in the blue-ribbon class and don't you forget it. Why, the other day he was inquiring of the hired girl what he was made of, and the hired girl happened to be making pies. So she held up a lump of dough and said: 'You're made of dough.' 'An' is brack ladies like the wash-lady made of brack dough?' he asked. 'Yes,' she said. He thought for a long time then finally said: 'Mary, I don't believe it. How'd they get the jelly in for the eyes? And you will talk about bright boys, will you?'"

"It pains me to mention it," said the third benedict, "but I must say I've got a boy up at my house who simply leads the procession. He taught me a lesson the other day. It was at the breakfast table and he had a soft boiled egg. He was making bad work of it and had daubed his nose and cheeks and hands. Finally I looked over at him and said, in a manner meant to be mildly sarcastic: 'Why don't you put it on your hair, Reg?'"

"And what did he do?" asked the other two benedicts in the same breath.

"He put it on his hair," replied the third benedict sadly.

KILLING OFF THE FAUNA

Australian Lyre Birds Being Ruthlessly Extirpated

Unless strict measures are taken in the immediate future, the native fauna of Victoria, Australia, will soon become extinct. The exterminated complaints to the customs department is that of "wanton destruction." Such unique specimens as the platypus and the lyre bird are already very rare, and if the present state of things continues, their total disappearance will be a matter of but a few years.

The police have frequently reported the fact of lyre birds having been shot in the ranges, and also the sale of the tails, but through inability to prove the actual killing of the birds, they have not succeeded in having offenders punished.

The Royal acclimatization society has now addressed the minister of trade and customs on the subject, and points out that in one shop alone in Melbourne twenty-five lyre birds' tails have been displayed for sale at one time, and that as the lyre bird, as a rule, only one egg each in the season, the present rate of destruction must soon extinguish the species.

It is further mentioned that the bird has an inveterate enemy in the fox, and that sixteen tails were recently found near a fox's lair in the ranges. Protection should certainly be afforded to the lyre bird and the platypus, and even the kangaroo, unless he is also to become extinct.

GOT EVEN AT LAST

How a Cleveland Lawyer Averaged a Blow of Thirty Years Before

"That all things come to him who waits" has been proven more than once," said Judge Henry McKinley of Cleveland, to a reporter.

"Once when I was a boy of nine or ten years I was sent on an errand a long way into the country. On my way home, being hot and thirsty, I climbed over a fence into a meadow and began picking some wild strawberries. All on a sudden the owner of the farm came rushing up behind me and struck me a brutal blow with a heavy ox gad, almost cutting my body in two. As I started to run away he hit me again a most vicious blow."

"Old man," said I, "I'll get even some day. I did, but it was thirty years later. I was called on to defend the property rights of some orphan children. As it happened, the oppressor was the man with the ox gad. In summing up I told the story of the brutal blows that I had received in that meadow thirty years ago. 'There is the man that did it,' said I to the jury. 'Do you wonder that such a man would rob orphan children?' The jury didn't seem to wonder a bit, for I got a verdict in my favor in less than five minutes."

Mother of Sixteen at Thirty-Two

A remarkable case of maternity was developed at Memphis recently, when an application was made by Sarah Petty to act as guardian of the minor heirs of Maggie James, deceased. All the parties are colored, and interest attaches to the proceedings from the fact that the deceased left ten children living and was the mother of six who are dead, dying herself at the age of 32. E. E. Bell, a colored lawyer, presented the petition, and, when questioned as to the truth of the statements in it, said they were correct. The deceased had been married at the age of 16, and had given birth to a child every year since, never having borne twins. Her first husband died and she at once married again.

Small Beginnings

Sarah Bernhardt was a dressmaker's apprentice. Adelaide Neilson began life as a child's nurse. Miss Braddon, the novelist, was a utility actress in the provinces. Charlotte Cushman was the daughter of poor parents and the best contracts to this country ever had up to a dozen years ago was a washerwoman's daughter up in Maine.

WORTH A THOUSAND DOLLARS

A Butterfly Which Is the Most Valuable Insect in the World

One naturally thinks of butterflies in connection only with flowers, and flowers suggest sunshine and warmth. But there is no place on this earth except upon its great seas and oceans where butterflies cannot be found. Of course the plains of tropical countries abound with them, but some of the most beautiful forms are found in the mountain passes of Darjeeling and Sikkim, in the Himalayas, and on the frigid altitudes of Tibet, Cashmere, Toorkistan and the Pamirs. Lieutenant Peary has told that when he planted the United States flag on the ice cap at the farthest point north a myth lit on the pole for a moment. Prices of butterflies vary in the catalogues of professional dealers from 15 cents to \$500. According to a writer from whom these facts about butterflies are gleaned, "fine types," beautiful and rare "varieties," and wonderful "aniques" are practically priceless. For example, one of the gems of the collection of Mr. Neumogen, of New York, is his wonderful papilio neumogeni. This insect, the only one of its kind ever captured, was taken on the island of Sumbawa, southeast of Java. Received in a shipment from his collector at that place, Mr. Neumogen, at once concluded that it was new to science. He sent it to Europe, risking its loss, and experts there decided that he was right. It is of a wonderful metallic green. Special expeditions have been sent to the locality several times since in the hope of finding another, but this one still remains unique. If it were sold at auction in London it would bring \$1,000 at least.

WILL COST OVER A MILLION

The Carr's New Yacht, the Keel of Which Was Recently Laid

The Carr's new yacht, of which he saw the keel laid at Copenhagen, will be named the Standard. A Berlin correspondent learns that she is to cost \$1,250,000, and is to be finished in the year 1925. The new craft, which is also to be used as a cruiser, is to be attached to the so-called "volunteer fleet" in the Black Sea. She is to be 270 feet long and 30 feet broad. She will be supplied with engines of 10,000 horse power and be able to sail at a great speed. The Polestar, the Carr's present yacht, measures only 315 feet by forty-five feet, and her engines are 7,000 horse power. At the ceremony at Copenhagen nearly all the workmen of the shipbuilding yard, numbering about 1,500, were assembled to await the Carr's arrival. The place was literally teeming with Russian police agents. The ceremony was presided by a religious service in the Russian church at Copenhagen. The Carr was received by the metropolitan, whose hand he kissed and who sprinkled him with holy water. He took up his position with the empress in front of the altar, and knelt for a quarter of an hour in silent prayer. As the shipbuilding yards on Befskholm a magnificent pavilion had been erected for the imperial party. The ceremony began with prayer. Then the Carr placed a silver plate in the center of the keel, on which were inscribed the name of the vessel, her size and character, as well as the date and year. Next the empress stepped forward and gave three taps with a golden hammer which had been made expressly for this purpose, on the plate.

Probably the Same Race

Dr. John Beddoe of Bristol, has been making some interesting inquiries into the relative commonness of light and dark hair in England. Fair hair, he finds, is gradually disappearing, and he attributes this to the laws of natural selection and of the survival of the fittest operating under the insanitary conditions which are imposed by residence in large towns. Fair-haired people seem to be less able to stand these adverse conditions than dark-haired ones. Consequently, more dark-haired women marry than fair-haired ones. Of 100 dark-haired women seventy-nine marry; of 100 fair-haired women only fifty-five marry; and, of course, the general tendency is for children to "take after" their mothers. Thus the darkness of the race is little by little increased.

Succession to the British Throne

The London Times is authority for the following list, giving the order of succession to the British throne: prince of Wales, Prince George of Wales, duchess of Fife, Lady Alexandra Duff, Princess Victoria of Wales, Princess Maud of Wales, duke of Edinburgh, Prince Alfred of Edinburgh, Princess Marie of Edinburgh, Princess Victoria of Edinburgh, Princess Alexandra of Edinburgh, Princess Beatrice of Edinburgh, duke of Connaught, Prince Arthur of Connaught, Princess Margaret of Connaught, Princess Victoria of Connaught, duke of Albany, Princess Alice of Albany.

Saving Crops in Oregon

Farming is business and the crops must be saved in the far West. A visitor at the Polk Butler settlement on Des Chutes Ridge, Ore., last fall, noticing that the school house was still closed and the fall term, long overdue, has not yet begun, asked when school would commence. "Not till the wheat gets dry," was the reply. "Why, what's the school to do with wheat?" was the natural query. "We're drying it in the school house," was the explanation. Wet wheat was spread all over the school house floor, from three to five feet deep.

They Were an Excellent Pair

Lemons were used by the Romans to keep moths from their garments, and in the time of Pliny they were considered an excellent poison. They are native of Asia.

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