

## Scientific Museum.

### Submarine boat in France.

The following account of a submarine steamboat brought before the citizens of Paris within the past few months, is an evidence that all things are not new that are stated to be novel, as will be observed by comparing the account with a communication published in last week's paper.

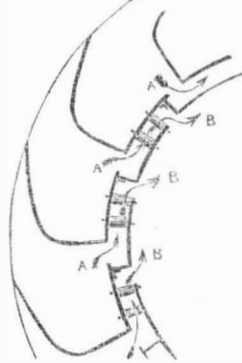
"Dr. Payerne, of Paris, has recently invented and brought before the public a curious submarine steamboat. It measures 27 feet in length and 9½ in width, and accomplishes the purposes for which it is intended, says M. Lammiral, by the following means:—1 Alimentation of vital air constantly made under the water, without any communication with the atmosphere above water. 2 Direct contact of the crew with the water at any depth down to 150 feet. 3 Slow or active locomotion of the boat under water. The alimentation of air is made by a double process, mechanical and chemical, which maintains, almost without expense, the air perfectly pure and respirable in all hermetical places, such as diving bells, submarine vessels, ship's holds, mines, &c. The direct contact with water is easily obtained by a pressure of air previously stored in special compartments of the boat and let out into the room, when the bottom of the vessel is to be thrown open, with a tension made sufficient to balance the column of water and the weight of the atmosphere above. A slow locomotion under water is necessary to accomplish various branches of industry, such as saving of wrecked goods, fishing for oysters, corals, spurge, pearls, &c. In these cases, when the submarine boat has dived down to the bottom, the crew work her as if preparing to go up, pumping out the liquid ballast in order to render the specific gravity of the submarine boat nearly equal to the weight of the bulk of water that she displaces. Then previously to the natural ascending impulse, which would take place, a couple of men having their feet on the ground and the upper part of their body inside the boat, take hold of her and walk easily towards the point wished for. This slow ambulation is quite sufficient in the above-mentioned works. A rapid locomotion, for travelling the boat under water and for contending against under currents, must be given by steam power. The apparent impossibility of maintaining fire under a furnace with a current of air is completely conquered by chemistry, in its pyrotechnical branch; a certain fuel is consumed in a hermetical furnace, and generates steam in the boilers. The machinery is worked quite as well as in any other screw steamer. This important attainment of Dr. Payerne cost him ten years of persevering study, the loss of his health and large sums of money. Eminent men of science have reported favorably on it, and the Minister of Public Work has appointed a Commissioner to investigate it."

### Trial of a New Balloon at Paris.

Galignani's Messenger says it will be remembered that last summer great sensation was caused by the announcement that the means of navigating balloons had been discovered, and crowds flocked to the Hippodrome, where experiments were made. The balloon employed was in shape something like a fish, and beneath it was an apparatus on the clock-work principle, which propelled it by moving wings at the sides, and a sort of rudder at the tail kept it in the required direction. In some of the experiments public and private, the balloon was propelled in different directions, and against the wind, but the latter trials were not so successful. Since then the inventor, M. Jullien, a poor workman, has constructed a longer balloon, it is fifteen yards long; and on Friday he succeeded in making it go several times from one end of the Hippodrome to the other against the wind. M. Jullien proposes to construct a much larger balloon if he can succeed in raising the funds, and he calculates that 20,000 francs would be necessary. He has passed nearly ten years in making the experiments which have led to the present result, and during that time suffered

frightful misery. He would indeed, the *Presse* says, have died of hunger, if M. Arnault, the director of the Hippodrome, had not assisted him.

For the Scientific American.  
Hydraulics.  
(Continued from page 224.)  
FIG. 39.



Back water offers a very serious obstruction to the Overshot Water Wheel, both by the filling of the descending bucket with back water, and the gathering of a considerable quantity of air therein. The remedy for removing the air, has been to bore holes in the "start" of the bucket. In wheels for low falls, made with open buckets, or straight float boards radiating from the centre, large openings were made in the sole planking, exclusive of the perforations in each bucket, to relieve them from the condensed air. At the present moment the practice in Britain (where water-wheels are found more economical than the steam engine, in some locations, although fuel is very cheap), is very different. In 1825 three iron water-wheels were constructed in Manchester, England, under the auspices of the celebrated Roberton Buchanan, for cotton factories in Scotland, one of which was for Mr. Smith, of Deanston (lately deceased), so well known in America. Each wheel was of 120 horse power, and at the present moment (1851) they are in successful operation and in good condition. The construction of these wheels twenty-five years ago, directed close attention, in Britain to the ingress and egress of water. The object was to prevent the condensation of the air, and to allow it to escape during the filling of the bucket; also its re-admission during the discharge of the water into the lower mill race. In 1826, a breast wheel had been erected at a place named the Linwood, in Scotland, a short distance from the natal place of Sir William Wallace, and it was found that when the wheel was loaded, and in flood waters, the buckets acted like water blasts, and forced the spray about 6 feet above the place where it entered. In order to remedy this defect openings were cut in the sole plates and small interior buckets were attached to the inner sole, as shown at B B B, fig. 39. The air in this case made its escape through the openings, A A A, into the inner bucket and passed upwards as shown by the arrows through B B B, into the interior of the wheel. By this means the buckets were effectually cleared of air while they were filling. The effect of this alteration gave an increase, of one-fourth of power to the wheel and it worked much better in flood water. It is now in operation, unaltered, and performs its duty satisfactorily.

Close bucket wheels labor under great difficulties, when receiving the water through the orifice at which the air escapes, and in some wheels the forms and construction of the buckets are such as almost entirely to prevent the entrance of the water, and thus deprive the wheel of at least one-third of its power. These defects may be easily accounted for where the water is discharged upon the wheel in a larger section than the opening between the buckets. Under such circumstances the air is suddenly condensed, and by its elastic force, it re-acts, and throws back the water, and the buckets pass without being half-filled. A common plan to relieve the buckets of air, has been to cut holes in the sole plates close to the back of the buckets, or else making the openings much wider in order to admit the water freely and allow the air to escape at the same time. All these remedies have been objectionable. Other remedies, such as circular tubes and

boxes attached to the sole plates, and extending upwards into the interior, have been applied. The improvement of the breast wheel spoken of (fig. 39) directed attention in Great Britain to a proper system of ventilation, and Mr. Fairbairn, of Manchester, whose name, as an ingenious and scientific engineer, stands very high, has made very important improvements, a description of which will be given in our future papers.

### Longitude of Savannah.

The telegraphic wires between Charleston and Savannah have recently been employed by the officers on the Coast Survey in ascertaining the difference of longitude of the two cities. They have erected a temporary observatory at the latter place, to which is attached a clock with Professor Locke's apparatus for breaking the circuit of the electric fluid. The circuit is broken at each beat of the pendulum, which enables the observers at Charleston to hear the strokes of the seconds as distinctly as though they were by the side of the clock in Savannah. These beats are recorded by a register similar to that used in telegraphing. The transits of the stars as they pass the meridian of Charleston are noted on the register by another break in the electric circuit, which is made at the option of the observer, by pressing on a key fixed to the transit instrument. Accordingly, the paper which registers the passage of time by having second marks stamped on it by the clock, also gives evidence of the precise moment of a star's transit. The passage of the same star over the meridian is then noted by the observers at Savannah. The difference in time is the longitude between the two places.

### India Cotton Crop.

The Bombay Telegraph and Courier reports that the cotton crop of the present season, from the cotton lands of Guzerat, is expected to produce 300,000 bales, being 100,000 bales more than was obtained last year. The quality also promises to be good, and the only measure necessary to give the produce its fair chance in the market, is to prevent the Ryots and shippers from adulterating the article. This requisite will, it is said, be secured by the severity with which the law on the subject has been carried out by Mr. Davies, the Collector of Broach.

### Noble and Witty Reply.

In 1561, Philip I, sent the young Constable de Castile to Rome, to congratulate Sextus the Fifth on his advancement. The Pope immediately said—"Are there so few men in Spain that your king sends me one without a beard?" "Sir," said the fierce Spainard, "if his Majesty possessed the least idea that you imagined merit lay in a beard, he would have deputed a goat to you, not a gentleman."

### Five Sundays in February in 1852.

We believe it will be found that there are five Sundays in February once in 28 years; and the next instance of this kind after 1852 will consequently be in 1880. This, however, will not be the case when the termination of a century occurs during the interval, owing to the dropping of the century leap year.

### Dispatch in Ship-Building.

The "Glasgow Mail" gives an account of a screw steam ship named the "Arabian," of 700 tons burden; which, from the day her keel was laid down, until the day when she was ready to sail—with her engines and every thing in proper order, was only ten weeks. Her engines were put in by Mr. R. Napier. She is 200 feet long, 26 in breadth, the engines 130 horse power, and the screw 11 feet in diameter. This is "going a-head."

### Dress.

Be either delicately pale or richly dark; beware of blue, red, and yellow—the favorites of savages, unless your red be deepened with black, or contrasted with green; your blue animated with orange; and your yellow illuminated with purple. Let the brilliant colors be small, like the lights in a picture; and the main body of the dress of a mixed color, or pure white, which is all colors. Beware of eclipsing yourself, by making your dress so beautiful that you will not be seen.

A round table top, of Amboyna wood, from China, six feet in diameter, has been received in Boston. It is believed that the tree from which the wood was obtained, must have girdled at least thirty feet.

### LITERARY NOTICES.

THE PHILOSOPHY OF SPIRITUAL INTERCOURSE—being an explanation of the modern mysteries of Andrew Jackson Davis. This publication has just been issued by the well-known publishers, Messrs. Fowlers & Wells, 131 Nassau street: mail edition 50 cents.

The author purports to lay bare to public comprehension the mysterious operations of the "evil spirits" which annoyed so extensively the reverend gentleman at Stratford last year, also the "Rochester Knocking" spirits, whose antics have so completely dumbfounded the sages and philosophers of the modern age. We read this work with the eager expectation of being at once made familiar with the pantheistic operations of ghosts and wizards, from the time of the old Salem witherfast down to the last and by far the most startling demonstrations. We had hoped that Mr. Davis, in his "superior condition," might succeed in solving all these mysterious agencies, and establish the relationship between past and present spirits, but we are disappointed; instead of "new light" we are more than ever mystified by the symbols and hieroglyphics introduced into Mr. Davis's philosophy. From what region he derives these figures, puzzles us more and more, and we incline to the opinion that the whole concoction is a gross species of deception and intrigue, designed to subserve selfish ends and spread false light among the people.

We regret that Mr. Davis, like many other modern prophets, has seen fit to throw over his publication the sacred drapery of religion. It is not strange, however, for it is a practice common among men, with sacrilegious hands, to seize upon the apostolic keys of heaven, and appropriate them as tools for crafty knaves, to shut out virtue and unfold the gates which heaven has barred against the lust and avarice of ambition. The object is "not all divine," as we regard it, but serves to "turn the cup of undigested peace to wrath and bitterness." It is a popular way of sanctifying vice and spreading the seeds of transcendentalism among a class whose thoughts are readily turned from nobler influences. We do not intend by these strictures to condemn the publishers of this work, for we know them to be high-minded, honorable men, who seek only to enlighten mankind. We believe this to be the only work emanating from this source, ever issued by them, and our only regret is, that so available a position is afforded Mr. Davis to circulate his doctrine. That there is a class in our community who will always drink deep into the most absurd vagaries, and amongst whom better influences would only meet with scoffs and sneers, none can deny—to this class the writings of Mr. Davis should be confined.

JOURNAL OF THE FRANKLIN INSTITUTE.—This old and respectable journal still maintains a high character for the quality of the articles in its columns, and the great amount of information it contains. It is the oldest monthly magazine in the United States, devoted to Engineering and the Mechanic Arts. It is published at the Franklin Institute, Philadelphia.

DICTIONARY OF MECHANICS AND ENGINE WORK.—No. 26 of this able work, published by D. Appleton & Co., New York, contains articles on the Locomotive Engine and the Power Loom. It treats Mr. Bigelow's improvements on carpet looms at great length.



## INVENTORS AND MANUFACTURERS.

### The Best Mechanical Paper IN THE WORLD! SIXTH VOLUME OF THE SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America. It is published weekly, as heretofore, in *Quarterly Form*, on fine paper, affording, at the end of the year, an ILLUSTRATED ENCYCLOPEDIA, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ORIGINAL ENGRAVINGS, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office, thus constituting it the "AMERICAN REPERTORY OF INVENTIONS."

TERMS—\$2 a-year; \$1 for six months.

All Letters must be Post Paid and directed to  
MUNN & CO.,  
Publishers of the Scientific American,  
128 Fulton street, New York.

### INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—  
10 copies for 6 mos., \$3 | 15 copies for 12 mos., \$22  
10 " " 12 " \$15 20 " " 12 " \$25  
Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

### PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.