

Aerial Navigation.

Messrs. Editors:—In the second number of the present volume of your journal you have an article under the head of "The Difficulty of Navigating the Air." In this you correctly assume that a body must be 800 times lighter than water before it can float in the air, and that such a body, therefore, must carry 800 times less power than a steamboat. You then go on and state that a steamboat cannot make any headway against a wind blowing two hundred miles per hour. Granted. The part of the boat above the water is opposed by the wind—the part below, or in the water, is against the opposing current of water, caused by the wind, which is much more opposing than the wind would be of itself, if blowing against the hull of the boat directly. In the case of the water, acted on by the wind, it is an accumulating force, increased by the duration of the blast and extent of its impact upon the water. But it is even so as you have stated; you then say, "how is it possible for a body of 800 times less power to make any headway against even a gentle wind blowing three miles an hour." And from the whole calculation you make in the aforesaid article, you conclude that Aerial Navigation "Is no go."

Your paper is intended to promote the arts and sciences, and your opinion on any subject, being its editor, carries with it weight, and should therefore be open to a fair analysis. Now, if your premises in the question were firm and invariable, the conclusions could hardly be shaken. Your hurricane would indeed blow all aerial machinery, its own way, with a velocity exactly equal to its own, (I have experienced this,) and it would moreover wreck and founder any ship or steamboat caught in its track. The air craft has but one medium, the water craft has two; hence the latter's destruction, arising from the great disparity of density in the two mediums, and the former's safety from moving in the simple element. Such a wind, so far from injuring a balloon, would only drive it completely round the world in five days. But the aerial ship has an advantage, compared with the water ship, that is seldom considered. It can surmount, or dodge the "no go" barrier in your premises,—the steamboat can't. It is not necessary, in aerial navigation, to go right against the wind, nature is very profuse, in its variety of atmospheric currents, within two miles above the level of the sea. The greatest obstacle to the perfection of aerial navigation, is, in the loss of buoyant power required in rising and falling into the currents that will waft the vessel towards its port of destination. I am not theorizing when I say that nature is profuse in its variety of currents; I know it from the experience of over a hundred aerial excursions. By the aid of these contrary and various currents I have avoided the otherwise necessity of descending in rivers, forests, lakes, seas and bays. The uppermost current I have always found to blow from West to East. While aloft, I have, within the visible length of a twine string suspended from the car, seen the effects of two currents, besides the one that moved the balloon. These strings were five hundred feet long. You may often see, as you no doubt have seen, two, three, and four different currents of air within the range of the cloud region, when clouds exist. I have found these various currents just as numerous in a perfectly clear atmosphere. The greatest desideratum, in aerial navigation, is, a power adaptable to raising and lowering the balloon, without expending any of its buoyant gas. Steam, I think, is not adaptable to its being made a common useful art. It would do for a demonstrable purpose. But the progress of improvement may yet give us a power adaptable to this art, if we should fail to contrive a means by which the balloon may be made to rise and fall by the principle of expansion and contraction. Franklin said the child must learn to walk before it can run, in allusion to aeronautics; and as this child laid in the womb of science over two thousand years before it was born, (it was sought after, all that time, by many ingenious persons) it is certainly doing very well, considering its infant state. A subject like

this, calculated, when perfected, to bring within the space of a few weeks the practicability of exploring the whole circumference of the globe, must have its time,—that time is fast approaching—but it wants encouragement, especially by the developing powers—the Scientific Press.

The natural elements, so far from presenting barriers and obstacles, as they do to a great extent in ocean navigation, seem to be peculiarly inviting to aerial navigation. The almost universal opinion, and to a great extent among really scientific men, that aerial navigation cannot be turned to a generally useful account, is almost as prevalent as the opinion that aerial voyages are extremely dangerous, and is just as wrongly founded, in my humble opinion.

JOHN WISE.

Lancaster, Pa., Oct. 1, 1849.

[The above communication from Mr. Wise, is just such an one as we like. It is reasonable and contains practical information. His opinions respecting steam as an aerial propellant, accords with our own, and as we have expressed them on the subject in our last volume. There is another thing beside the discovery of a more compact power, which would greatly facilitate economical balloon navigation, viz., a more buoyant, cheaper gas than hydrogen. A body of great magnitude is not easily managed—the whole experience of ballooning proves this. We all know that balloons can ascend, float, and move in the atmosphere, and have been propelled by the Roberts, in Paris. These things are not the subjects of discussion. It is the practicability of propelling balloons through the atmosphere as steam vessels on the ocean. There is no man to whom we can more confidently look for a correct account of the probable economical establishment of aerial navigation, than Mr. Wise. We would be content with a balloon speed of ten miles per hour, if the balloon could be perfectly controlled by the aeronaut, as a steed its by its rider.

As it respects the last paragraph of the above letter, we must say that the whole history of ballooning, to scientific men, is full of facts, affording just grounds for their opinion, that is, respecting its dangers. Within the past three months, one aerial navigator lost his life in England, Vardale barely escaped with his in our city, and it was certainly a most wonderful escape of the celebrated Mr. Green, in one of his late ascents in London. The subject of Aerial Navigation, has been before the scientific world for 67 years, and we know of no practical improvements that have been made in it since the days of the French Consulate; while during that period, steam navigation and the science of electricity, and other sciences, have advanced with giant strides. Yet for all this we never have, and never will ridicule experiments in aerial navigation. We have hopes like those of our correspondent; but so far as it regarded the balloon excitement that was raised about going to California at the rate of two hundred miles per hour, we deemed it our duty to expose the sham, although believed in by thousands, and the results have faithfully borne us out in our predictions—yea, in every word.

ED.]

Report on Propellers.

[Concluded from page 22.]

It is true that Mr. Emerson, in express terms, in his specification, claims the spiral propelling wheel in every form, and every thing on similar principles, producing similar results. In virtue, then, of his claim, as he has stated it, he would include Loper's, Ericsson's, and even the propeller about to be constructed for the San Jacinto. But it will be seen, by reference to the opinion delivered by the Supreme Court, annexed to Emerson's memorial, (page 8,) that the court say expressly, that the inventor (Mr. Emerson) claims as his improvement, not the whole of the wheel, but merely in the new and superior form which he particularly sets out." Now it will be seen by reference to the several claims here cited, that the new and superior form of Mr. Emerson's propeller, viz; the two-sided blades of a rough form, is not, in any-wise, approached in the other claims.

Further, the memorialist claims "a spiral propelling wheel, constructed and operating in

the manner I have set forth, in which setting forth he does not once use the word hoop, cylinder, perforated hub, or elliptic brace, the patentable features of Ericsson's propellers; neither does he use the word hub, the peculiar construction of which only constitutes the patentable features of Loper's propellers.

The pretence that Loper's propeller is an infringement, has never, to my knowledge, been set up in a court of justice. The claim to the San Jacinto propeller is the claim of a patentee, whose privilege has expired, to an article that has not yet been produced. The very general language of the memorialist's specification, and the interpretation that has been put on it by the courts in New York, would appear to have encouraged Mr. Emerson in the delusive idea that he is the inventor of the stern spiral screw propeller, whereas Stevens, Smith, Beard, and others, have anticipated him by many years, in all the novelties of his invention, except the trough.

It is proper that I should add here, that the drawing furnished by the memorialist has been certified as a part of his patent, in a copy of a drawing on file in the patent office, which was filed, as I am informed, ten years after the issue of his patent, long after the inventions of Captains Ericsson and Loper has been introduced into public use, and long subsequent to the filing of a prior drawing, filed under the statute of 1837, which provides for the restoration of patents destroyed by the burning of the Patent Office of the preceding year; and which drawing must necessarily have been the one regarded by the Commissioner of Patents when he passed the several claims of Captains Ericsson and Loper.

Reviewing, then, the facts herein presented, it appears,

1st, That the memorialist claims "the spiral propelling wheel," not confined to forms, but so long "as similar results are produced by similar means."

2d, That the Supreme Court says he does not claim the whole of the wheel, but merely the new and superior form, which he particularly sets out, which is the trough.

3d, That the spiral propelling wheel was patented long before the issue of the memorialist's patent in 1834.

4th, That the novelties claimed by Emerson, Ericsson, and Loper, vary widely in their purposes and locations, in one common instrument.

5th, That of the 28 cases of alleged use of the memorialist's invention, four are where Ericsson's propeller of 1838 has been used, one is where Ericsson's propeller of 1844 is in use, and to which the memorialist as yet has set up no legal claim, eighteen are for Loper's propeller, one is where the propeller is not yet constructed, and four are unknown—28.

6th, That should the Supreme Court decide the case now before it in Mr. Emerson's favor, and thus establish that Captain Ericsson's propeller of 1838 is an invasion of Mr. Emerson's patent, and that as Mr. Emerson has recovered in the case carried to the Supreme Court, and now pending there, his patent fees for three of the vessels above enumerated, as using the propeller of 1838, his having once obtained satisfaction for his patent fees, it is difficult to understand upon what principle he can now call upon the United States to pay them a second time.

7th, That in the event, then of a decision by the Supreme Court favorable to the claims of the memorialist, he could only claim a patent fee for the use of the propeller which was first used in the Princeton, and which was replaced by the Stevens's scull in 1844.

8th, That the judgement of the proper tribunal would be necessary to validate the memorialist's claim to the one case of Ericsson's propeller of 1844, and the 18 cases of Loper's propeller, neither of which have yet been assailed in the court of justice, so far as I am enabled to ascertain.

9th, That the interests of the memorialist are not likely to be affected in the case of the San Jacinto's propeller, as it is not yet drawn, and will not assimilate to his description in any one feature; added to which, the patent right under which he claims \$15,000

fees, in this prospective violation, expired on the 8th of March last.

Further, I am not aware that any propeller has ever been built resembling that described by the memorialist in his specification; in fact, the application of one constructed in accordance with his specification is, in my opinion, positively impracticable for useful purposes.

I am, respectfully, yours, &c.,

CHARLES H. HASWELL.

To CHAS WM. SKINNER, Chief of Bureau of Construction, Washington, D. C.

Oil of Turpentine.

Oil of Turpentine, commonly called essence of turpentine, is extracted from several species of turpentine, a semi-liquid resinous substance, which exudes from certain trees of the pine tribe, and is obtained by distilling the resin along with water. This oil is the cheapest of all the volatile species, and, as commonly sold, contains a little resin, from which it may be freed by re-distillation with water. It is colorless, very fluid, and has a very peculiar smell. Its specific gravity at 60 deg. is 0.872; that of the spirit on sale at the shops is 0.876. This oil always reddens litmus paper, because it contains a little succinic acid.

100 parts of spirits of wine, of specific gravity 0.84, dissolve only 13-14 of oil of turpentine at 72 deg. Fah. When agitated with alcohol at 0.830, the oil retains afterwards one-fifth of its bulk of the spirit; hence this proposed method for purifying oil of turpentine is defective. The oil, if left during four months in contact with air, is capable of absorbing 20 times its bulk of oxygen gas. One volume of rectified oil of turpentine absorbs at the temperature of 72 deg., and under the common atmospheric pressure, 163 times its volume of muriatic acid gas, provided the vessel be kept cool with ice. This mixture being allowed to repose for 24 hours, produces out of the oil from 26 to 47 per cent., of a white crystalline substance, which subsides to the bottom, of a brown, smoking, translucent liquor. Others say that 100 parts oil of turpentine yield 110 of this crystalline matter, which was called by Kind, its discoverer, artificial camphor, from its resemblance in smell and appearance to this substance. Both the solid and the liquid are combinations of muriatic acid and oil of turpentine; indicating the existence of a stearine and an oleine in the latter substance. The liquid compound is lighter than water, and is not decomposed by it, nor does it furnish any more solid matter when more muriatic gas is passed through it. The solid compound, after being washed first with water containing a little carbonate of soda, then with pure water, and finally purified by sublimation with some chalk, lime, ashes, or charcoal, appears as a white translucent, crystalline body, in the form of flexible, tenacious needles. It swims upon the surface of water, diffuses a faint smell of camphor, commonly mixed with that of oil of turpentine, and has rather an aromatic than a camphorated taste. It does not redden litmus paper. Water dissolves a very minute quantity; but cold alcohol of 0.806 dissolves fully one-third of its weight; and if hot, much more, depositing, as it cools, this excess in the form of crystals. The solution is not precipitated by nitrate of silver, which shows that the nature of the muriatic acid is perfectly masked by the combination. It is composed, in 100 parts, of 76.4 carbon, 9.6 hydrogen, and 14 muriatic acid. The muriatic acid, or chlorine, may be separated by distilling an alcoholic solution of the artificial camphor, 12 or 14 times in succession with slaked lime.

Oil of turpentine is best preserved in casks inclosed within others, with water between the two. Its principal use is for making varnishes, and as a remedy for the tape-worm.

Death by a Drop of Laudanum.

There is an account in the last number of the New England Surgical Journal, of a child being poisoned by the administration of one drop of laudanum, by its mother, for griping. It was a fine healthy child, and it lived but eleven hours after the laudanum was administered. People should be very careful about the use of drugs that are reputed dangerous, especially in administering the same to children, who cannot tell the state of their feelings.