

Electric Lighting in London.

At a recent meeting of the Society of Arts, London, Mr. W. H. Preece gave an interesting account of his observations in this country concerning the use of the electric light, after which the chairman, Sir Frederick Bramwall, spoke of the great obstacle to the progress of electric lighting in England, viz., that owing to the wires having to be put under the streets, the belief being entertained (though that was a moot point) that the local authorities had no power to grant permission for this, and that Parliament had to be applied to. Mr. Hammond had spoken as if the only objection to this was the delay and expense in obtaining the act, and why he and every other speaker had refrained from touching on what was the real obstacle he did not know; but it was a pity to close the discussion without reminding the meeting of what it was that really prevented electric lighting from central stations being carried out in England. It was not simply that an act of Parliament had to be obtained, but that when obtained it would be unfair, because it would have to be in accordance with a general act which must have been passed with the express intention of forbidding the progress of electric lighting.

Imagine a new steamboat company being started in Liverpool, which would have to use the docks, and assume that these docks belonged to the corporation, and that to be allowed to use them it was necessary to obtain an act of Parliament, and that the condition of its being allowed to use the docks was that at the end of twenty years, if the company paid a dividend, the corporation should be entitled to purchase the undertaking for the value of the old materials; but if the company did not pay, the corporation should not be obliged to purchase. He said that this appeared to his hearers to be ridiculous; but why was it more ridiculous in connection with a steamboat company than in connection with the distribution of electricity?

It was a mere accident that they had to go to Parliament; it was because they required to lay the wires under the streets in the same way as gas companies required to lay gas pipes. When the Electric Lighting Act was in the House of Commons, the Board of Trade tried to say that at the end of fifteen years the local authority in whose district the wires were laid should have the option of purchasing the undertaking, not for what it had cost, but on the then value of the material for their purpose. All apparatus put down in process of developing, which had been removed to make way for better, would not be reckoned as one shilling in the valuation.

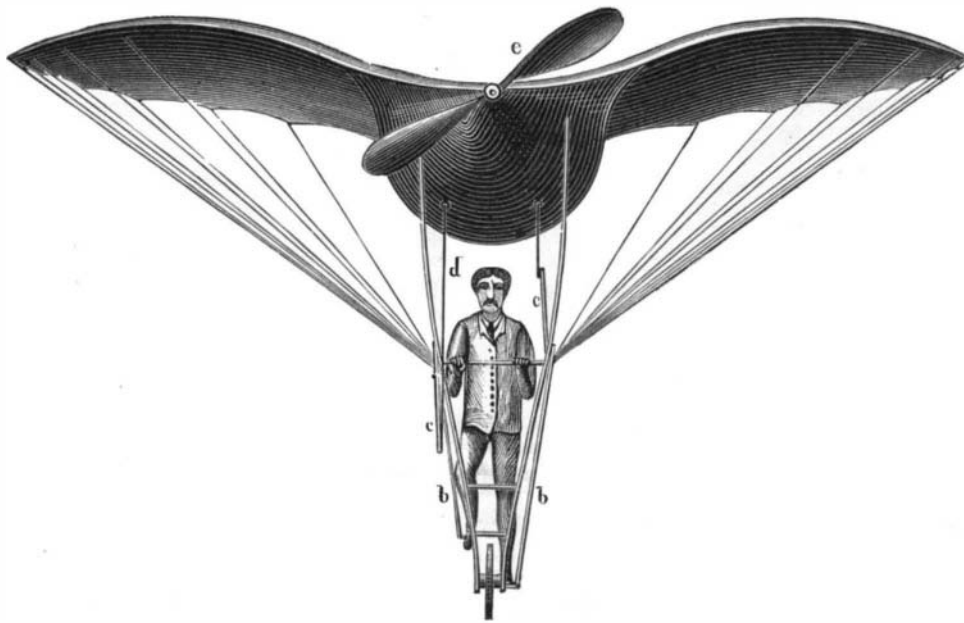
When the bill got into the House of Lords, an effort was made to improve it, but the utmost concession obtained was to increase the fifteen years to twenty-one; and thus it stands that, at the end of that time the company, if the venture paid, must submit to be bought out at the value of the old materials. If it did not pay, no one would care to take it; but the company might go on until they had worked the affair up to a profit, not for their own benefit, but for that of the local authority, for after the first option of purchase, at the end of every five years in perpetuity the option rears, and might be exercised to purchase the property for the value of the old materials.

Subterranean Woods.

Clarence Deming, in his "By-ways of Nature and Life," says of the swampy region of southern New Jersey:

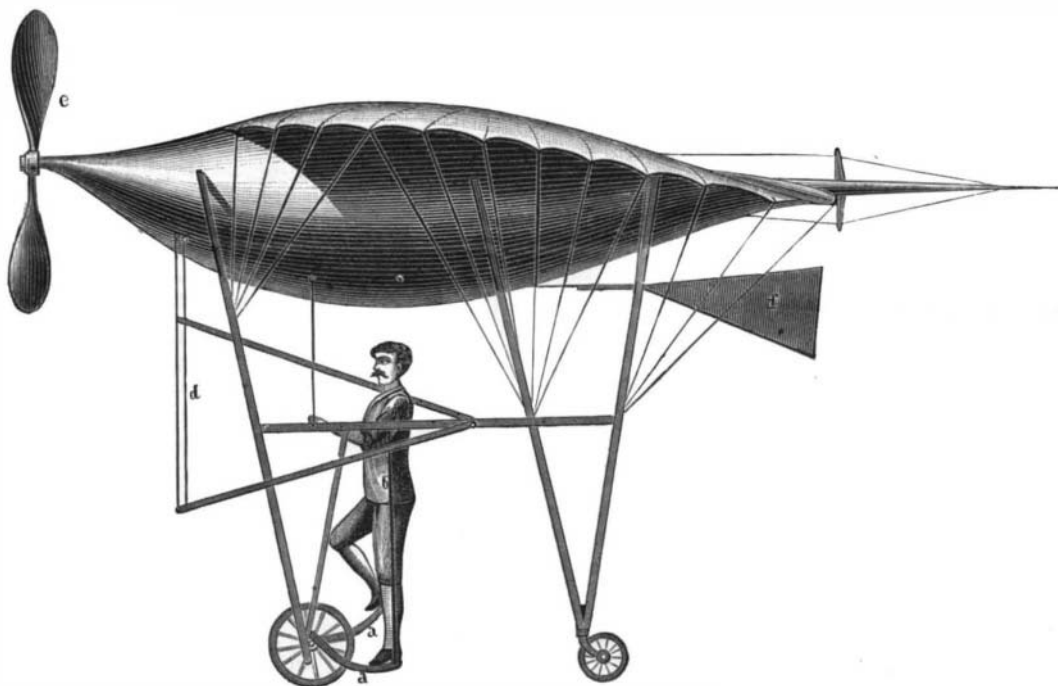
"The huge trees which lie under the swamp to unknown depths are of the white cedar variety, an evergreen, known scientifically as the Cupresses Thyoides. They grew years ago in the fresh water, which is necessary for their sustenance, and when in time, either by a subsidence of the land or a rise of the seas, the salt water reached them, they died in numbers. But many of them ere they died fell over as living trees, and were covered slowly by the deposits of muck and peat which

fill the swamp. Those trees that fell over by the roots, and known as 'windfalls,' to distinguish them from the 'breakdowns,' are the ones most sought for commercial uses, and they are found and worked as follows: The log digger enters the swamp with a sharpened iron rod. He probes in the soft soil until he strikes a tree, probably two or three feet below the surface. In a few minutes he finds the length of the trunk, how much still remains firm wood, and at what place the first knots, which will stop the straight 'split' necessary for shingles, begin. Still using his prod, like the divining rod of a magician, he manages to secure a chip, and by the smell knows whether the tree is a windfall or break-

**GOUPIL'S FLYING MACHINE.**

down. Then he inserts in the mud a saw like that used by ice cutters, and saws through the roots and muck until the log is reached. The top and roots are thus sawed off, a ditch dug over the tree, the trunk loosened, and soon the great stick, sometimes five or six feet thick, rises and floats on the water, which quickly fills the ditch almost to the surface.

The log is now sawed into lengths two feet long, which are split by hand and worked into shingles, as well as into staves used for pails and tubs. The wood has a coarse grain which splits as straight as an arrow. The shingles made from it last sixty or seventy years, are eagerly sought by builders in southern New Jersey, and command in the market a much higher price than ordinary shingles made of pine or chestnut, which last

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for roofing usually not more than twenty or twenty-five years. In color the wood of the white cedar is a delicate pink, and it has a strong flavor, resembling that of the red cedar used in making lead pencils. The trees, once fairly buried in the swamp, never become waterlogged, as is shown by their floating in the ditches as soon as they are pried up, and what is more singular, as soon as they rise they turn invariably with their under sides uppermost. These two facts are mysteries which science has thus far left so. The men who dig the logs up and split them earn their money. The work, according to the *Industrial World*, is hard, requiring, besides lusty manual labor, skill and experience; the swamps are soft and treacherous, no machinery can be used, and long stretches with mud and water must be covered with boughs or bark before the shingles can reach the village and civilization.

GOUPIL'S AEROPLANE.

The accompanying figures give end and side views of an aeroplane devised by Mr. A. Goupil, and described by him in a recent work upon aerial navigation. The apparatus might be termed a sort of aerial velocipede. The man, in order to obtain speed, acts at one and the same time, though the pedals, *a a*, and the connecting rods, *b b*, upon a wheel that moves over the ground, and through jointed arms, *c c*, upon the helix, *e*; and he likewise acts upon the rudder, *f*, and the tail lever, by means of cords. In measure, as the apparatus obtains velocity its weight diminishes on account of the increase of the vertical reaction of the current, and,

finally, it ought to ascend and maintain itself aloft solely through the motion of the helix combined with the sustaining action of the wings and regulating and directing action of the rudder. Equilibrium must be maintained through the displacement of the man's center of gravity.

The construction of the apparatus (which is of thin strips of wood cross-braced by tough wood and covered with silk) is of the lightest character. The whole weighs 220 pounds.

Certain persons will smile, perhaps, upon first glancing at the figures of this new aerial velocipede; and others, upon reading the conditions of the apparatus' working and the hopes that are had of it, will be tempted to ask us if such apparatus have already operated—a question which we cannot answer affirmatively. However, if it is allowable to smile innocently at such claims, it is perhaps less allowable to have doubts. The rules of

mechanics do not contradict the assertion that it will one day be possible for man to rise and direct himself in the air when the latter is undisturbed by storms.

When aluminum and still lighter and more powerful motors shall intervene, the solution of the problem will not have to be long awaited. But what will prove more difficult yet, after this very solution, will be the practice of the thing. It is not everything to have a sure and well rigged ship that fulfills all the conditions of good navigation, for a crew is likewise necessary. When, then (however distant the period), it shall be felt that the end has been about reached, it will be necessary to instruct the future fliers to preserve that coolness and precision of motion in the air that should contribute to secure the necessary conditions of precise maneuvering and perfect equilibrium.—*Chronique Industrielle*.

Mechanical Toys.

The recent holiday season is said to have afforded a particularly active business in mechanical toys. A dealer says: "The run on them has been something wonderful. The baby doll that walks and squeaks, says mamma and papa at each mechanical theatrical stride, sold like hot cakes. They have simply been improved upon very much, but not recently invented. The mechanical smoking man is a late patent. It is a comical figure of a man eleven inches high, seated on a black walnut box and a small keg at his elbow, with the historical long pipe and mug of beer in his hand. Place a cigarette in his pipe, and, when wound up and the cigarette lighted, the figure will

draw and puff the smoke in a perfectly natural manner. The motions of the head and arm and the action while smoking are perfect. These have sold rapidly to the small boys, ambitious to learn how to smoke and use tobacco.

"But one of our latest hits is the stumporator. It is a negro with a carpet bag in one hand and an umbrella in the other. He makes motions, pounds the desk in front of him with the umbrella, and assumes positions of appeal, entreaty, fierceness, and humor such as the orators of the day do when speaking. The dog cart with the dude in it driving a prancing horse is put in the show window for the first time this season.

By winding it up, away it goes until it runs down. The bear that walks about snapping his jaws cost a lot of time and money to perfect."