When the centripetal propeller has been fully tested by experiment, it is intended to publish a small work, containing those Tables, and directions relating to propellers in general.

As the screw propeller is the most valuable instrument for the propelling of vessels, and thus far, behind the paddle wheels in the employment of steam for propelling, its friends therefore, ask for the screw propellers and their engines, that they should be submitted to a series of patient and impartial experiments; extending through two or more different vessels, and six or more different propellers. These experiments I feel confident, will result in *proving its equality* to paddle wheels, and as the screw propeller (if rightly made,) is a direct action propelling instrument, as well as the paddle wheels, why should the preeminence be justly on the side of the latter?

Experiments, we know, have been made again and again, but the principal feature has been too often overlooked.

In reference to propeller engines with gearings, it is worthy of inquiry what is *gained by them*? If they are intended to increase the number of revolutions of the propeller, we see where ever they are applied, that they do not. They only increase the size, weight, and expense, and occupy more room in the vessel. Propellers with equal diameter and pitch, will make rather more revolutions from a direct action steam engine with the same quantity of steam.

The mechanical law says, "*Apply the power as near the object as possible.*" And the words *stationary* and *DIRECT ACTION*, (no trunks,) are perfect teachers on the subject.

Philadelphia, September, 1851.

Translated for the Journal of the Franklin Institute.

Experiments on the Application of Electro-Magnetism as a Motive Force.
By M. ARISTIDE DUMONT.

The author announces in the following terms, the consequences to be deduced from the experiments reported in his memoir:

1. The electro-magnetic force, although it cannot yet be compared to the force of steam in the production of great power, either as it regards the absolute amount of power produced, or the expense, may nevertheless, in certain circumstances, be usefully and practically applied.

2. While in the development of great power, the electro-magnetic force is very far inferior to that of steam, it becomes equal and even superior to it in the production of small forces, which may be thus subdivided, varied, and introduced into trades and occupations using but small capitals, where the absolute amount of mechanical power is less exerted than the facility of producing it instantaneously and at will.

3. In this point of view, the electro-magnetic force assists, as it were, the usefulness of steam, in place of uselessly competing with it.

4. Other things being proportional, electro-magnetic machines with direct alternating movement, present a great superiority of the power developed over rotating machines; since in the first there are no compo-

TABLE TO FIND THE PITCH OF PROPELLERS.

Suggestions for arrangement of Propeller Steam Engines,

by

J.W. NYSTROM.

nents lost, and with the same expense a much more considerable power is obtained than with rotating machines.

5. In machines of direct movement, the influence of the currents of induction appears less considerable than in rotating machines.

6. Finally, in the calculation of the expense, it is proper to include deduction of the value of the sulphate of zinc produced, and to take into consideration, that in apparatus of any considerable size, the same battery may be used at the same time for the production both of the power and light.—*Comptes Rendus de l'Academie des Sciences, Paris, August 25, 1851.*

For the Journal of the Franklin Institute.

On the Gain of Power by Centrifugal Force. By T. W. BAKEWELL.

The recent controversy, particularly in New York, as to centrifugal force being susceptible of furnishing a gain of power by machinery adapted to that end, has induced the following remarks, in which I have endeavored to make the subject plain to the general reader.

Suppose a wheel in a horizontal position, the axis vertical, with hollow arms closed at the ends, and having a heavy ball in each, free to move in the arm. Let this wheel revolve with a given velocity, and the balls will press with a certain force against the ends of the arms.

If the velocity of the wheel be doubled, the ball pressure on the ends will be quadrupled.

Herein is the supposed gain; and it is my object to show it deceptive, and of no practical avail. When the wheel is under the first named velocity, imagine the end of the arm suddenly removed:—the ball would not then fly outward in the direction of its previous pressure, but be projected at a tangent to the wheel, as from A to B, in a given time.

Under the double velocity, (the end of the arm being removed as above,) the ball would not fly outwards, in the direction of its previous quadruple pressure against the end, but would be projected to C, twice the distance of B, in equal time.

This result, is by the law of centrifugal force, and all other forms of dynamics, viz: in the simple ratio of the power used.

The quadruple pressure by the ball, under double velocity, is in this wise:—The ball, in revolving, has, at any and every point of the circle, a velocity in a tangential direction, as A to B, but is coerced from this straight line, by the closed end of the arm, compelling the ball to follow the circle, thus causing the pressure on the end; and the ball is found at D, instead of B, having been coerced from its straight line by a force, represented by the curved line B D.

In like manner under double velocity, the ball is found in equal time,