

Correspondence.

TWIN PROPELLERS ON AEROPLANES.

To the Editor of the SCIENTIFIC AMERICAN:

In your editorial criticism of the Wright aeroplane, issue September 26, you say that "the distribution of the thrust between two propellers, placed on either side of the center of gravity, constitutes, as this terrible accident has too clearly shown, a constant invitation to disaster." Also, you further say that one centrally-placed propeller would obviate the risk. Now I have been a student of aviation since 1878, and consequently can follow intelligently the process of reasoning that decided the brothers Wright to adopt the now condemned arrangement of a dual drive, and I cannot see but that, in their case, it was the best arrangement.

In their earlier gliding machines for private experimentation, these inventors always lay prone, using their hands and feet for guidance. But evidently they decided, against their better judgment, that this position was not one of sufficient dignity to assume before the eyes of the multitude, hence the seated posture of both operator and passenger. Possibly too they regarded a feet-first sitting position as having some advantage in case of accident, increasing their chances of landing right side up. But their decision had this result: *The propeller had to be removed from a position in front of them*, both on account of its unpleasantness, and also because of the dissipating effect upon the reacting currents, which in their case should be directly, horizontally rearward; consequently, if the position of the propeller was shifted upward, downward, or to one side of the center of resistance, it must be balanced by another of equal thrust at an equal distance from the said resistance center. Moreover, there is no reason why it should not work as Mr. Orville Wright said it would, discussing the probable outcome of just such a one-sided break. He is quoted as saying: "It would have a tendency to turn the machine from its course, but I would shut off the power and glide to the earth." Whether the nervous strain and a sense of peril to which he had subjected his esteemed fellow-passenger acted to confuse the operator, or whether some part was broken that was necessary to the guiding mechanism, is not known, I believe; but *he did shut off the power*, so why should the result be different with but a single propeller?

I believe that automatic balancing arrangements would have saved the situation; and where such rapid and precise action is needed, it should not be left to the operator, who has enough to attend to in steering.

Personally, I never had any use for screw propellers on aeroplanes, as they are wasteful of power, dangerous, and interfere with gliding evolutions. It is, I think, a safe prediction to say that in three years there will not be one in aeroplane practice.

St. John, N. B., October 8, 1908. J. E. FRASER.

WAS THIS AN AEROLITE?

To the Editor of the SCIENTIFIC AMERICAN:

At 10 o'clock Tuesday morning, September 8, a noise was heard in the air above certain parts of middle Tennessee that seemed to indicate the passage of an unusually large aerolite over the section. The noise of the meteor (if meteor it was) was heard over the counties of Franklin, Coffee, Warren, and Grundy, and perhaps beyond the borders of these counties, which cover a superficial area of about 1,500 square miles. Your correspondent was at the time about seven miles south of Tullahoma on the Nashville, Chattanooga & St. Louis Railway. From that point the sound seemed to originate at an elevation of about 20 deg. in the north, and to travel eastward over an arc of about 50 or 60 deg., being audible for the space of a full minute. The sound was described by some as similar to the long heavy roll of thunder with three loud explosions or detonations in the midst of it, dying down very quickly after the last. Many persons who were at the time indoors, 50 to 150 yards from the railroad, thought a collision had occurred head-on between two heavy freight trains in the midst of the village. Still others thought that a large shipment of dynamite had exploded at a distance of several miles, and others, that terrific explosions had taken place in some of the coal mines in the vicinity. The sound could not properly be said to have only been distinct. It was, in fact, almost deafening, and interspersed with the three explosions, it crashed and roared away in—to many—a terrifying manner, apparently toward that part of the escarpment of the Cumberland Mountains which intervenes between McMinnville and Chattanooga.

There were no clouds in the sky at the time, and no trains near the point where your correspondent was. Moreover, the distance over which the sound was heard, at and near the same time, seems to have been at least fifty miles, and possibly much more. It was accompanied by a slight jar or vibration.

I have said that the sound, from Estill, seven miles south of Tullahoma, appeared to travel from north to

east, starting at an elevation of 20 deg. and tending eastward and downward. This is the testimony of all. Now Beersheba, in Grundy County, and Altamont, in the same county, are situated on the plateau some 1,000 feet above, and 50 miles southeast from Tullahoma and Estill Springs; and at those points the sound is described as being not so loud as at Estill Springs, but, most interesting of all, they report there that it seemed to be low down as if it were a somewhat distant explosion in the earth, and to reverberate through the mountains as in a general course from east to west. If that particular point has been accurately reported, allowing for some error as to course, it would tend to locate the course of the meteor after the manner of tracing the flight of bees. It would show that it passed over certain points at no great height, and possibly fell somewhere on the mountain side in the vicinity.

So great was the interest and excitement created by the aerial disturbance that citizens telephoned and telegraphed to and fro from town to town, seeking information, and it is the chief subject of query and discourse to this day at the places mentioned.

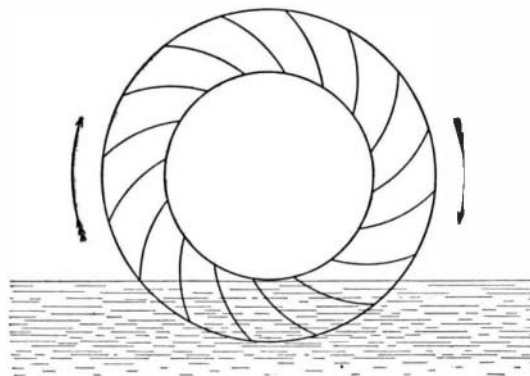
Now, undoubtedly all accessible data about this meteor ought to be gathered at once. Indeed it is not known but that it may be possible to find the place of impact, and possible fragments.

Nashville, Tenn. PARK MARSHALL.

A PADDLE WHEEL FOR GLIDING BOATS.

To the Editor of the SCIENTIFIC AMERICAN:

After reading in the SCIENTIFIC AMERICAN an interesting article on gliding boats, the thought occurred to me that the screw was not perhaps the propeller best adapted to them. I believe that the type of paddle wheel shown in the accompanying figure would, in the case of gliding boats and only in that case, reduce the waste of power attending the use of the ordinary paddle wheel. Whenever a considerable segment of the latter is immersed, the effect of the



A PADDLE WHEEL FOR GLIDING BOATS.

paddles is, at the same time, to raise, to propel, and to sink the boat, both the raising and sinking efforts being useless. In the case of the modified paddle wheel, the raising and propelling effects only are left, and, in gliding boats, both are wanted. It might be worth trying to propel one of these boats with four such wheels arranged in two sets, as the rollers in Mr. Bazin's ill-fated rolling boat.

San José, Costa Rica. GUSTAVE MICHAUD.

High "Villages."

To the Editor of the SCIENTIFIC AMERICAN:

In the issue of September 12, which is just at hand, is an article under the caption "Villages Situated at Great Altitudes," which is calculated to make a Coloradoan smile. The altitudes mentioned are scarcely worth noticing in this State, where one standard-gage railroad reaches an altitude of 11,660 feet, one narrow-gage, ordinary type, attains 14,007 feet; and a rack railroad reaches a height of 14,147 feet.

I herewith give a list of "villages," all in this State, together with their populations and altitudes:

Town.	Population.	Altitude.
Sherrod	100	11,423
Ivanhoe	30	10,928
Kokomo	350	10,654
Leadville	12,455	10,197
Cameron Junction	400	10,040
Independence	600	9,800
Cripple Creek	14,000	9,591
Silverton	1,360	9,285
Ward	300	9,217
Silver Plume	775	9,188
Ouray	2,196	7,706
Denver	180,000	5,309

This list might be extended to great length and still include no towns below 8,000 feet.

As to the highest habitations, I am unable to give figures, but they probably can be found far above 12,000 feet.

Altitudes of peaks, passes, etc., reached by rail in Colorado:

	Railway.	Gage.	Altitude.
Pike's Peak.....	M. & P. P. Ry.	narrow rack	14,147
Mt. McClellan..	Argentine Central	narrow	14,007
Corona.....	D., N.-W. & P.	standard	11,660
Alpine tunnel.....	C. & S.	narrow	11,596
Boreas Pass.....	C. & S.	narrow	11,470
Ivanhoe.....	C. M. Ry.	standard	10,944
Marshall Pass.....	D. & R. G.	standard	10,846
Tennessee Pass.....	D. & R. G.	standard	10,240
Cumbres.....	D. & R. G.	10,003

Denver, Colo.

LEROY FIREBAUGH.

What the Designer of an Aeroplane Ought to Consider.

The pages of Engineering have been enlivened for some weeks past with a number of letters from aeroplane inventors, some of them of no small reputation, which letters have drawn together much scattered information obtained from experimental and other sources. In one of the recent issues of our contemporary Mr. Frank Hambling attempts to clear the air of controversy and to anchor a few principles, which, in his opinion, ought to be kept in mind by aeroplane enthusiasts. These are his principles:

1. An aeroplane must have sufficient combined speed and plane to raise its intended load, together with its own weight.

2. The greater the speed the less the plane, and the less the necessary angle of that plane for the same effect.

3. To counteract the resistance set up by the means of gaining momentum while on the ground, which is additional to the resistance the machine will have when once clear: (a) extra power is required, or (b) extra plane surface to meet the power we have; (c) a better effect for the power we have; (d) an outside agency that will assist. Extra power means more weight; extra plane means more resistance; better effect for the power we have means an improvement in the engine or means of propulsion; an outside agency means a fixed starting-point.

Mr. Hambling accepts (c) a better effect for the power we have, as the correct course.

4. The planes must always be sufficient to permit of a safe landing.

5. Their exact shape depends upon the type of machine constructed, the means employed for obtaining lateral and longitudinal balance and stability, and varies so greatly that no rule can be laid down.

6. The planes should be constructed of material as strong as the end in view permits, and should in themselves create as little *useless* resistance as possible.

7. The general arrangement should be as simple as the design allows.

8. The control should be simple and easy of manipulation.

9. The balance should be automatic.

10. Although it is highly improbable of attainment, we must not overlook the fact that a means of keeping afloat without engine power perfects the aeroplane.

The chief points unsolved (without 10) and receiving attention are:

The engine.

The means of propulsion.

The raising.

The balance.

Given a good means of propulsion, and an automatic balance, the aeroplane will be as reliable as its engine—a speedy, safe, and cheap means of conveyance.

A Floating Compass Needle.

If a thoroughly dry and clean sewing needle is very carefully laid on the surface of water in a basin, says Kosmos, the needle will float, in spite of the high density of steel—seven or eight times that of water.

On close inspection it is found that the surface of the water is depressed under the needle, very much as if there were a thin film stretched over the water, and slightly indented by the weight of the needle. This property of liquids, of offering a certain assistance to a force exerted upon their surface, is termed "surface tension." The magnitude of the force of surface tension varies from one liquid to another. It is greatest in the case of mercury. The cause of the phenomenon must probably be looked for in the attraction of the liquid molecules to one another. A sewing needle, thus floating upon water, may be used as a compass, if it has previously been magnetized. It will then point north and south, and will maintain this position if the containing vessel is moved about; if the needle is displaced by force, it will return to its position along the magnetic meridian as soon as the restraint is removed.

Registrations of automobiles with the Secretary of New York State in securing licenses for the current year are less by 200 than last year. * Up to July 1 last year there had been 8,225 registrations.