Correspondence.

A Cause of Gun Erosion.

To the Editor of the SCIENTIFIC AMERICAN:

I have read your articles and the communications of your correspondents on gun erosion with a great deal of interest. A part of this trouble may be due to the manner employed in igniting the charge. The spark is applied to the powder near the breech. The expanding gases push forward the unburnt powder and the projectile, forcing some of the former between the latter and the gun barrel, where it explodes, causing a lateral pressure on the barrel, thus further opening up space and retarding the flight of the projectile. If now the powder be first burnt just back of the projectile, then this would move forward alone and the unignited explosive would be pushed toward the breech, where when burnt it would exert its force against the shot. It would cost little to try this, as the ammunition could be easily altered, and might to some extent reduce the erosive effect of the charge.

Dubuque, Ia., May 8, 1907. HENRY B. GNIFFKE.

A Way of Cleaning Silver.

To the Editor of the SCIENTIFIC AMERICAN:

I know of rather a unique way to clean silver that I think may interest some of the readers of SCIENTIFIC AMERICAN. Some time ago a powder was put on the market under a trade name that cleaned silver remarkably easy. It sold for twenty-five cents a quarter pound. Upon analysis, carbonate of soda (Na_2CO_3) or washing soda was the only ingredient found.

Take a large tin pail and fill it with a hot solution of carbonate of soda and water, one tablespoonful of soda to the quart of water. Take any silver article and stir it around in the solution, but do not touch the tin pail with it. If in a minute or so it is taken out no change will be seen. Now immerse it again and touch the bottom of the tin pail with the article to be cleaned, and upon taking it out of the solution it will be found to be cleaned and polished. Rinse in hot soap suds and wipe dry; if this is not done the article will turn yellow.

I should be pleased if the SCIENTIFIC AMERICAN or some of its readers will tell me the action that takes place when the silver and tin come in contact with each other. LESTER D. WISE, M.D.

New York, April 24, 1907.

Remodeling Battleships.

To the Editor of the SCIENTIFIC AMERICAN:

Would it not be possible to remodel the "Georgia" class of battleships so as to bring them up to the highest plane of "all-big-gun" ships? I have devoted some time to the "Connecticut" class, and find that by a trifling addition to weight, guns, and gun protection the following change could be made—open, however, to the disadvantage of restricted arc of fire of the proposed 10-inch guns.

Enlarge the present 8-inch turrets slightly, and replace the 8-inch guns with 10-inch guns. Substitute 5-inch guns in broadside for the present 7-inch. The weight thus saved would almost compensate for the added weight of 10-inch guns. If feasible, this class would have but little fear from the "Satsuma" class. Thus:

"Connecticut."	"Satsuma."
16,000 tons, 18.5 knots.	19,000 tons, 21 knots.
4 12-inch.	4 12-inch.
8 10-inch.	12 10-inch.
12 5-inch.	20 4.7-inch.

As I understand the "Satsuma" battery arrangement, she can bring but four 12- and six 10-inch guns to bear. The "Connecticut" would thus be outmatched by two 10-inch guns only, and probably 2 or 2.5 knots in speed—quite a handicap, but not necessarily fatal.

If this arrangement of weights would be too "top-heavy," the alternative of removing the 8-inch guns and substituting a single 10-inch gun in a somewhat elliptical turret, with really less weight than at present might be attempted, leaving her thus:

"Connecticut."	"Kashima."
16,000 tons, 18.5 knots.	16,400 tons, 18 knots.
4 12-inch.	4 12-inch.
4 10-inch.	4 10-inch.
12 7-inch.	12 6-inch.

This would permit the "Connecticut" to answer gun for gun, opposing the 6-inch guns on the "Kashima" with her own 7-inch guns.

If the first suggestion were carried out in three, and the second in two of this class, which are practically in commission, I feel sure the remaining ships could take care of the rest.

Figuring out the "Georgia" plan, I find that the "Georgia" class can, with practically the present weights, carry this battery:

8 12-inch		4 12-inch.
12 5-inch	instead of	8 8-inch.
		12 6-inch.

As the "Dreadnought" carries 12-inch guns in turrets about as widely separated as the two proposed to take the place of 8-inch turrets abeam, I see no difficulty except the possible cutting away of the superstructure to make room for the larger turret.

San Francisco. S. O. BLODGETT.

Outline of an Aerial Contest for the Scientific American Cup.

To the Editor of the SCIENTIFIC AMERICAN:

I note your generous encouragement given to aerial flight by the offer of a prize. It is a subject to which I have given much attention and I would respectfully put forward my views as to what the nature of a test of an aerial machine should be.

All the experimenters seem to be possessed of one idea only, and that is to fly forward in a horizontal straight line and by means of planes to sustain the machine above earth.

A machine may fly for a long distance in a straight line and yet be a total failure as a flying machine.

If its safety depended upon keeping up a certain speed in a straight line, as all aeroplane machines do, then I submit that they are not flying machines; a stoppage of the engine or its slowing down would mean annihilation.

To sail a machine from a tower or top of a hill to the bottom is a foolish experiment. Any flying machine worthy of the name must sail from the ground upward to the top of a hill or tower. The old parachute will sail safely with a man aboard from the top of a tower to the ground, but it is not a flying machine; it cannot sail up again. Of how much use would a steamship be, even if it could go from here to New York in a straight line, if it would promptly go to the bottom of the sea if the engine stopped or slowed down? That is what would happen to the aerial machine on aeroplane principles.

I would submit that there are three essential tests to be applied to any machine which claims to be a flying machine:

First, it should be able to rise of its own power from the ground level, and soar to a few hundred feet height; second, it should be able to hover over any spot on the earth for any time desirable without any straight-line movement; third, it should come down to earth safely from any height when the engines are stopped.

From my point of view we should first meet these requirements before even beginning to think about straight-line flight.

Any one of these three requirements is worth a hundred times more than a hundred-mile straight-line flight. They are absolutely essential in anything which could seriously be considered a flying machine.

The aeroplane I have studied long but have come to the conclusion that no successful flying machine will depend in any way upon aeroplanes for sustaining them in the air, and the results of all the recorded experiments with them amply confirm me in that conclusion. An aeroplane has no propelling or sustaining power in itself. The prime mover and the propeller on a flying machine alone must supply all the power required for sustaining the weights and propulsion.

The work, then, had better be done direct, by engine and propeller, and then aeroplanes become only uselessly added weight and resistance, with no reason for their existence at all. Aeroplanes may be useful for balancing and steering purposes, but never for the two prime functions, propelling and supporting the weight.

To encourage the solution of the problems on the right lines, a prize for a machine which would go up, stay up for a time, and come safely down, it seems to me would bring the matter into the realm of engineering. RANKIN KENNEDY.

Glasgow, May 4, 1907.

THE NEW WHITE STAR LINER "ADRIATIC."

BY OUR LONDON CORRESPONDENT.

On May 16 there arrived at New York on her maiden trip the latest acquisition to the transatlantic fleet of the White Star Line, the "Adriatic." This vessel, constructed at the Belfast shipyards of Harland & Wolff, constitutes a new record in shipbuilding construction; and she is the largest vessel that has ever entered this port. She measures 725 feet 9 inches in length, with 75 feet 6 inches beam, and is 50 feet deep, her gross tonnage being nearly 25,000 tons and displacement 40,000 tons. Of the five largest and heaviest liners at present engaged in service between America and Europe, no less than four fly the White Star flag. They are as follows:

"Adriatic"	25,000 tons.
"Baltic"	23,876 tons.
"Amerika" (German)	23,000 tons.
"Cedric"	21,000 tons.
"Celtic"	20,904 tons.

The "Adriatic," it will be observed, exceeds the tonnage of the "Baltic" by 1,124 tons. In this liner the same policy is maintained by the White Star Company as in the case of the "Oceanic." Speed is, to a certain extent, sacrificed to comfort, while at the same time the vessel is given a larger cargo-carrying capacity. Upon the "Adriatic" many important innovations have been introduced for the purpose of relieving the traveler of any feelings of ennui. The decoration of the vessel is carried out upon more luxurious and sumptuous lines than have been attempted in any other vessel of the same class.

In seaworthiness and stability, it is anticipated that this liner will show a decided advance even upon its most recent prototypes. The ship is very strongly framed, divided into twelve water-tight compartments, and has a double bottom extending through the entire length of the hull. The total number of plates used in its construction aggregates approximately 20,000, while two and a half million rivets were used. The anchors, weighing about 8 tons each, are worked by powerful gear, the cables being 3⅜ inches in diameter and weighing 90 tons. There has been a careful consideration of the distribution of weights; so that easy steaming may be possible in any kind of seaway. The vessel is propelled by two sets of quadruple-expansion engines, driving twin screws.

With regard to the internal arrangements, a greater degree of roominess has been obtained. An unusual amount of headroom has been provided, while great width has been given to the upper series of the nine decks used by passengers. There is the continuous shade deck running fore and aft, with three tiers of deck houses, and three promenade decks alongside them. The staterooms are lofty, well lighted, and excellently ventilated, these arrangements being appreciably facilitated in design by the great beam of the vessel and the exceptional height between the decks.

In regard to the first-class accommodation, the "Adriatic," in response to the growing demand, has an unusual number of single-berth rooms, there being no less than seventy-six of these apartments. The appointments throughout are of the most sumptuous character, many little novelties and conveniences being freely introduced to dispel the feeling of being afloat as much as possible. The dining saloon is on the upper deck, and extends the full width of the vessel, and the situation has enabled an exceptionally airy and roomy apartment to be provided, with seating accommodation for some 400 persons. The style of decoration and furnishing is Jacobean, the general tone being ivory white, which is now so much the vogue in Europe. The illumination is obtained from a large dome, glazed with leaded glass in white and pale yellow tones, beneath which is a frieze of paintings representing scenes in Switzerland, Italy, the Yellowstone Park, and in various countries. The seating arrangements follow the lines of separate tables, adopted a little while ago with conspicuous success.

The reading and writing saloon is on the boat deck. The scheme of decoration is of a delicate character, comprising paneling and ornamentation in low relief, the panels being filled with paintings of the graceful and imaginative school, as represented by Bartolozzi, Cipriani, and others. The windows are of large size, filled with stained leaded glass, the furniture being birch richly inlaid. The electric illumination is carried out by shaded ceiling and wall lights, giving a soft, restful effect. The lounge is on the same deck, and is paneled in oak with an appropriate ceiling to match. The same scheme as regards windows is followed, the stained glass carrying figures of illustrious poets, painters, dramatists, and philosophers. The smoking saloon is of a somewhat heavier appearance, the walls being embellished with figured leather, the upholstery of the furniture to match the prevailing color being a rich mahogany hue.

Many important innovations, which will be greatly appreciated, have been introduced for the convenience of the first-class passengers. Communication between the various decks is facilitated by an electric lift; a feature first suggested to the Cunard Company by a member of the editorial staff of the SCIENTIFIC AMERICAN. Another new feature is a large gymnasium, fitted with an ample variety of apparatus. Turkish baths consisting of the usual hot, temperate, and cooling rooms, with plunge bath, massage couches, and shampooing rooms, are also provided, while the conveniences in this direction are further supplemented by three electric baths. Photographers have a dark-room placed at their disposal, and there is an inquiry office, at which every kind of touring information desired by the traveler can be gained.

The second-class accommodation is immediately abaft that provided for the first-class passengers, and consists of dining saloon, smoke room, and drawing room for ladies. The staterooms are decorated in white paneling; the smoke room is framed in oak, with walnut dado, the furniture being in harmony with leather upholstery. The ladies' room is in satinwood embellished with inlaid panels, with mahogany furniture and dado lincrusta ceiling, parquetry flooring and stained-glass windows. The dining saloon