

BALLOONS AS BATTERIES.

AERONAUTICS AS A FEATURE OF MILITARY WARFARE.

To Drop Bombs From the Sky on an Army or Fleet—Balloons For Reconnoitering.

UNCLE SAM will soon be forced to consider seriously the establishment of a balloon corps as an adjunct of the army. England, Germany, and especially France have been giving much attention to the subject, though their experiments have been in secret. Within a year the French have produced a balloon that can be steered and manoeuvred in the teeth of a wind blowing twenty miles an hour.

Cigar-shaped airships recently have been run by propellers in France on calm days at fourteen miles an hour, and double this speed will be attained before long. The Germans are said to have produced a balloon that can be steered and which carries great weights, but little is known about it. A rudder will operate to direct an aerial machine if the latter can be driven fast enough to give it steerage-way. The notion that an airship sustained by gases is not to be relied on is another fallacy.

Within the last few years ballooning has been revolutionized abroad and reduced to a science. Experts now understand how to make balloons tight, so that leakage is reduced almost to nothing. When one has a gas-bag of gold-beater's skin that will stay afloat thirty days, he has something to start business with.

Against balloons no armed force, on land or water, can have any means of defense or retaliation. No fort on land or afloat can withstand high explosives dropped from aloft. An air ship would be absolutely safe, because no shot from a gun will do damage beyond 6000 feet above the surface of the earth. The gasbag is practically secure from serious hurt at an elevation of only 1500 feet. Besides, bullets discharged straight up in the air might do harm in falling back, as they would have the same velocity on reaching the earth again as when discharged from the rifle or cannon. However, when the balloon is passing away the line of sight is changed so slowly that sharpshooters could easily pepper it with accuracy.

Even so, the balloon would not suffer importantly. A rifle bullet puncturing a great gas-bag containing 40,000 or 60,000 cubic feet of hydrogen makes only a little hole, which is partly closed again by the broken edges of the fabric. Some gas escapes, but not enough to be of any consequence. But there is no reason for passing over a hostile army or fleet at so low an elevation, inasmuch as bombs can be dropped just as well and as accurately from a point high enough to be out of reach.

Besides, the instant that a bomb is thrown the balloon rises rapidly, being relieved of that much weight. At night, or in a fog, it would be entirely safe from observation. Or it is easy enough for the air-ship to come down into the lower part of a cloud, whence the crew can see the enemy below while invisible to them. Thus the latter are entirely helpless.

During the siege of Paris, in the Franco-Prussian war, balloons were sent up, passing over the besieging armies. The aeronauts took with them homing pigeons, which carried back news to the beleaguered metropolis. These balloons were constantly fired at, and Krupp, the gun-maker, at the request of Von Moltke, designed a "balloon musket" for the purpose of attacking them. Nevertheless, this sort of rifle practice proved wholly ineffective, and only those balloons were captured which were low down through expanded gas.

If a dozen aerial batteries of four balloons each were stationed at different points along the Atlantic coast no hostile fleet could come near our sea-board cities. The hostile vessels could be sunk within a few minutes by dropping nitro-glycerine cartridges upon their decks. This could be accomplished with the utmost accuracy and precision.

Dr. Myers, the aeronautical engineer, speaks of experiments made by him in killing ducks by dropping shot from an elevation of 1500 feet upon the water below. Each splash showed where the last shot fell, until the fifth or sixth shot hit the bird and killed it. Falling from so great a height the velocity of the leaden pellet was as great as if fired from a gun.

The air currents at a high elevation are always moving from west to east. Accordingly, it would be particularly easy for such war balloons to ascend on the coast and float seaward over an enemy's fleet, like so many birds carrying in their claws dynamite bombs or torpedoes. Having wiped out the ships, it would be necessary for the flying battery to return in the face of the wind, but this could be accomplished very easily by using the propellers. At the same time it would be comparatively difficult for balloons sent up from hostile vessels to advance towards the shore, inasmuch as they would have to encounter an unfavorable breeze.

The idea on which the famous Mr. Maxim has been working for some time past is a cylinder of aluminum, containing a three-fourths vacuum, its collapse being prevented by strong ribs inside. The machine is to be propelled and steered by electric gear, while sustained and balanced by the wings of a great aeroplane. The inventor expects to be able to fill his aerial car with explosives and hover it over a city, which must pay ransom or be destroyed.

However, Professor H. A. Hazen, of Washington, an accepted authority in aeronautics, asserts that the aeroplane idea, of which Professor S. P. Langley, of the Smithsonian Institute,

is the foremost advocate, is impracticable. His opinion is that man must imitate the bird, if he is ever to fly at all. The "soaring" of the bird, by which an animal many times heavier than the air is enabled to sustain itself motionless in the latter medium—its extended pinions, as yet an unexplained phenomenon. If it could be accounted for, light might be thrown on the problem of human flight. Wonderfully clever mechanical birds, by the way, which will actually fly quite a distance, have been made in France; but they are only toys.

The United States Signal Office has already constructed balloons for reconnoitering. These are intended for ascents of 1000 feet or so, being anchored to the ground by a wire rope, through which a copper wire runs. The latter affords telephonic communication with the aerial car, from which the observer gives notification of what he sees. If desired, the telephone wire may communicate with the headquarters of the commanding general miles away. Sketch maps can be sent down by the rope.

Man has been trying to fly ever since the earliest historic times. Archytas, a famous geometer of the Pythagorean school, who flourished 400 years B. C., made a wooden bird, which, as is alleged, flew by mechanical means, its buoyancy being affected by magnets. But if it fell to the ground it could not lift itself again. Under the reign of Nero an inventor is said to have flown in Rome, but he lost his life in coming down. It was said his evil genius tackled him while aloft, taking him at a disadvantage.

John Muller is said to have constructed an artificial eagle at Nuremberg, which flew out to meet the Emperor Charles V. and accompanied him back to town. About the same period a monk named Elmerus flew about a furlong from the top of a tower in Spain. By means of a pair of wings a person named Dante, of Perouse, was enabled to fly, and, while amusing the people of that city with his aerial performances, he fell from the top of St. Mary's Church and broke his thigh.—New York World.

SELECT SIGHTINGS.

St. Gothard tunnel is 9 1/2 miles long. Petrifying human flesh is a lost art. Coins were at one time made of leather.

The most frequent crime in California is burglary.

Iron and steel are made by native tribes in the interior of Africa.

It is estimated that the world's cucumbers are worth \$8,000,000 annually.

Real agate marbles are made from agate found in Oberstein, near the Rhine.

A cat with "eight well-formed legs" is owned by Edward Franklin, of Athens, Ga.

The largest locomotive was built four years ago for the Northern Pacific, 225,000 pounds weight.

The Greeks consume annually to each inhabitant five pounds of sugar and one pound of coffee.

The highest natural bridge is at Rockbridge, Va., 200 feet from the water to the bottom of the arch.

Engineers on the first locomotives were equipped with tin horns, with which they warned people from the tracks.

If ancient history is to be taken as an authority, Phyllus of Crotona could clear fifty-six feet at one "standing broad jump."

At Cannae, where the Romans sustained the worst defeat they ever experienced, there were 145,000 men on the field, of whom 52,000 were killed.

A large elephant had to be killed at Stuttgart, Germany, on account of his temper. A single bullet from a small bore rifle delivered in the forehead dropped him dead.

A remarkable archeological discovery is announced from Treves, France. In excavating the old Roman walls close to the Moselle, a complete Roman pottery establishment was discovered.

The estimated population of Mecca is about 60,000, while the number of pilgrims massed together there last year from all parts of the Moslem world was variously estimated at from 200,000 to 300,000.

Application was made at the New York Postoffice the other day for mourning stamps, and the applicant expressed great disappointment when he was told that the Government did not keep any in stock.

Revenue officers have captured, in North Georgia, the smallest still on record. It is complete, with cap, tubs, and all appurtenances, and is not over eight inches high. Strange to say, a colored man weighing 225 pounds was arrested for running it.

While making some excavations beneath a church in the Prussian town of Angerburg, the workmen made a horrible discovery—a small walled-in space in which they found a human skeleton, a broken chair, and the remains of a helmet and a pair of boots. The walls bore marks as of finger-nail scratches, and there was other evidence that some person had been walled in alive.

A Two-Inch Hole Over a Mile Deep.

The deepest boring of which we have any knowledge up to the present time, says Revue Scientifique, is at Parvoscowitz, in the District of Ribnik, in Western Silesia. The depth attained is 6568 feet, and the diameter of the hole is only 2.75 inches. The work has been temporarily stopped in order to lower special thermometers, which have been made with great accuracy, into the hole for the purpose of obtaining the temperature at different depths. The boring will then be resumed, and it is hoped that a depth of 8200 feet will be reached.

SCIENTIFIC AND INDUSTRIAL.

Eight cubic feet of snow produce one cubic foot of water.

The first electric machine, a globe of sulphur, was made by Guericke in 1647.

In Germany there is a law forbidding restaurateurs to serve beer to people who have eaten fruit.

The apple has a larger proportion of phosphorus than any other fruit, and is, therefore, an excellent brain food.

The average cost of building an English ironclad is \$240 per ton; French, \$275; Italian, \$285; German, \$300.

A wind blowing at the rate of nineteen miles an hour exerts a pressure of but one and four-fifths pounds to the square foot.

The newspapers report the striking of a gas well near Portland, Ind., the daily output of which is over six million cubic feet.

A Japanese novelty is "glass paper," which is said to combine wonderful transparency with unusual strength and tenacity. The material for making it is furnished by a Japanese aquatic plant.

Saccharine has a rival. A new substance called valzin is now being manufactured in Berlin under a patent, and is claimed to be 200 times sweeter than sugar, and free from certain objectionable properties of saccharine.

Railway mathematicians calculate that a train which can speed at the rate of eighty-five miles an hour would require from seventy-two to seventy-five seconds in which to "pull-up" or come to a standstill. It would require nearly a mile in which to stop.

A new process of making rain was recently brought before the Academic des Sciences, Paris, by M. Baudoin. His theory is that electricity maintains the water in clouds in a state of small drops and that if the electricity be discharged the water will come down.

Several farmers who had been summoned before London magistrates on the charge of selling adulterated milk, were dismissed on proof that the thin quality of the milk was due, not to added water, but to the impaired condition of the cows, in consequence of the great drought.

A somewhat widespread belief is that water can be heated only to 212 degrees Fahr. This is true of unconfined water, but under a pressure of ten atmospheres (150 pounds to the square inch) the water may be heated to 359 degrees, and under sixty atmospheres 531 degrees may be reached.

The bees work harder than most people would believe. There about sixty flower tubs in every head of clover, and only a tiny morsel of honey in each. In order to get enough sugar for a load the bee must visit about six thousand different flowers, and each bee makes, on an average, twenty trips a day.

He Lives on Monkey Diet.

A recent session of the Missouri Valley Horticultural Society at Kansas City was addressed by W. S. Manning, of London, whose card is inscribed, "Fellow of the Royal Botanic Society and Hon. Secretary and Lecturer of the Natural Food Society to promote Food Reform Based on Science." Mr. Manning's hobby is, as his card indicates, "food reform." He advocates that the human family should live solely on a diet of fruits and nuts, and he practices what he preaches. He said in his address that for eight years past he had not swallowed a drop of liquid refreshment of any kind nor a morsel of cooked food. He had subsisted solely on fruits and nuts.

"My breakfast this morning consisted of a half pound of California figs, two oranges and two bananas mashed up together, followed by a tomato salad and a handful of nuts. This meal was eaten raw, as all my meals are."

"What did you have for dinner?" asked a member of the society.

"I have not yet eaten dinner. I eat but two meals a day. My dinner will come between 6 and 10 o'clock this evening, and will be a repetition of the breakfast."

Mr. Manning claims that an exclusive diet of fruits and nuts contains all the nutriment that the human body needs, and he claims also that the body fed on such a diet cannot be sick. Mr. Manning is not a crank. He is described by the Kansas City Times as an intelligent, well educated, florid-faced robust man. He has proved to his own satisfaction by experience that the reform of which he is the apostle is a good thing.

A Church Made of Paper.

There is a church at Bergen, Norway, made of paper, which can accommodate nearly 1000 persons. Its exterior is octagonal, while in the interior it is circular in form. The reliefs without and the decorative statues within, as well as the vaulted roof, nave and Corinthian capitals, are made of papier mache, which has been made waterproof by soaking in a solution of quicklime, curdled milk and white of egg.—San Francisco Call.

England's Torpedo Destroyers.

The Havoc, the new torpedo destroyer of the British naval force, can steam as fast as a railway train, and can turn with such rapidity in her own length that she would cut a good figure in a marine walk. There are to be a dozen such vessels, the fastest steamers in the world, and they are expected to do smart service on occasion. They could catch anything afloat, or as rapidly retreat. The next war will be interesting in more ways than one.—Toronto Empire.



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Modern Lifeboats.

There are many kinds of lifeboats and many other devices for effecting communication by lines between a wreck and the shore. The type of boat in most general use in our service is distinctively known as a surf-boat. It is made of white cedar upon a white-oak frame. It is from twenty-five to twenty-seven feet in length, with its other dimensions proportionate. It is propelled by six oars, and will carry, besides the crew, from ten to fifteen persons. The excellence of these boats is shown by the record during the eighteen years they have been used in the hands of the life-saving crews. They have been launched in actual service 6730 times, and have safely landed from wrecked vessels 6735 persons. They have capsized but fourteen times, six of these accidents being attended with loss of life. Of the boats' crews, twenty-seven were drowned, being one out of every 240 lives saved.

A "self-righting" lifeboat is largely used in the English service, and in our own to a limited extent by way of experiment. This boat is constructed with air-chambers at the bow and stern and several hundred pounds of iron in the keel. These cause the boat to "right" itself when capsized by the waves. It is of necessity heavy and cumbersome, and the record for actual service is on the whole favorable to the smaller and lighter surfboats adopted by our own Government. The proportionate loss of life from capsizing is considerably less with the surf-boats. The self-righting boat is fourfold heavier than the other, weighing about 4000 pounds. Boats are being constantly improved and perfected, one of the latest devices being for self-bailing, by which water that may be "shipped," or fills the boat as the result of a capsize, is instantly expelled. A boat combining successfully the properties of self-righting and self-bailing would seem to be nearest possible approach to the ideal.—Popular Science Monthly.

A House Built of Sea Shells.

The ruins of some very strange habitations are to be found all over Arizona. The most of them are built of adobe or concrete, which is plentiful, and the only thing that cannot be explained is who were their builders. But there is one ruin in the Huachuca Mountains which is a mystery. It is 200 miles from the ocean, and around it on all sides are rocks and hills of sand. There is no water for miles, and even the suggestion of it, and yet the house is built of sea-shells, laid in cement.

It is hardly likely that the builder of the house would have carried his material across the desert, when there were rocks at hand that would have served his purpose, and the question is—where did the shells come from? There are a dozen varieties in the walls, and one over the door is of extraordinary size. The house has room inside for five or six persons.—New York Witness.

MOTHERS

and those soon to become mothers, should know that Doctor Pierce's Favorite Prescription, which cures child-birth, its tortures, terrors and dangers to both mother and child, by aiding nature in preparing the system for parturition. Thereby "labor" and the period of confinement are greatly shortened. It also promotes the secretion of an abundance of nourishment for the child.

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An Island Missing.

The American ship Daniel Barnes, Captain O. P. Arpe, arrived yesterday from Caleta Buena, Chile, after a voyage of ninety-one days. An interesting and important report from Captain Arpe is in regard to the total disappearance of an island in the South Pacific Ocean. On October 10, Captain Arpe says, he passed over the exact spot where Podesta Island is laid down on the chart. He had men aloft looking for land, and, although it was daylight and perfectly clear, he says that nothing could be seen of it. The island was about forty feet high and three-fourths of a mile in diameter. It is thought by the Captain and officials at this port that some volcanic disturbance on the mainland caused the island to disappear.—Baltimore American.

Constantinople, Turkey, has 1,000,000 people, who are kept in order by 1000 policemen.



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