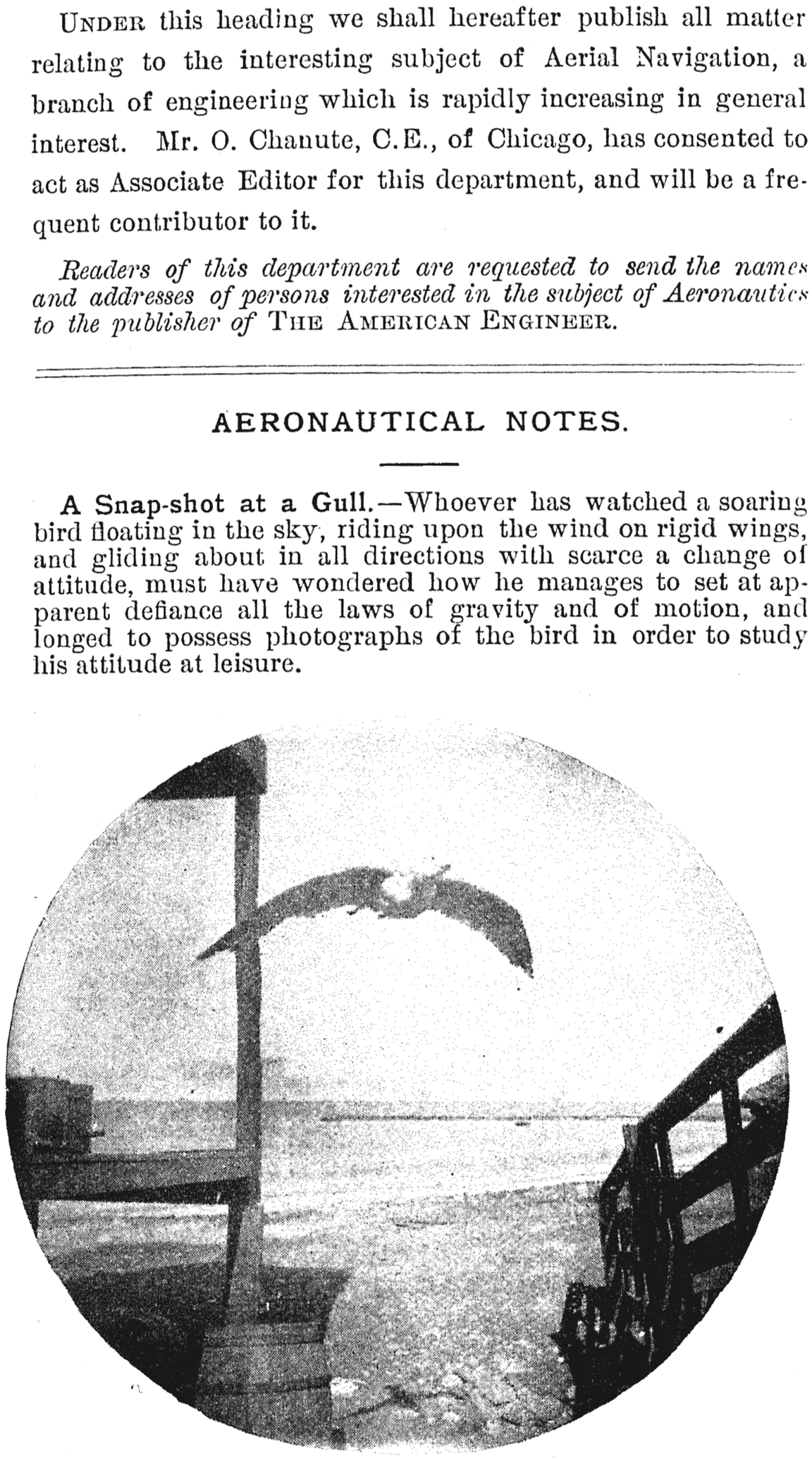
AERONAUTICS.

UNDER this heading we shall hereafter publish all matter relating to the interesting subject of Aerial Navigation, a branch of engineering which is rapidly increasing in general interest. Mr. O. Chanute, C.E., of Chicago, has consented to act as Associate Editor for this department, and will be a frequent contributor to it.

Readers of this department are requested to send the names and addresses of persons interested in the subject of Aeronautics to the publisher of THE AMERICAN ENGINEER.

AERONAUTICAL NOTES.

A Snap-shot at a Gull.—Whoever has watched a soaring bird floating in the sky, riding upon the wind on rigid wings, and gliding about in all directions with scarce a change of attitude, must have wondered how he manages to set at apparent defiance all the laws of gravity and of motion, and longed to possess photographs of the bird in order to study his attitude at leisure.



A SNAP-SHOT AT A GULL.

Unfortunately the taking of such photographs is exceedingly difficult. The bird flits so rapidly, he is generally so far off, there is so seldom any neighboring object to guide the eye in judging of dimensions and positions, and the effects of perspective so frequently distort the attitude, that numerous as are the soaring birds at sea or in southern latitudes, adequate photographs of them are very rare.

We, however, engrave herewith "a snap-shot at a gull," taken by a young lady with a kodak camera, upon one occasion when all the surrounding circumstances were just right.

A Balloon Tour.—In the latter part of September of this year Mr. M. Mallet, the aeronaut who succeeded in 1892 in maintaining himself for 36 hours in the air in a balloon, and Mr. W. de Fonvielle, the veteran author and aeronaut, undertook what they called a tour of France by balloon, traveling by a series of ascents.

The balloon was of 37,500 cub. ft. capacity, weighing with its appurtenances 660 lbs., and capable of carrying three passengers. It was provided with an auxiliary storage balloon of 2,100 cub. ft. capacity, from which to replenish the main balloon, and also with the aerial screw invented by Messrs. Mallet and Langlois, to raise and lower the balloon, so as to economize ballast and gas.

A preliminary trip was made in the night of September 14. The wind was not in the desired direction, and, being violent, the aeronauts were blown 286 miles in about 10 hours, landing not very far from La Rochelle, whence they went back to Paris after emptying their balloon.

They started out again on September 19, and were blown about 40 miles northward, when they landed for the night. They started up again the next day, but went only a few miles in consequence of light and baffling winds. The next day rain set in, and for the next three days, although ascents were made daily, little progress was accomplished, the winds being so light and baffling that the aeronauts never got more than 100 miles from Paris. The seventh day they gave it up, and returned home determined to try it again later. The aerial screw was tested once, and found to raise and lower the balloon; but as it is rotated by hand, its use was found to be a good deal like work, and it was landed after the trial test.

Upon the whole, it may be doubted whether anything like a tour can be made by a balloon. It is the sport of the wind.

Paris Captive Balloon for 1900.—The French have had captive balloons at all their international expositions, and have demonstrated the fact that these can be so safely operated that they form popular and profitable attractions, no less than 15,000 passengers having made the ascension in the comparatively small captive balloon of 1889, without the slightest accident, and this balloon having subsequently made a free voyage with 20 passengers.

The following compilation shows the principal data pertaining to these captive balloons.

CAPTIVE BALLOONS IN PARIS.

YEAR.	Diameter.	Cubic Feet.	Passengers.	Height.
1867.....	?	176,000 ?	12	820 ft.
1878.....	118 ft.	883,000	42	1,640 "
1888.....	59	107,800	14	1,400 "

Now the French are proposing to have a much larger captive balloon at the Exposition of 1900, and Messrs. L. Godard, E. Surcouf & J. Courty, aeronautical engineers, have designed one 144 ft. in diameter, to contain 1,590,000 cub. ft. of hydrogen gas, and to ascend to a height of 1,950 ft. with 160 passengers. It is to be controlled by a cable decreasing in diameter from 3.93 down to 4.71 in. in diameter, wound upon a drum by a steam-engine of 600 H.P. All the parts, including the universal pulley under which the cable passes, are designed with a factor of safety varying from 4 to 6.

The balloon is to have an internal air-bag, which is to be kept more or less distended, in order to maintain a uniform pressure upon the gas, so as to prevent deformations of the external envelope when variations occur in the volume or density of the gas.

The clear atmosphere of wood-burning Paris is particularly favorable for captive balloons, and it is to be hoped that this will be more fortunate than the captive destroyed in Chicago in 1893.

FLYING EXPERIMENTS.

To the Editor of THE AMERICAN ENGINEER:

Since the appearance of my article in the January number of your magazine, I thought it well if I would indicate the lines of my investigations. I have employed a surface of 200 sq. ft. in area, stretched on a bamboo frame, all in one piece and weighing 50 lbs. I have sailed a few feet, but not from any great height. My experience resulted the same as others who have sailed from greater elevations—*i.e.*, it must be propelled, as the wind cannot be depended upon as a motor. I concluded that if the above surface was cut up into strips about a foot wide and spaced a foot apart, extending out on each side of the operator like the wings of a bird, it would give greater lift in ascending currents of air, and less resistance to advance; with a narrow tail extending back would give equilibrium, but this latter would be attained only when the machine is advancing. Now in order to propel, I thought that by running and jumping into the breeze I could continue the motion of springing up and down after I left the ground, and so propel. The result of my experiments proved that I must first lift, then propel, and continue advancing to obtain equilibrium, regardless of whether the wind blows or not, or the place of starting is rough or smooth, before I could hope to evolve a successful machine which would go under all