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"AN ANGEL WITH LOTS O' NERVE."

BY JOHN JAMESON GIBSON.

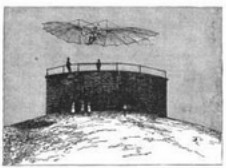
JACK HORTON was left an orphan at the age of sixteen. He found himself confronted by circumstances which obliged him to support himself, and he promptly went to work. His education had merely begun, and he was young, very young, in the ways of the world; but yet he was well armed to fight his way in the struggle for existence, for his weapons were aptitude and natural brightness.

An uncle of Jack's was connected with a manufacturing concern which owned a fairly large plant of mills and shops, and employed several hundred men. Through him Jack was able to secure the position of "time-keeper" of the works, and as his uncle was the superintendent, and lived by the mill, Jack made his new home with him.

Jack was very well pleased with his job. He sat at a window every morning as the "hands" went by to work and passed in their "checks." It was his duty to ascertain from these checks what men were there and "on time," and what men were absent, and twice a day he made a round of the shops and returned each man his

FLYING-MACHINES.

THERE is nothing more interesting to any boy—or any man, for that matter—than the possibility of putting on wings or getting in a machine and moving off into space. Long before we had any railroad trains or any

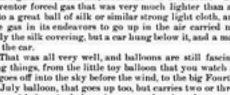


THE JUMP FROM THE TOWER.

telegraph wires, post-offices or electric machines—many centuries ago, in fact—men were working away trying to get something that would carry them along through the air. By-and-by somebody invented a machine which was lighter than the air, and that was a balloon. The inventor forced gas that was very much lighter than air into a great ball of silk or similar strong light cloth, and the gas in its endeavors to go up in the air carried not only the silk covering, but a car hung below it, and a man in the car.

That was all very well, and balloons are still fascinating things, from the little toy balloon that you watch as it goes off into the sky before the wind, to the big Fourth-of-July balloon, that goes up too, but carries two or three men with it. And there is no use denying that everybody rather wishes he could go up in a balloon just once to see how it feels. These big and little balloons always go just where the wind blows them, and of course they go just as fast as the wind. The men in the car can throw out a sand-bag and the balloon will rise, or they can let out a little of the gas and it will fall.

Then somebody put a big propeller, like a windmill, or rather like the "screw" of an ocean steamer, at one side of the car, and set it whirling by means of an engine in the car, and tried to force the balloon in one direction or



SOARING.

another along the same level without rising or falling. That is as far as inventors got for many years. It did not work well, because the wind almost always blows ten miles an hour at least, and in order to stay still in one place the engine had to force the balloon ahead against this wind at the rate of ten miles an hour. To "gain ground," so to speak, the engines had to work a great deal faster, and this on the calmest days. When this was tried it was usually found that the fragile balloon got torn to pieces by being pulled about this way and that.

In the mean time there were instances when it was seen how valuable balloons may be. For example, when the German armies were around Paris, bombarding it, the Parisians went up in balloons, and they could see all that was going on, and being attached to the earth inside the city by a long rope, they could report what the Germans were doing. The famous leader of the Parisians, M. Gambetta, wanted to get out and organize an army in the country outside Paris to attack the Germans from the rear. And any boy who will take the trouble to read the history of that time will read of the wonderful way in which Gambetta went up in a balloon and drifted with the wind across the country, till he finally could land safely, and there he did organize the army.

All this showed how much benefit could be obtained from flying through the air, even in a balloon that must go with the wind, and just where the wind chose to take it. How much better it would be if something could only be arranged by which the balloon could be made to go against the wind! And so they worked for years. As all the attempts failed, inventors—and some of them are very practical men, such as Professor Langley, at Wash-

KEEPING BALANCE WITH HIS LEGS.

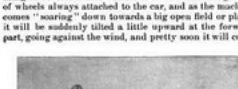
ington, and Professor Maxim, of London, who made the famous Maxim gun—began to watch birds. They watched such birds as the turkey-buzzards in the Southern States of our country. Of course the turkey-buzzard is heavier than the air, yet he stays up there without sinking, and, strange to say, he sails along for hours without once moving his outstretched wings. That is, he "soars," as we say. He goes around in a great circle, rises gradually, falls gradually, and moves this way and that.

These inventors took such a simple thing as a piece of paper—which anybody may try for himself—and they noticed that the paper when let fall did not drop at once, but "sealed" off in one direction, then tilted a little and sealed back again, and by-and-by fluttered to the ground, but it took a good while to get there. It was a simple thing to say that if they had an enormous sheet, say one hundred feet square, made of a light frame-work with silk stretched over it, it would probably do just what the paper did, but if they could tilt it a little against the wind, the wind blowing under it would cause the plane to rise and go against it, just what the turkey-buzzard does, in fact, or somewhat as the sail of a boat does for the boat. If the wind caught the plane on top, by the least bit of an angle, the machine would glide downward.

A GUST OF WIND.

'Here was a new idea. The machine was heavier than the air, as the paper and the turkey-buzzard are, and yet it might stay up and move against the wind if it could be properly directed, and so the idea of a balloon has been practically abandoned, and Professor Langley and Professor Maxim and many others are now at work on the *aeroplane* idea. Professor Maxim's idea, and he is working on it now, is to build such a great stiff silk shell with huge propellers behind it and a car underneath holding the engines and the men. The machinery, which is to be as light as possible, is to be so arranged that a man in the car can tilt the plane exactly as he wishes, and the propellers can be made to go fast or slow as he desires.

When his machine is ready his idea is to put it on wheels like an ordinary car, but the wheels are to be so fixed that by touching a spring they can be detached from the flying-machine and left behind. Then he means to put the whole thing on a short railroad built for the purpose. When all is ready he will start the propellers revolving. The machine will move along the track on its wheels, and as soon as the car is well started he will tilt the plane a little upwards at the forward part, touch the spring that holds the wheels to the cars, and leaving these behind, the whole flying-machine will rise into the air. When he comes down he intends doing the same thing in reverse order. There is to be another light set of wheels always attached to the car, and as the machine comes "soaring" down towards a big open field or plain, it will be suddenly tilted a little upward at the forward part, going against the wind, and pretty soon it will come



WELL STARTED.

almost to a standstill, when the engineer may safely let it touch the earth, or run a short distance on its wheels.

While Maxim is working on this machine, a German inventor named Otto Lilienthal has actually built a machine on the same idea, but a little different principle, in a place called Steglitz, near Berlin. He has tried it, and has himself "flown" two hundred and fifty yards from a tower. The tower was built partly for the purpose of holding the machine when it was not in use, but principally to give him a place to jump off when he starts. You will see it in the illustrations which accompany this article. The pictures themselves are drawn from six instantaneous photographs taken of Herr Lilienthal during one of his trial trips.

His flying-machine is made of a very light frame-work of willow, over which some light cloth has been tightly stretched. Its form is plainly seen to be like the two wings of a huge bat, with a great tail re steering apparatus behind. The two wings when open cover 150 square feet. They work by some machinery which causes them to open and shut like a real bat's wings. Herr Lilienthal jumps from his tower, and starts off flapping his enormous wings. If a gust of wind strikes him on the side he keeps his balance by throwing his legs to one side or the other, and he has made many flights already without serious accident of any kind.

GETTING READY TO ALIGHT.

If he succeeds, there will be a great change in our daily life, and it seems probable that some of us who read HARPER'S YOUNG PEOPLE now may live to see that done regularly.

THE ORDER OF THE ROUND TABLE.

BY MARGARET E. SANGSTER.

HO! gallant Knights and Ladies fair,
Wherever you may be,
I waft you greetings on the air
That sweeps from sea to sea.
Here, walking near Long Island Sound,
I hear your heralds speak;
Their challenge rings the land around,
From Bootle to Pike's Peak.

The Alleghanies catch the strain,
The Rockies take it up,
The sighing of its soft refrain
Is in Missouri's cup.
The Mississippi sings it through
Its miles of yellowing foam;
It falls in mist soft as dew
On many a school and home.

What is the wondrous magic word
Through all the continent,
That floats and flows in note and chord,
By myriad voices sent?
'Tis just "be good! be true! be right!"
Where'er they are found
So chant the Knights and Ladies bright
Who gird our Table Round.