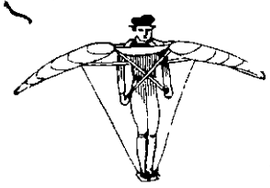
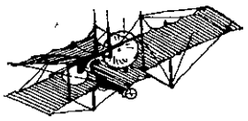
ANDREE

know it before Ice pack and Tundra give up their dead ?

The balloon was made of Pongee silk, of a capacity of 176,582 cubic feet Most of this material was used in fourfold thickness and all was of more than double the strength—as tested by the Nordenfelt company's engineers—stipulated for by the careful aeronaut Provided with an envelope for protec tion against the snow, with all seams made stronger, by a special cement, than the material itself of the balloon; with valves of improved design, and a great tearing rent for emptying the balloon rapidly in case of accidental dragging, with guide ropes trailing astern and giving control within fair limits before the wind, and a car and platform below carrying four months provisions and arms and ammunition, which Andree used to refer to in his optimistic way—no one but an optimist of the most inveterate would have undertaken such a venture—as "an unlimited supply of concentrated meat,"* this balloon was the strongest and the best equipped the world has ever seen There is only one thing more amazing than the truly amazing prudential genius shown in every detail of its design and execution. It is that the possessor of such an abnormal gift of wariness should have trusted himself to a south wind in a region where a south wind is the rarest thing. It was not for want of warning of the fact, for the whole summer of 1896 was wasted at Danes' Island near Spitzbergen, waiting for the southerly which never came. It was not till the next season that the aeronauts got away, and then not till July, when most of the season had gone by—so capricious are the winds from the south in that quarter of the world How in that second season the balloon was got once again to the starting place, how with its weight and bulk it was safely navigated by the intrepid sailors of the Swedish navy through the rough waters and the ice floes between the ship and the landing-place, how the shed built for it the previous season was renewed, how the gas generating plant was set up with every improvement known to the chemistry of the time for its purification, how special precautions were taken to prevent damage from the swaying inevitable to



MILLER'S AEROSTAT 1843.



HENSON AND STRINGFELLOW (AERODROME) 1843.

so great a mass while being let out of its cover, and how at last it was launched, all this would take too long to tell. The representative of Lachambre, who built the balloon, was there and has told the story in warm and earnest words.

It was the 11th of July 1897 Andree had been all the morning considering the weather with the wind blowing fresh from the south Would it last ? He decided in his own mind that it would. He left it to his two companions to say what they thought of it, the case being too serious for any interference with their unfettered discretion They thought it would last There was a scene at parting Friends shaking hands, the travellers leaving last words for loved ones far away, tears were falling, voices trembled In the midst of it the voice of the commander was heard "Strindberg! Volkmar! Let us go" The three aeronauts took their places, on the platform under the straining balloon tugging at its ropes The decisive moment had come

"One! Two! Cut!" cries the commander in Swedish The seamen cut the ropes and the balloon rose majestically, sailing out of the shed. The first peril was in the very gateway A gust of wind descended upon them from the mountain and the balloon, being encumbered with ropes, did not rise any further, and presently was seen to be rushing down towards sea level The sailors hurry to the boats for a rescue which they think is imperative Fortunately the balloon slows down, just touches the water, and, rising up once more, sails off "The balloon at an altitude of 164 feet," it is the narrative of the builder, who is watching the behaviour of his craft, "speeds rapidly away The guide ropes glide over the water, making a very perceptible wake which is visible from the starting-point like the track made by a ship We exchange last signals with our friends Soon we can no longer distinguish them, but we see that they are setting their sails on the bamboo mast There is a change of direction the balloon is travelling straight to the north at between 18 and 22 miles an hour. If the wind hold they will be at the pole in two days."

There was a line of hills in the distance between the explorers and the Pole The balloon travelling steadily on clears the top, stands out grey against the blue sky a moment; and is gone Then between two hills apart a lessening ball moves swiftly towards the northern horizon, and is lost Before it are the Sea, the Ice Field, the Unknown

"13th July. — 12.30 p.m. — 82 2 N. — 15 5 E —Good journey eastwards. 10 South All goes well on board This is the third message sent by pigeon —Andree"

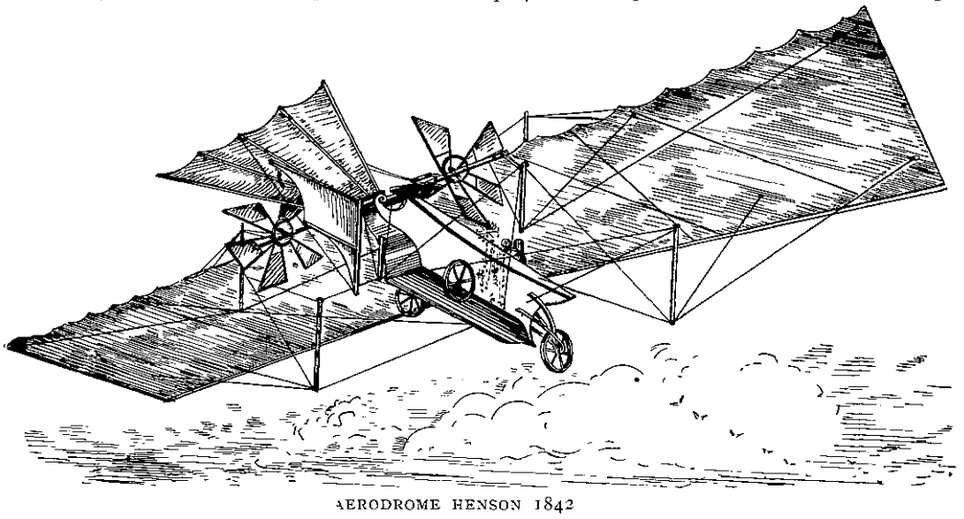
Out of that Unknown, that is all that ever came back from them It was brought by a carrier pigeon caught and killed by a Norway fisherman The pigeon was one of thirty-two carried for purpose of communication Why did not any of the others bring a message ? They would have had to fly 1600 to 2000 miles Pigeons do not fly so far as a rule but a pigeon in 1905 started from a point in Alaska for San Francisco, and was picked up in an exhausted condition at Havre, in Montana, 3100 miles distant These no doubt perished in the northern wastes All we know of the expedition is that on the third day out the treacherous south wind had left it travelling east in the desperate hope of a change to better conditions How desperate, we may judge from the fact that the travellers who had nothing else to rely on knew that they had waited in vain a whole season the year before for a south wind R I P

* Nansen left the *Fram* with three months' provision and lived on the ice for sixteen months on the above "concentration."

HENSON'S FLYING MACHINE

The thing most noteworthy about this invention is its date It was patented in the year 1842 The fact will considerably astonish those who have followed the preceding description of the laws governing the flight of bodies heavier than air Henson anticipated nearly everything in the way of principle though in detail he was as far behind as one might expect from one who, besides living half a century ago, did not bring his invention into practice Here is his own description, taken from the records of the Patent Office "If any light and flat or nearly flat stone be thrown edgewise in a slightly inclined position, the same will rise in the air till the force exerted is expended, when the article thrown will descend: and it will be readily conceived that if the article possessed in itself a continuous power or force equal to that used in throwing it, the article would continue to ascend so long as the forward part of the surface was upwards in respect to the hinder part, and that such an article, when the power was stopped, or when the inclination was reversed, would descend by gravity only, or by gravity aided by the force of the power contained in the article, if power be contained, thus imitating the flight of a bird."

The machine (see illustration) was designed to represent a bird with wings and tail. The bird's body was a car carrying a steam engine of 40 h.p. the wings were outstretched above the body, each made of a light strong framework of bamboo or other wood hollowed, covered with oiled silk, and the tail was arranged for raising or lowering the plane of flight The wings were carried on two masts rising out of the car and braced to them, "making the whole one trussed beam of light construction." To supplement the steering of the tail, which was to act vertically only, there was a vertical rudder to do the lateral steering. The function of the wings was confined to that which is performed by the wings of the bird, when it is skimming through the air at speed, and they were to exercise a retarding power in descent after the manner of the parachute The inventor, however, relied entirely on the tail action for bringing the machine down at such a flat incline that impact with the earth would be entirely without shock. For starting the machine he preferred an inclined plane like the side of a hill, and he proposed to allow the machine to run forward down the incline, the propellers being first set in motion. He thought



AERODROME HENSON 1842

it would be found that in a short time they would act sufficiently upon the air to cause the machine to leave the incline and proceed in any desired direction. These propellers were fan paddle wheels working at the sides of the machine.

This machine was never flown, though it was heard of again the next year as the machine of Henson and Stringfellow (see illustration). But whatever happened to it, its design was too remarkable to be passed over in silence. The design was the forerunner, the core, so to speak, of the inventions of the present day. Our illustration is from the copy supplied by the inventor to the Patent Office.

LANGLEY'S AERODROME, 1896.

This machine, the name of which signifies the runner of the air, as seen in the illustration, bears a resemblance to the flying-machine of Henson, which was patented fifty-four years earlier. It was the outcome of the experiments of Langley which have been detailed above, and it was several years in the hands of the inventor before it could be trusted to the air. Langley began with kites and proceeded gradually to the complete model. Very many attempts to fly the latter failed on account of the difficulties of launching Fortunately the launching was done overwater, for which reason the machine never sustained any damage in its numerous falls Finally it was launched from a house-boat in a secluded part of the Potomac River 20 miles from Washington, from a height of 20 feet Dr. Graham Bell was present and took an instantaneous photograph of the flight that followed He described it as rising steadily in half circles of about 100 yards in diameter and flying at the rate of 25 miles an hour, under direction