'E SHALL YET FLY. So Says Doctor Langley in Discussing His Great Man-Carrying Aerodrome With Frank G. Carpenter.

A Scientific Inventor and His Successes-The Flying Machine Not a Failure and Why-The Three-Horsepower Model, Which Flew By Gas-The Lightest Gas Engine Ever Made and How it Was Invented-The Great Machine a Military Secret-Its Future-The Motives of a Scientisf-Being the First Interview Ever Given by Dr. Langley on His Man-Carrying Machine.

ASHINGTON, D. C., June | the Potomac in 1896.

-I have just returned rom a talk with Secretary a launching which resulted so disastrously last fall. I say "in launching," for

as will be seen from this interview the ability of the machine to fly has never bein tested. The accidents have occurred before it was free from the haunching stage. It has really never been in the air. You might as well say that a great madern steamer, broken a launching, would not float if it were safully placed upon the water. Indeed, there is every reason to believe at the Langley machine will fly, and at the Langrey interine with ny, and a chee properly launched, its en-s will drive it through the air at will of the engineer, sitting within "h his hands on the levers, and

In his hands on the levers, and ling it as the engineer controls of upon the sea. This is the be-Mr. Langley. It is also the be-other scientists and mechanical its who know something of the inents which Mr. Langley has whill made in this field. SCIENTIFIC INVENTOR

SCIENTIFIC INVENTOR the say a word as to what he has be in this and other fields of discov-rand invention. His work is every-sere known in the scientific world, as high is standing in Europe is as high as in the United States. What Edison, Trels and Bell have been in the fields of practical invention he has been in scientific invention. He has created he methods of studying the heavenly scientific invention. He has created new methods of studying the heavenly codies, has to the inrgest extent meas-ured the heat of the sun, and by his invention of the bolometer has produced an instrument by which the tempera-ture of a sunbeam can be tested to the millionth part of a degree. Every railmillionth part of a degree. Every rail-read in the United States runs on a time system invented by Mr. Langley. It was through him that we got the systematic time service by which the clocks all over the country are regu-lated from the observatories, and by which the railroads run their trains without danger from accidents through average time.

rying time. This invention illustrates one phase of This has been his professional

This has been his professional ut he has also for years been ating the properties of the air making scientific and other exper-netis to give the world the knowledge on which may be based its success-in avigation. To test these proper-es he has made machine after ma-ter marks or small that they

tes he has made machine after ma-iles, from some so small that they could be held in the hand to others so arge that they would fill the room of a good sized house. He had failure af-ier failure, but from each failure he learned something. His work in aerial investigation went on for 16 years be-one to uningted in the first success.

THE AERODROME. I had the honor to describe the first from a tars Langley about his flying flight of that machine for the public machine, the experiments of the United States. I spent a week with Mr. Langley on an island in the river in order to secure a time for the best flying conditions. It came and I then saw this machine, which Was then saw this machine, which was made chiefly of steel, weighing as much as a four-year-old boy, but so large that it would about fill the average parlor, dart forth from the launching stage and fly through the air. Its mo-tive power was an exceedingly light steam one-horse power engine invented by Mr. Langley. It carried five pounds of water, and it flew through the air a distance of about three-quarters of a mile, continuing to fly until all the wa-ter had been converted into steam, when it gently dropped down upon the bosom of the Potomac.

bosom of the Potomac. As I tooked at the machine, Mr. Lang-ley told me that it weighed many hun-dred times more than the air it dis-placed. This is the difference between Mr. Langley's machine and those of Santos Dumont and others who expect to fly by means of balloons. The bal-loons are lighter than the air and they float as a boat floats upon the water. Langley's machine is carried through the air by the engine upon it, although it is many times heavier than the air it displaces. It is believed that such a machine will be safer and more easily directed than anything of a balloon nature, while its special properties will make it more suitable for military in-

MR, LANGLEY'S NEW MACHINE.

vestigation in times of war.

The aerodrome I have described weighed about 85 or 40 pounds. It was a little more than a model, and was not intended to carry a man. It had a score of successful flights, being the first flying machine ever made that really flew, and it effectually proved that an engine could drive a machine through the air.

That little model was the father of the great, man-carrying, military, aerodrome that now lies in the machine shops of the Smithsonian Institution, not much the worse for its unsuccessful launching on the Potomac. The latter is the result of Mr. Langley's work for the past eight years. It was undertak-en with the aid of the war department, which gave \$50,000 for this experiment, which gave \$50,000 for this experiment, that it might learn how to make a mil-itary engine large enough to carry a man in order to use it in military sur-veys and in warfare. That and some other money from a special fund in the Smithsonian Institution has all been spent in making experiments and in constructing this machine, which still remains to be tested. Personally, I think the expenditure may be one of think the expenditure may be one of the most profitable Uncle Sam has ever made, although perhaps a quarter of the amount already spent will have to be added to repair the aerodrome and

to construct new hunching arrange-ments which will enable it to start out upon its voyage through the air. A TALK WITH MR. LANGLEY.

I asked Mr. Langley to give me the reasons for the failures of last fall. He



THE MAN-CARRYING AERODROME JUST STARTING FROM THE HOUSE BOAT,

a chance to show what it will do. The difficulty so far has been with the launching, where we least expected it, and where we had reasons to believe that our conditions were perfect. The launching is a very serious matter in aerial navigation, how serious was not understood until I began my experi-ments with the small aerodrome which you saw fly. After many changes I in-vented the launching apparatus which verted the launching apparatus which worked with that machine. I had more than 20 flights from it and it never failed me. I thought I had just what was needed for the larger ma-chine and built launching ways on a proportionately larger scale. I was still surer of this when I launched an exact model of this large machine upon a successful flight shortly before the a successful flight shortly before the other trials were made, and was sur-prised to find that the same arrangements would not work as well with the great aerodrome. The front platform of its ways drops down in the launch-ing like a disappearing gun carriage,

the trouble." WHY THE EIG AERODROME DID NOT FLY.

"Here is a photograph of the machine on the launching stage," contin-ued Mr. Langley, as he showed me a snap shot taken by the photographer of the institution shortly before the trial. "Our idea was that the engine on the flying machine would carry it off into the sir and that it would leave the launching stage unimpaired and unin-

out Success. von

never been in the air and has not had f air, at the same time twisting one of I then this will fly. air, at the same time twisting one of the wings entirely out of shape, as you may see from another photograph which was made by Mr. Smillie at the time. The twisting of this wing threw the machine out of balance and helped to dash it down into the water. You might as well expect a bird to maintain itself in the air with a broken wing as a flying machine, which relies upon its wings to stendy it, to ily when one of wings to stendy it, to fly when one of those wings is twisted or broken. The result was that the machine went into the water carrying the intrepid engi-neer (Mr. Manly) with it."

"How about your second attempt, Mr. Langley?

The result of the second launching -The result of the second launching was even more disastrous than at the first. At that time one of the stern wings was caught in almost the same way and thrown out of place, resulting in the overturning of the aerodrome and its plunging again into the water before a flight could be begun. Had it not been for these accidents I have every reason to believe the machine would have made a successful flight would have made a successful flight, I think there is no doubt but that it will and this was the immediate acuse of fly, but so far it has had no opportunity to do so."

"Then you consider your invention a

success?" "Nothing is an absolute success until it is proved so by actual test. I can-not say the machine is a success in that respect, for it has never been tested. I have, however, every reason to be-lieve that it will be a success. We have taken into consideration every element with which we have to contend; we investigation went on for 16 years be-for it culminated in the first success-for it culminated in the first success-for it culminated in the first success-for the machine is concerned. It has

"Tell me about the flight of your model?"

"That flight was so remarkable." said Mr. Langley, "that I was surprised that it did not attract more attention. It was made on August 8 of last year, being the first time in the history of invention the first time in the history of invention that any successful flight took place in public. The model carried a gas en-gine of three-horse power, which drove it through the air for a distance of a little less than a quarter of a mile. It then stopped only because of a defect in its fuel supply. It left the launch-ing stage without trouble, and this as-sured us that it was all right for the larger machine."

THE LIGHTEST GAS ENGINE EVER MADE.

"Then I suppose you use a gas engine n this large machine?" "Yes," replied Mr. Langley, "we have

gas engine of extraordinary lightness for the very considerable horse power The engine was one of my chief diffi ulties. I am not an engineer, and in-leed, I should not have attempted to construct the machine had I known the trouble I should have in getting the proper engine. In 1898 I made a con-tract with an American builder for a tract with an American builder for a suitable engine. He agreed to deliver one within a year, but at the close of that time found that he was unable to produce what was needed. For my pur-pose it is necessary to have the lightest engine possible with a certain definite horse power. Fnding it impossible to get this in the United States, I went to

find one which weighed so little as 10 pounds to the horse power, none as light as that ever having been built. I was then most reluctantly forced to indertake to build the engine myself or to have it built under my supervision. I say reluctantly, as I am not an engineer. I then secured the as-sistance of Mr. Charles M. Manly, a young mechanical engineer, a graduat of Cornell university, and we tried to of Cornell university, and we tried to produce a lighter engine than any yet made. We made experiment after ex-periment, until he finally developed a gas engine much less than half the weight of the lightest gas engine we could procure in Europe. This is the engine which operates the present ma-chine. I will not say just how light it is, but it weighs less pounds per horse power. At the same time it is of won-derful strength in comparison with its erful strength in comparison with its weight

ngine builders, but nowhere could

"You refer to the press, Mr. Langley, Why did you not let the newspaper men see the machine when you first took it down the Potomae?"

teck it down the Potomac?" "That was not a matter of choice with me," was the reply. "I explained why at the time. A large part of the money employed in making the ma-chine was furnished by the war depart-ment with a view to using it, if suc-cessful, in warfare. For this reason the department warted its construction to be a millitary secret. Suppose, for to be a military secret. Suppose, for instance, that Japan had a successful flying machine, the secret of whose construction was known only to the construction was known only to the Japanese, would not the war depart-ment of that country be anxious to keep that secret from the Russians? With such a machine they could fly over the armies in Manchuria and esti-

over the armies in Manchuria and esti-mate their size and armament. They could reconnoiter the country for miles about their army and prepare to resist an atack. They could look down into Port Arthur and perhaps determine the length of slege required to take it. These are the principal uses of a flying machine in reconnoissances, without speaking of its potentialities as aver engine in dropping dynamite. Do you wonder that the United States army does not wish to give publicity to a does not wish to give publicity to a possible invention of this kind made with its money, or that I, as a con-scientious servant of the government, could not but obey such instructions? looked upon the machine then as i looked upon the machine then as a military secret. Much of its construc-tion is a secret today. I can show it to you, but I cannot allow you to make any scientific or detailed description of it for the reasons I have stated.

"I regret much," concluded Secy Langley, "that my situation in this matter has not been understood or fair. ly stated, though I tried to explain in at the time.'

AS TO THE FUTURE.

"If it were left to you, Mr. Langley, what would you now like to do as to the machine?" I asked. "If that were the case," he-replied, "I

"If that were the case," he-replied, "I should like to put it in order and launch it under such conditions that it could show its possibilities of a flight through the air. The machine is not serious-ly injured, and it could easily be re-paired. Another launching apparatus, however, would be a matter of much experiment and of considerable ex-pense, which is beyond my means." "Would you again use a house boat for such an experiment?" "I cannot say as to that," replied Mr. Langley. "The machine carries a man

Langley. "The machine carries a man in it, and it is hardly fair to the man

that it should be flown under such conthat it should be hown under such con-ditions that if there is a failure he must fail into the water. It might be better to haunch it from the land." "But, Mr. Langley," said I, "is it not softer to fail on the water than on the hund?"

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"I see that on the water than on the land?" "I see that you do not understand how these machines fail." said Mr. Langley. "Once fairly haunched in the air they descend like a parachute, so gonfly that there is little danger to any one in them. In the flights we have so far made, these models once successfully launched, have dropped down so very slowly and evenly that a shass of water might have remained in one of them and not been spilled. The descent is generally considered the dangerous part of flying machine ex-periments. I do not regard that so in this case, and the aerial engineer may prefer to descend to the land than to the water." the water.

"Would it take you long to arrange matters for another attempt?" "It would require five or six months, I should say," was the reply.

AERIAL PASSENGER TRAFFIC.

"You speak of the aerodrome as a war engine. Do you think such ma-chines will ever be used in passenger transportation?"

"Those matters are in the far future," "Those matters are in the far future," replied Mr. Langicy. "I hesitate to speak of them for fear I shall be thought impractical. I see no reason, however, why they should not be used however, why they should not be used for many commercial purposes. In any case the air is a highway that leads everywhere, and the track is al-ready laid." "What speed can be attained by ma-

chines like yours?

chines like yours?" "Flying machines, based upon the principle upon which mine is construct-ed, must necessarily fly fast, or they will fall. They cannot remain station-ary, for the moment they stop, their weight is such that they begin to sink, For continued flight we must have a minimum speed of about twenty miles or hour and we have some muck fast. an hour, and we have gone much fast-er than that. The small models have actually attained a speed of about thir-ty miles an hour, and the large one may be expected to go indefinitely fast-

SCIENCE VS. MONEY.

SCIENCE VS. MONEY. "Will you please tell me, Mr. Lang-tey," said I, "what has been your chief you have devoted the leisure of a third of your active life to this subject. What have you hoped from it?" "I don't like to discuss motives," re-pled Mr. Langley, "The truth, how-ever, is that the commercial end of this machine has had nothing to do with the work I have put upon the sub-ject during the past twenty years. My life has been along scientific lines, and while I will not say that I am quite indifferent to the making of money, it never has been my leading object. If I were what is called a rich man I should not hesitate to complete these experiments at my own expense, but as it is I shall have to rely upon others to furnish the money if I am to do the work. As to the commercial end of the Aying machine, I have been fre-asked me to patent it. I have never done so, and, whether wisely or not, have never sought to make it a source or minimum of the source of the sou of profit.

FRANK G. CARPENTER,



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Nearly 2,000 World's Fair portfolios have been issued to "News" readers and the work has only fairly begun. It was a frequent expression of those who attended the "Columbian" Expo-sition that although several days were spent within the grounds very much of interest was nevertheless over-looked.

If this were so at that time, how much more difficult it will be to get a comprehensive and complete idea of the Exposition, which opened on April

the Exposition, which opened on April 16th at St Louis. The comparative figures are some-what interesting. The Exposition in-closure at St. Louis covers 1,240 acres. closure at St. Louis covers 1,240 acres, as against 633 acres at Chicago and 336 The roof-covered area at St. Louis is

12s acres, while at Chleago it was but \$2 acres and at Paris but one half that

Foreign participations at St. Louis will be from 50 to 75 per cent greater than at Chicago and this ratio also holds good with regard to the expense for Event

holds good with regard to the expense for Exposition purposes. There will be 128 acres under roof and over 100 acres of exhibits out of doors, and the Fair will be further distinguished by the assemblage of natives of every nation on the globe. The Exposition from day to day will constitute a vast moving panorama, too stupendous, indeed, for any single mind to compass.

and to compass.

Then, again, one scene so quickly takes the place of another that the senses become confused and little may be distinctly remembered. This con-dition protons and the sense of the sense. dition renders it all the more neces-sary to catch the spirit of the exposi-tion by the aid of the camera and forever on the sensitive

Preserve it forever on the sensitive photographic plate. This has been done in the superb photographic series, called the "Forest City Art Portfolios" which are now be-ing distributed to Deseret News readers. It should be born in mind that this series of views is official in a double sense.

n the first place, the photograph an which the reproductions are made we been specially taken for the series, the next place the descriptive which accommpanies the views "I propared by the one official there most familiar with the of the Fernantian of the Exposition.

expert artists comprising the of the official photographers have at work for months securing at work for months securing dves, and will continue to secure for the next seven months. The The Walter 13. Stovens, the secretary

and the distinguished talents of both artist and author thus join in reproduc-ing the Fair on paper for permanent preservation. It will prove a souvenir for the mil-lions who will attend the Fair, as a record of what they will see, and it will take the place of the Exposition itself for the millions who may not find

opportunity to see it. Readers should secure this valuable

Readers should secure this valuable series in its entirety, beginning with Part One, which contains sixteen beautiful and interesting views, show-ing some of the buildings in the course of construction, others immediately after completion, and picturing some interesting persons connected with the Interesting persons connected with the enterprise.

W. L. Yancy, Paducah, Ky., writes: "I had a severe case of kidney disease and three of the best physician in Kentucky treated me without success. I then took Foley's Kidney Cure, The first bottle gave immediate relief, and three bottles cured me perminently, I gladly recom-mend this wonderful remedy," F. J. Hill Drug Co. Drug Co. BASEBALL EXCURSION To Castilla June 5th.

Fort Douglas vs American Fork. Special train via Rio Grande leaves Salt Lake 9:00 a. m. Returning leaves Castilla 9:00 p. m. Fare \$1.25 for the round trip. Everybody invited.

GROUT, A POSSIBLE DARK HORSE.



Edward M. Grout has managed in the past year to put himself in the vortex of contending political interests. His recent stand against leader Murphy of Tammany Hall offers food for thought. Tammany is bound to defeat Judge Parker if possible, and it is known Senator Hill has no great love for the jurist. Is Grout filrting with Hill, that the Empire state's contending forces may compromise on him?



