Hours

cross the Atlantic in Sixteen

WASHINGTON-The day will soon come when we shall be able to go from North America to Europe in less time than we now spend on the between New York and Chicago We shall be able to start from Newfoundland at noon, or even later, and tand in one of the cities of Ireland next morning in plenty of time for an 8 o'clock breakfast. This is the belief of one of the shrewdest and most careful arithme ticians among the scientific minds today I refer to Dr. Alexander Graham Bell. the inventor of the telephone, who for the last twenty years has been connected with every movement in the direction of

aerial navigation. Dr. Bell was closely associated with Langley in his experiments as to artificial flight, and he was with him when the first heavier-than-air machine was sent by steam flying this way and that across the Potomac. He is a member of the chief societies of aeronauts, and his own researches as to the basic principles of serial navigation have done much to bring that science where it is today,

A great deal of Dr. Bell's work has been in connection with others. He was an associate of Simon Newcomb, who had striking theories as to the weight of bodies of certain shapes while in the air; he is also the friend and adviser of Glenn Curtiss, and much of the work of F. W. Baldwin has been connected with his experiments at Baddeck, Nova Scotia. Dr. Bell has made tetrahedral kites, which have supported men in the air, and he has a well-equipped flying machine laboratory at Buddeck, where Mr. Baldwin is now carrying on his experiments as to the hydrodrome, and making wonderful discoveries as to the rapid movement of boats through the

Hundred Twenty-Pive Miles Hour. Dr. Bell has what might be called the scientific imagination, and his deductions deal with possibilities far beyond those of the ordinary inventor. His mind works along scientific lines, and his flights at times make the head of the layman buss

Our talk as to short trips across the Atlantic took place after midnight last Thursday, in the big library of his house on Connecticut avenue. We had before us the statistics of all the best aerial flights yet made and Dr. Bell figured out his calculations on a 5-cent pad as he talked. Said he:

The shortest distance between Newfoundland and Ireland is less than 2,000 miles and the fastest speed record of a heavier-than-air machine was made by James J. Vedrines in a Deperdussin serodrome on the 19th of September last. His speed was over 197 miles an hour. Now let us suppose that that machine could keep up a speed of even 100 miles an hour, and it would cross the Atlantic ocean within twenty hours. If the flight were made from America to Europe we would have the winds to help us along, and this would give us an additional velocity of at least twenty-five miles per hour, as the general trend of our winds is from west to east. Adding this to the thinness and rarity of the air. It was 00 miles, we have a speed of 125 miles an hour, at which rate we could cover the amount of oxygen. This is avoided by 2,660 miles in just sixteen hours. If we the speed of the flying machine, which left Newfoundland at high noon we might goes so fast that it condenses the air be landed in Ireland at 4 o'clock in the within the hood, and gives you air to morning, giving us four hours' margin breathe of practically the same quality for our 8 c'clock breakfast. Or, during as that you had when leaving the ground, the summer months, we might start with This density will vary with the speed of the rising of the sun at 4 in the morning your machine, and no matter how fast the Irish coast in time for din- you go, your supply of per at 8 o'clock in the evening. All of that ride would be in the daylight and we should be landed the same day we

Rapid Flight at High Altitudes. "Is there a possibility that one might to even quicker than that, Dr. Bell?"

'Yes," replied the scientist, "but I do not wish to be quoted as saying anything more definite than that flying machines should be able to cross the ocean in a single day. I have no doubt that a drome will increase its speed in the rarer air high above ground, but whother this increase will be strictly proportionate to the diminution of density is a point that I am not yet prepared to assert. The winds are more steady there than at the ground. According to Mr. F. W. Baldwin, who has been working out a series of calculations as to the speed of flying machines at high elevations, the speed of the machine will rapidly increase as it goes upward. Mr. Baldwin says that it is absurd to judge the speed of a fiying machine by its performance at a low slevation. He says that the resistance of the air decreases as the air grows thinner and at the same time the power which moves the machine has the same He asserts that when the marises to a height of 16,000 feet it gets into air which is only half as dense as the air at the ground. According to him, the propeller then meets with only half the resistance, but it can go twice as fast, and it therefore has the same pushing force as at the ground. At the same time the aerdrome itself meets only half the resistance and therefore it goes twice as fast. He describes the

Grandma Talks About Babies

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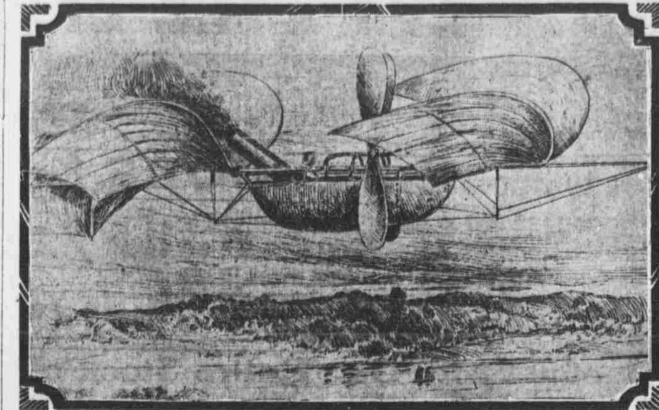
experience, but it was through her recom-mendation that so many young, expectant mothers derived the comfort and blessing

mendation that so many young, expectant mothers derived the comfort and bleasing of this famous remedy.

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Langley's First Thying Machine

speed of the drome near the ground as like that of a motor car on low gear, and says all that is necessary for a high altitude is a gear-shifting arrangement, such as we have on our automobiles. You change your gear as you rise, just as you do with your car when you go up hill. In this way you could leave the ground at a moderate speed, have a high speed in the air and, changing your gear, alight without danger.

"Now, if Mr. Baldwin's calculations should prove true in actual flying, the speed of the machine at 15,000 feet high would be almost doubled, and the possihis velocity, without the assistance of the winds, would be 200 miles per hour Instead of 100. It seemes to me, however, that it is quite enough to pro; hear that we shall be able to fly across the ocean

To Overcome Mountain Sickness. But, Dr. Belt, would it be possible for man to cross the Atlantic at 16,000 feet slevation? I once went up in the Andes to an alitude of 15,600 feet, At the. height I had a bad attack of scrocks, or mountain sickness. My nose bled. I had a tarrible nausea and an earthquakesplitting beadache, and this continued until I got down the mountain. I should not like to fly to Ireland feeling that

"That can easily be prevented," said the scientist, "All that you need is to have your place in the machine so covered at the sides and back that you get the air only from the front. Your sickness on the Andes was caused by the not dense enough to give you your usual just what you need. At 16,000 feet you are in air which is haif the density of that near the ground, but your speed is double that which you had at the ground, and so the density of the air which you are breathing is just the same."

How High Man tan Fly. "But can flying machines go to a height

of 10,000 feet" I naked. "They have done so and better. The highest altitude reached by an American is only a little over a mile, but in Burope the aerodrome records have been steadily rising. In 1912 we had some very remarkable flights. June 30 of that year Lieutenant Glatchke ascended from Vlenna, taking a passenger with him, to a height greater than the top of Pike's peak. He went up more than 14,000 fest, which was almost 2,000 feet above all the records preceding. September 17, 1912, George Legagneaux made a new altitude record of 17,876 feet. That was over 2,000 feet higher than Mont Blanc, and more than 2,000 feet above Fujtysma, Japan. The world's record as to altitude was made last December. The flight was from Tunie, in Africa, by Roland Garros. and the altitude reached was 19,002 feet, or almost four miles."

"But how about keeping up in the air, Dr. Bell? Have we got the fuel which

duration records show that such a long flight is already within the possibilities. flies forty-six miles an hour." In October last John H. Towers flew for six hours and ten minutes in a Curtiss hydro-aeroplane from Annapolis, Md., and the world's duration record was made a scouting flight of sixteen hours; made in France last September. The aviator was G. Fourny, and he flew for over thirteen house."

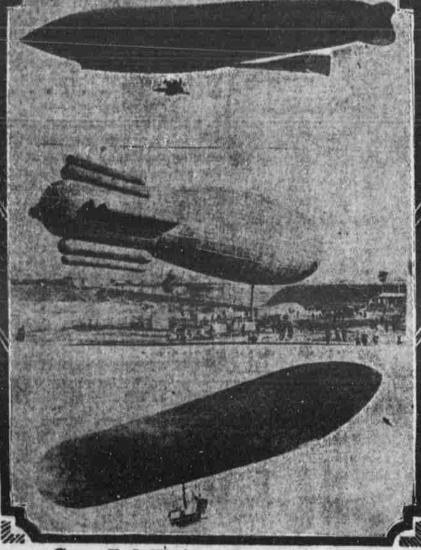
"Have you any idea of making the flight, Dr. Bell?"

"No. I have not, although it has been reported that I was to compete for the \$50,000 prise offered by Lord Northeliffe to the man who shall first cross the Atlantic ocean in an aerodrome in seventytwo hours. I do not expect to enter any contest, nor shall I send any machine. You will note that the limit of Lord Bell?" I asked. Northcliffe's voyage is seventy-two hours, or more than four times as long as the sixteen hours which we have found the possibility to be." The World's Progress Toward Flight

"Are you satisfied with the progress which the world is making in aerial navigation?"

"Yes. It seems to me that we are moving steadily toward successful flight. We are learning more about the air, and more about the machinery necessary to navigate it. This is so as to all kinds of apparatus. We have, you know, two great divisions. First, machines which are lighter than air, and accoud, those lishment of an aviation department for air." which are heavier than air. Under the first kind come the spherical and dirigible balloons, and under the second the various kinds of aerodromes, or as many call them acroplanes. I do not like the They had 224 trained pilots and an equal word aeroplane. Aerodrome was the term number of trained observers and 23% Dr. Bell whether the mortality was inused by Langely. It means 'traversing men. Since then their army aerodromes creasing the air, and it is far better than the have been increased by a very large word 'aeroplane,' which means a flat surface driven edgewise through the air. of the machine, but not to the machine 1500 trained pliots. The French can number of the accidents of 1912 was as a whole."

"What has been lately done in balloonservice. "A great deal, both in sphericals and



Some Fast-Flying Modern Dirigbles

dirigibles, but more in Europe than in marks toward aviation. They have Gordon Bennett race in Germany, in training men for the service. which the different nations took part.

Wonderful Feats of the Dirigibles. 'How about the dirgible balloons?" The Germans are now making more other nations," said Dr. Bell. At the Rosyth, and in the Humber." beginning of last year they owned thirty

and Dusseldorf, in which the miles in less than eleven hours, an aver- terrupted communication with their base. trips from Frankfurt to Dusseldorf, Turks." going from one city to the other in three will keep the machinery going all the hours, carrying twenty-sight passengers. It also made a flight from Hamburg "That we shall have it within a short over the North sea, a distance of \$50 time there is but little doubt, and the miles, and of a duration of eight hours. There is another German balloon which

> "What are the French doing in ballooning? "They have one balloon which has and another which has flown for seven-

> teen hours with ninteen passengers. The French are much interested in dirigible aviation.

The Flying Machine in Warfare.

known. That is one of the things that pose. governments try to keep secret. In the winter months of 1912 our own army that one of the best aerodrome guns is aviators made 436 flights, and for the an invention of a United States army offiscal year ending June 30, 1912, they ficer. Colonel J. N. Lewis of the

aerial law last year regulating the estab- gun is for shooting at machines in the the army, and at the end of that year they had a total of 544 effective aerodromes, divided into forty-three sections and distributed on a territorial basis. that they will have on or before the

"How about the Germana"

the United States. In 1912 there was a large number of aerodronfes and are

'In Great Britain the government has The first and second prizes were won by created the Royal Flying corps, which is France, and America came third. The connected with the military service, but ecords were 1,304 miles in forty-five has an entity of its own. It is associated hours, and 1.306 miles in forty-six hours, with both army and navy, and has a both made by French aeronauts. Cap- military wing and a naval wing. The Hunnewell, the American, made nilitary wing and a naval wing, each of which is divided into sections. The military wing has an airship section, a kite section, and three aerodrome sections. The naval wing has flying staprogress in dirigibles than any of the tions on the Island of Sheppey, at

"The Japanese are doing considerable dirigibles, while the French had twenty- in aviation," continued Dr. Bell, "and so one and the Russian eight. They had are Italy and Austria. The Italians have a regular balloon service beween Frank- been the first to employ the serodrome in actual warfare. They have used aerocirigible Schwaben made 100 trips within dromes in Tripoil in their war with the three mouths and carried 2,225 passen- Turks. The machines were employed in gers. it flew altogether a total of 224 making observations at night, and for dehours, covering 7,750 miles. Later in the tailed observations over long distances. year it flew from Dusseldorf to Berlin They were manned with wireless televia Bremen and Hamburg, making 380 graphs, and were able to maintain uninage of more than thirty-four miles an Acrodromes were also used by the Balkan hour. The Victoria Luise made daily armies in the recent troubles with the

Dropping Bombs on the Enemy. "I understand that some of the aerodromes have been competing as to the dropping of bombs into an enemy's

"I suppose you refer to the contest for the Michelin prizes. They were all won by Lieutenant Scott, an American. The first prize was \$10,000. It was for the placing of the greatest number of bombs, each weighing fifteen and one-half pounds, within a circle of about thirtythree feet, the same to be dropped from balloons as related to warfare. At the an altitude of 656 feet or higher. Lieubeginning of last year they appropriated tenant Scott dropped twelve out of his \$1,600,000 for such balloons, and the fifteen bombs within the circle. The sec-French budget of that year included a ond prize was \$5,000. It was for the placvote of more than \$4,000,000 for military ing of the greatest number of bombs in a rectangle of less area than the deck of one of our biggest steamers, or in one "Are the great powers of the world 394 feet long and 13t feet wide. In this doing much as to military aviation, Dr. contest the altitude was a half mile or more. Scott dropped fifteen bombs and "Yes. They are fully alive as to its eight of them fell inside the rectangle. possibilities and dangers. Every strong The third prize was \$2,000 for the most government is experimenting, and 1 scientific and practical apparatus for doubt not that a great deal more has bomb dropping Lieutenant Scott won this been accomplished than is generally by his gun which he used for the pur-

"In the same connection I might say made 1,500 flights. The total time that post artillery corps. His gun is made our men were in the air was about 260 of steel and aluminum, and it weighs about twenty-five pounds. It will shoot "As to the French, they passed an from 300 to 700 shots a minute. This

> Firing Machines as Man Killers. I here referred to the great number of deaths which have occurred in connection with flying machines, and asked

"The deaths are growing less in pro-Topular subscription and it is claimed portion according to the number and duration of the flights, and to the num-Aeroplane is applicable only to the wings | year 1915 at least \$60 aerodromes and ber of men on the machines. The actiful aviation the fourth arm of the military greater than that of 1911, but its ratio to the miles flown was much less. The French have kept the best sta-"They have recently subscribed 5,000,000 tistics in regard to such matters. They

estimate that they have had one accident for about every \$2,000 miles of flight. During the first three months of last year their military machines flew a distance of over 400,000 miles, which was ust about twice the distance covered during a similar period in 1911. The number of accidents in both cases was about the same. Many of them were due to breakage, and some to inexperience. I believe that such accidents will grow fewer as time goes on." FRANK G. CARPENTER,

PRATTLE OF THE YOUNGSTERS

Small Sadie was of an inquisitive turn, and one day while out riding with her papa they happened to pass a cemetery. and she asked: "Say, papa, how long does it take for the tombstones to come op after they plant people?"

"Ma," inquired Bobby, "hasn't pa s weer idea of heaven?"

"Why do you ask that?" 'Cause I heard him tell Mr. Naybor that the week you spent at the seashore seemed like heaven to him."

Kate, aged 6 years, had been going to school only a few weeks. She had learned to raise her hand if she wanted anything. One day she put this method into effect when she was sent to the chicken-house to get the eggs. Just as ahe reached the chicken-house door her mother heard her say:

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