Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

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The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains footavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U.S., Canada or Mexico. \$6.00 a year to foreign countries belonging to the Postal Union. Single copies 10 cents. Sold by all newsdealers throughout the country. See prospectus, last page. Combined Rates.—The SCIENTIFIC AMERICAN and SUPPLEMENT will be sent for one year, to oue address in U.S., Canada or Mexico, on receipt of seven collars. To foreign countries within Postal Union eight delars and fifty cents a year. receipt of seven couars. 10 dollars and fifty cents a year.

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197 The safest way to remit is by postal order, express money order, raft or bank check. Make all remittances payable to order of MUNN Readers are specially requested to notify the publishers in case of any tailure, delay, or irregularity in receipt of papers.

NEW YORK. SATURDAY, DECEMBER 22 1894.

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PROF. S. P. LANGLEY'S FLYING MACHINE.

have been in progress for some time past, a long series foot bridge crossing the Hudson River, we shall proof private trials having been conducted at Quan- bably retain for many a year a proud pre-eminence in tico, near Washington, D. C. An aluminum body con-this branch of engineering. tains the steam boiler and engine by which the and descent.

tion and lightness. Many trials have been conducted, and, at last, the possibility of flight has been proved. A trial of the machine was made on December 13. and the aeroplane successfully accomplished a flight of three hundred yards. This was not the first flight.

indicate the possibility that we may yet see a success- discovery is one of great importance to navalengineers. ful aeroplane flying machine. We hope soon to have. It has long been known that hard metal projectiles particulars of the further trial trips.

THE HUDSON RIVER BRIDGE.

The insular situation of New York is one which is destined in the course of time to make it a city of the purpose of shattering the shots fired at it. The bridges. The East River between New York and present discovery, it will be seen, will probably work Brooklyn has been spanned, and already work is in a revolution in such methods. progress on a second bridge. But the great Hudson River is intact. An unfinished tunnel running part the discovery that if a thin sheet of soft wrought iron way under its bed marks the only actual attempt to. break down its barrier. Over its surface a vast popu- to shatter a chilled steel projectile which had been lation is transported every day by ferryboats. The fired at it with great force. A similar combination was mouth of the Hudson is at New York City, and a most curious fact is that for many miles of the final portion projectile instead of to the steel armor plate. In the of its course the narrowest part of the river is at the subsequent experiments (which were carried out in city, Castle Point, Hoboken, N. J., and Fourteenth Russia) the capped projectile was found to penetrate Street, New York, marking the ends of the shortest line which can be drawn across it within a very long distance.

Various companies have been organized to bridge the Hudson River, and we have illustrated the pro-posed structures. The construction of long span bridges has settled definitely into two types, the cantilever and the suspension systems. The beautiful Brooklyn Bridge over the East River, between Brooklyn and this city, illustrates the perfection of the suspension called Russian "magnetic" shot, concerning which type, a type which always produces a graceful structure, the suspension cables tracing an approximate capped projectile. Similar experiments have been reparabola in midair. The Forth Bridge is a monument cently carried out at the United States naval proving of the gigantic and the ugly, the disproportion be- ground at Indian Head, Maryland, with the same tween its cantilevers and connecting trusses being pri- result. marily responsible for its appearance.

It crosses the Firth of Forth at Queensferry, in Scotland, and has two main openings of 1,710 feet span each. It is to be hoped that no structure of this sort will be luvial deposits from overloaded streams has been disbuilt here. It would be a pity if the harbor of New covered by the government geological expedition on York, with the Statue of Liberty and the Brooklyn the Yahtse River, in Alaska. This river in its course Bridge, both objects of absolute beauty, were to have from the Chaix Hills to the sea passes through a tunsuch an infliction as the Forth Bridge. Fortunately nel in the Malaspina glacier, some 6 or 8 miles in length. the action of the Secretary of War seems to prohibit it When it finally emerges into the open air it is a very for the present at least, as will be seen below.

federal control as far as legislation is concerned. The the river emerges from the ice it flows through a fordecision of the Secretary of War in the matter of the est of large trees, and the gravel and sand carried along construction of a bridge over the Hudson River has by the stream are deposited here to the depth of been published within the last few days. It was many feet. Some of the tallest trees still project elicited by the application for permission to build a through the deposit and retain their branches. The cantilever bridge across the stream by the New York greater part, however, have been broken off and comand New Jersey Bridge Company, the charter of the pletely covered up by the sand. In other places the company providing that their plans must be approved presence of vast forests is indicated by a few dead by the Secretary of War. The main point of the de-branches projecting through the deposits. In places cision is that the secretary forbids the construction of where the deposits are thickest all signs of the trees have any bridge except one of single span.

We have illustrated two plans of bridges proposed but broad sand flats. These are inundated in stormy for the purpose in question. One, the great Lillien- weather, and are of about the consistency of quick-15818 dahl suspension bridge (SCIENTIFIC AMERICAN, May sand. *** ¹. 15827 23, 1891), was designed for a span of 2,920 feet, enough Distribution of tate of Main o go clear across the water. The other, a cantilever An interesting report on the distribution of wild game onstruction (Scientific American, June 16, 1894), with a maximum span of 2,020 feet, requires a pier in in the State of Maine has been made recently by the he stream. The latter feature the Secretary of War State Fish and Game Commissioners. A remarkable as decided to prohibit. This decision follows an ex- increase of large game, such as moose, caribou, and naustive investigation of the subject made by a deers, is reported. The number of those who hunt poard of engineers appointed for the consideration of this game has, however, increased fully twenty-five per cent during the year. The ruffled grouse, which are he question of the construction of the bridge. The reports state that a single span bridge of either still quite plentiful, are being rapidly decimated, and f the above types is safe. The distance between this is true for the most part of other forms of small pearings is put at 3,100 feet. A cantilever of this span game. Fish culture as applied to land-locked salmon vould cost twice as much as the 2,000 foot one, while a has been very successful. Some forty fine lakes and uspension bridge of the larger span would cost but ponds were stocked with these fish during the year. one-third more than the smaller cantilever. A sum of The value of fish and game interests to the State is 23,000.000 is estimated as sufficient for a six track sus- estimated at from \$3,000,000 to \$4,000.000. The comension bridge. The gist of the decision is that it mission ask for an appropriation of \$30,000 per annum for the next two years for carrying on the propagation vill be a suspension bridge or nothing. There has long been a species of rivalry between en. of fish and game. They also request that the State ineers, and even nations, involved in the magnitude of | be thoroughly supplied with wardens to protect the oridges. For a while the United States, with the East game.

River Bridge, led the world; now Great Britain, with Experiments with Prof. Langley's flying machine its Forth Bridge, is in the van. When we have a 3,200

When we consider that for the above enormous sum machine is driven. The motive power is a pair of of money six or seven tunnels could be built under the screws or propeller wheels at the rear of the body. river bed, which would be superior in their operations These are rotated at very high speed and exert the en- to a bridge, as they would distribute trains with their tire propelling power. There are four aeroplanes, passengers along a considerable frontage of the river, with a maximum width of eight feet. The entire and which would be more quickly finished and put in spread is comprised within an area of eight by twelve; operation, it seems a wrong system to try to raise capifeet. To direct its course to right or left there is a tal for the construction of the gigantic bridge, desvertical rudder, and the setting of the wings de-tined perhaps never to pay a dividend. Already termines its changes of elevation or of angle of ascent a tunnel has been carried two-thirds of the distance across the river. If this should be finished and It is unnecessary to say that everything about it is put in operation, the bridge might be relegated to constructed to secure the utmost perfection of opera- future generations-it might be postponed until the bridge across the British Channel is commenced. ---------

Soft Caps on Conical Projectiles.

It has been proved recently that the penetrating power of conical projectiles may be greatly increased This, in connection with Maxim's work, goes far to by covering their ends with caps of soft metal. The are likely to be shattered on striking a plate of hard steel, thereby losing much of their force. Great efforts have consequently been made for years to provide the hardest possible surface for armor plates for

> The idea of capping the projectiles was suggested by be laid over a steel-faced armor plate, the latter failed effected by adding the soft metal to the head of the plates against which the best Holtzer shot was completely shattered. The caps were tried on a 6 inch conical projectile, and it was found that the most effective plan was to cover the 6 inch conical projectile with a cap $4\frac{1}{2}$ inches long, having a thickness of $\frac{1}{2}$ inch at the apex and 1/8 inch at the edges. It is probable that the good results obtained were due largely to the lateral support given to the hardened point by the soft metal thimble. It is suggested that the sothere has been so much mystery, is merely a form of

A Forest Buried by Alluvial Deposits.

A remarkable instance of the rapid formation of alswiftly flowing stream of dark muddy water, 100 feet The Hudson River, as a navigable stream, is under wide and about 20 feet in depth. Near the point where disappeared and in their place nothing may be seen

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A New and Successful Treatment of Typhoid Fever.

Some time ago Dr. Hugo Summa, of this city, a thorough physiologist and skillful practitioner, in con-glasses nowadays," said a New York optician to a sidering the fact that there is an almost total absence Mail and Express reporter. "But not all these peoof the usual signs of bile in the fæces of patients suffer- ple wear them. Four people in ten have some trouing from typhoid fever, came to the conclusion that ble with their eyes. It may be near sightedness, it possibly some of the distressing features of late typhoid may be simply weakness, it may be an inequality bemay be due to a deficiency of bile, and determined to tween the eyes; but whatever it is, there is a way to try the introduction of ox gall into the lower bowel in help it with glasses. well marked cases of the disease. This plan has now been carried out in a considerable number of cases, and do not know what it is; they attribute it to overand with the happiest results thus far, not a single work of the eye sometimes, and sometimes lay it death having occurred when the bile treatment has to headache or neuralgia, while it is merely the been instituted; whereas in a similar number of con-protest of a defective eye, that has been forced by tiguous cases of apparently the same degree of severity will power to do work beyond its strength, or to keep the usual fatality has been noted.

The treatment is as follows: Two ounces of fresh bile (which can be obtained at any packing house and eyes, and resort to artificial aid more promptly than kept for two or three days if the air be excluded) may previous generations did. A proof of it is the numbe mixed with from two to eight ounces of water and ber of young people and little children who are wearthrown into the rectum with an ordinary household ing glasses. This does not at all indicate that the syringe. Some patients cannot endure the bile of this race is growing degenerate, but simply that it is learnstrength, as it sometimes is quite irritating to the rectal ing to take care of itself, and these children in glasses mucous membrane; in which cases as much as fourteen will grow up to have better vision, that will also last ounces of water must be added to the two ounces of them longer for it. bile. The injection is given every night and morning.

er feeding, the course of fever has been very favorably age. The lens enables the eye to work normally, and modified in instances where the disease was far advanc- a fault in formation sometimes is entirely remedied by ed when the new treatment was begun; in one patient, it, and the child in later years is able to dispense with at the City Hospital recovery resulted even after three glasses altogether." severe hemorrhages had occurred, and in a large num- According to the statement of a Chicago optician, as ber of cases of typical typhoid in which the treatment many as nine out of every ten persons have something was employed before the end of the first week the wrong with their eyes. Black eyes and brown eyes disease was checked in a very few days,

use of rectal injections of diluted ox gall gives the same sightedness a little more frequently than those of results as those already obtained in the hospitals of darker hue. St. Louis, Dr. Summa will have given us a remedy second in importance to the recent cure for diphtheria. people are myopia or near sightedness and hyperopia Full details of the treatment and results will be pub- or far sightedness, and the latter predominates. But one of the most valuable of such naval stations. A lished as soon as its efficacy has been thoroughly tested.—St. Louis Clinique.

How to Buy a Horse.

An old horseman says: If you want to buy a horse, don't believe your own brother. Take no man's word for it. Your eye is your market. Don't buy a horse in harness. Unhitch him and take everything off but his halter, and lead him around. If he has a corn or is stiff, or has any failing, you can see it. Let him go himself a way, and if he walks right into anything, you know that he is blind. No matter how clear and bright his eves are, he can't see any more than a bat. Back him, too. Some horses show their weaknesses or tricks in that way when they don't in any other. But, be as smart as you can, you'll get caught sometimes. Even the expert gets stuck. A horse may look ever so nice and go a great pace, and yet have fits. There isn't a man who could tell it until something happens. Or he may have a weak back. Give him the whip and off he goes for a mile or two, then all of a sudden he stops on the road. After a rest he starts again, but he soon stops for good, and nothing but a derrick can start him. The weak points about a horse can better be discovered while standing than while moving. If he is sound, he will stand firmly and squarely on his limbs without moving them, with legs plumb and naturally poised; or if the foot is taken from the ground, and the weight taken from it, disease may be suspected, or, at least, tenderness, which is the precursor of disease. If a horse stands with his feet spread apart or straddles with his hind legs, there is a weakness in ⁱ his loins and the kidneys are disordered. Heavy pulling bends the knees. Bluish, milky cast eyes in horses indicate moon blindness or something else. A bad tempered one keeps his ears thrown back; a stumbling horse has blemished knees. When the skin gins at 40 or 45. Any unusual trouble with the eyes is rough and harsh and does not move easily to the during youth may cause the decay of sight to set in touch, the horse is a heavy eater and digestion bad. earlier, but ordinarily the impairment is uniformly Never buy a horse whose breathing organs are at all regular, and the age of the person is the chief guide in impaired. Place your ear at the heart, and if a wheez- the selection of proper spectacles.

What Oculists in This City and in Chicago Say About Defective Eyes.

"About forty per cent of the people need to wear

"A great many people have trouble with their eyes up with the other eve.

"But people are learning now to take care of their

"It often happens, too, that children's eyes are Under the influence of the bile, conjoined with prop-cured of imperfections by glasses worn at an early

and blue eyes are all afflicted to about the same degree, This is truly a remarkable showing. And if further unless it be that blue eyes are troubled with near

> The troubles commonest with children and young many are far sighted who are not conscious of it, and hence the trouble is seemingly less common than near tle, has been bought for the purpose and the work of sightedness, which is made apparent by the person so afflicted endeavoring to overcome the defect of vision a timber and concrete dock, 675 feet long, with a floor by holding the object close to the eye.

HOW DEFECTS MAY ARISE.

The Chicago Journal says that near sightedness and dock shall be completed within three years. far sightedness result from the improper focusing of the object by the lens of the eye on the optic nerve. knowledge in the construction of dry docks. The dock The focal point falls before or back of the nerve center, will be closed by a gate or caisson built in the form of and thus by an additional lens the defect of the lens of a ship with a hull and a bow at either end. This will the eye is corrected. Sometimes but one of the eyes be constructed of iron. Its dimensions will be 91 feet is defective, and again they are impaired in different in length, extreme breadth 24 feet, and a height of 38 degrees, and in either case a pair of spectacles in which feet from bottom of keel to top of water way. The gate the lenses are of the same power will not remove, but is pierced by twelve 20 inch filling culverts, each fitted may increase the trouble.

By far the commonest defect of the eye is what is known as astigmatism, which, properly speaking, is operated by a separate engine. In addition to this the irregular curvature of the cornea or "watch crys- there will be a fourth centrifugal drainage pump. The tal" portion of the eye. This defect may exist inde- steam for operating the pumps will be supplied by six pendently or be combined with other troubles.

Astigmatism may be of a vertical or horizontal form -that is, the eye may be perfectly rounded from top be capable of discharging 110,000 gallons of water per to bottom, but irregularly formed from side to side. To such an eye a perpendicular line would appear uniformly clear and distinct, while a horizontal line the dock. The upper part is supplied with a water would look otherwise. By pasting black strips of compartment provided with two 20 inch sluices, one of paper representing the spokes of a wheel on a white which opens into the sea and one into the dry dock. surface and viewing them from varying distances, The gate is closed by filling this compartment with with either eye and both eyes at a time, any one can learn something of the condition of his or her eyes. two 20 inch valves. When the gate is to be raised As a matter of course, oculists all have various charts or floated, this water is pumped out. The main deck for determining defects of the eyes.

NATURAL IMPAIRMENT OF SIGHT.

The natural impairment of vision by age usually be-

The marvelous stories of "second sight" are mislead | made recently at Sandy Hook with very gratifying reing. What is known as "second sight" is the result of sults. The contract called for the firing of ten shots a change in the form of the eye by which the defect an hour and offered a bonus of \$2,000 for each shot bewhich caused near sightedness or far sightedness is youd ten. In the test thirty two shots were fired in an corrected and the sight thereby improved. But the hour, thus making a bonus of \$44,000 for the company. second sight is not the regaining of a lost power, but The carriage differs from those previously tested. It is built on a platform with a central pintle, and can be means the coming into the fuller possession of a function that in earlier years existed in an impaired condimoved about in a circle. This is the only carriage for tion. This is why persons who have been accustomed 10 inch rifles which can be moved in this way. When to wearing spectacles sometimes lay them aside in adin position for firing it is 20 feet from the ground, and vanced years or old age. after firing it drops 8 feet to the loading position. It is supplied with two electric motors, one being used to It is probable that the sands of the seashore will be numbered and the leaves of the trees correctly counted pump the air for raising the carriage and the other for believe will be the first to reach her destination. Other about as soon as will be ascertained the number of swinging the gun about on its pintle. The recoil is things being equal, however, the steamers sailing un- cases of headache caused by nerve irritation arising taken up partially by air pressure and partially by der the flag of the United States are given the prefer- from defects of vision. The stomach has had to encounterweights. The counterweights are placed beence. The steamers are paid for their services the dure a world of bitter medicine to remove troubles for side the gun, thus providing some protection for the amount of the postage collected on all the mail mat- which the eyes were wholly to blame. But it is easier gun and the firing squad. The movements of the carter they carry from this country. The system has been to swallow any concoction that may be handy than it riage may be controlled either by hand or by elecperfectly satisfactory to all parties during the pastyear. is to make an exhaustive study of the optic nerves tricity.

and their remarkable influence on the health of the whole system. It is easier and cheaper to snuff camphor or smelling salts than it is to be examined for a pair of spectacles.

CURING "CROSS EYES."

Strabismus or "cross eyes" are now safely and almost painlessly corrected. The desired result may be obtained by the wearing of proper spectacles in early youth, but if the evil is not then corrected, an operation, later on, will be necessary.

The removal of a "cataract" from the eye is one of the most delicate operations performed by the oculist. A cataract is formed by the lens of the eye becoming opaque so as to appear grayish or otherwise, when it shuts out the light from the optic nerve. The oculist of to-day cuts into the ball of the eye and removes the darkened lens, and the optician supplies the defect by artificial lenses that make good the sight.

The demand for glass eves is increasing as the character and quality of the eyes improve. Unsightly eye balls are now removed in part, leaving enough of the muscles to rotate the glass shell that is placed over them. Where the work is properly done the possessor of the glass eye can move it about with all the naturalness of a real optic, and in many cases it is very difficult to tell the manufactured article from the genuine.

All the wild stories about substituting rabbits' eyes for human eyes, or the statements to the effect that oculists can take eyes from their sockets, wipe them on a coarse towel and restore them unimpaired to the harpy patient, are all moonshine, and any one who is called upon to listen to any such tales is perfectly justified if, under such circumstances, he should wink the other eve.

Dry Dock at Port Orchard.

The great dry dock at Port Orchard, Washington, now in course of construction, will be the second largest dry dock in the world, and inits general equipment large tract of land on Puget Sound, 16 miles from Seatbuilding is well under way. It is to be equipped with width of 67 feet. Its greatest width will be 130 feet and its depth 40 feet. The cost of construction will be \$608,000, and it is stipulated in the contract that the

The dock is being built in accordance with the latest with a gate valve. For emptying the dock, three powerful centrifugal pumps are provided, each of which is large steel tubular boilers. The boiler pressure will be 100 pounds to the square inch, and the pumps will minute.

The gate is, however, the most interesting feature of water and sinking it, the water being admitted through is supplied with a boiler and engine to drive a small centrifugal pump, capable of delivering 2,500 gallons per minute. The gate is handled by the aid of a capstan placed at the center of the upper deck and worked by a vertical shaft from the engine on the lower deck.

Test of the Gordon Gun Carriage.

The official test of the new Gordon gun carriage was

ing sound is heard, it is an indication of trouble.

Annual Report on the Ocean Postal Service.

During the past year the international sea post offices have been in continuous operations upon the fast steamers of the North German Lloyd line, the Hamburg-American Packet Company, and on the Paris and New York of the International Navigation Company. In all 147 trips have been made from Europe and 144 from New York. The mails are always dispatched by the fastest steamers, and when two fast steamers sail on the same day the mails are intrusted to the one whose records lead the postal authorities to