

Correspondence.

AN ODD PADDLE-WHEEL BOAT.

To the Editor of the SCIENTIFIC AMERICAN:

Among the odd boats in your recent issues, I failed to note a duplicate of one I saw in Canadian waters. It was a small excursion boat, sidewheeler, propelled by power furnished by a team of horses working on a treadmill. The speed was not great, but the boat surely moved, and furnished amusement for a goodly party which it happened to have the day I saw it. A band was playing and people shouting as we sped by on a steamer.

Utica, N. Y.

THE HEIGHT OF MOUNT RAINIER.

To the Editor of the SCIENTIFIC AMERICAN:

Reading to-day in a recent issue of the SCIENTIFIC AMERICAN, I saw this statement in reference to Mount Whitney: "This peak is the highest in the United States." Height given, 14,501 feet.

I was with Prof. McClure in 1897 when he ascended Mount Rainier, and helped him to carry instruments for use in determining the height. Although he was killed in the descent, his notes were complete, and the subsequent calculations made from them by his friends gave the height as 14,528 feet above sea level. I believe these figures have been accepted as the true height.

HARVEY F. MITCHELL.

New York city.

THE SCIENTIFIC AMERICAN AT JERICHO.

To the Editor of the SCIENTIFIC AMERICAN:

I inclose you a portion of your issue of February 7th, 1885, which was given me by a friend of mine, Dr. Herman Bryan, a returning medical missionary from the island of Hainan. Dr. Bryan took a trip through the Holy Land, and found in the reading room of Cook's Hotel at Jericho, on April 10th of last year, a copy of this issue, which was the sole American reading matter provided by the hotel management. Dr. Bryan has returned to China now, but he asked me to mention this to you, and suggest that the SCIENTIFIC AMERICAN might well be represented by a more recent copy.

ALEX. L. PUGH.

New York city.

WHY NOT A MONUMENT TO FITCH?

To the Editor of the SCIENTIFIC AMERICAN:

It gave all members of my family great pleasure to read the SCIENTIFIC AMERICAN editorial of October 9th. It strikes the keynote of the situation in regard to our unequal distribution of acknowledgment to steamboat inventors. My father (James Arthur) pronounces it the best column that has appeared to date.

We of course all realize that it is impossible to do honor to all the early inventors, but we should at least do justice to the United States of America by placing its steamboat successes in the right century. We have just been celebrating the fact that the United States had a steamboat in the nineteenth century while as a matter of fact we had several successful ones in the eighteenth century, and the one referred to in your editorial attained a speed which was not exceeded until the following century was several years old.

We all hope that your timely remarks will bear fruit and that a bronze tablet will be placed near Collect Pond, and that the grave of John Fitch may at least be properly marked.

DANIEL AETHUR.

New York, N. Y.

"INFLEXIBLE" AND "CONNECTICUT" COMPARED.

To the Editor of the SCIENTIFIC AMERICAN:

Pardon me for the presumption of criticising anything in your very valuable paper, but an article in the issue of October 9th, dealing with the visiting warships anchored in the Hudson River, I think is misleading in one particular. In comparing the broadside fire of the three battleships representing France, England, and the United States, the statement is made that the "Inflexible" has eight 12-inch guns which can be fired on one broadside. But, if I am not mistaken, the "Inflexible," like all her sister "Dreadnoughts" of the English navy, is unable to fire all her 12-inch guns on both broadsides, on account of the position of the two wing turrets. If this is true, then the "Inflexible's" superiority would be mainly in her great speed. I believe that the "Connecticut," with her rapid-fire 8-inch and 7-inch guns, coupled with her four 12-inch guns, would more than hold her own with an "Inflexible." Although the 8-inch and 7-inch guns, theoretically, will not penetrate the "Inflexible's" amidship armor belt, still the rain of shells from these lighter guns would play havoc with every part of the vessel above the low 7-inch armor belt of the English cruiser. This would not affect the crews in the 12-inch turrets, but when the ship is riddled fore and aft, with all the upper works, containing all the range-finding apparatus, carried away, it would tend to demoralize the entire personnel. The article also mentions that the "Inflexible" could close in to a range of 6,000 yards

and quickly overcome the "Connecticut," by the mere concentration of her 12-inch guns. Now, I think it would be extremely unhealthy for the "Inflexible" at this range, as the terrible broadside of the "Connecticut's" four 12-inch, four 8-inch, and six 7-inch guns would completely overwhelm the six 12-inch of the former. Even admitting that the 7-inch guns of the "Connecticut" are protected with comparatively light armor, still the tremendous rate of fire of that battery, in addition to the four 8-inch and four 12-inch, would so blind the gunners on the enemy, that they would be unable to properly handle their guns. Even up to 9,000 yards, the 8-inch and 7-inch guns would be very effective in carrying away the upper works of an enemy, thus destroying his ability to handle his ship. So I would like to see our "Connecticut" placed in a more favorable light in a comparison with the "Inflexible."

EMERSON B. MANLEY,

U. S. S. "Kansas."

Machinist's Mate.

[We mentioned in the article referred to that the secondary battery of the "Connecticut" would riddle the unprotected parts of the "Inflexible." The midship pairs of 12-inch guns on this ship are placed diagonally, and therefore all four guns can be fired on either broadside, through a limited angle.—Ed.]

RESULT OF A LIGHTNING STROKE.

To the Editor of the SCIENTIFIC AMERICAN:

The accompanying photograph was taken recently at Velva, N. D. Three young men were putting up hay, when a thunderstorm came up, and all three were knocked down, the lightning killing a team of horses, and rendering the two men who were holding them unconscious for some hours. The third man saw the others fall, and then lost consciousness himself. His



RESULT OF A LIGHTNING STROKE.

team, standing a couple of rods away from the other, was knocked down, and a hole was torn in his cheek, whether from the fall or from the lightning it might be impossible to say. He came to, mounted a horse, after pulling one of his companions from under one of the dead animals, and rode for help. Securing that, he returned, and then fainted, partly from loss of blood, and remained unconscious several hours. The other two men regained consciousness that night, and all three were practically over the effects of the stroke within a week after the occurrence. The photo shows a new pair of shoes worn by one of the men, and a new, heavy pair of overalls, just as they were taken from him after the accident.

HUGH J. HUGHES.

Agricultural College, N. D.

THE NUMBER OF OUR ANCESTORS.

To the Editor of the SCIENTIFIC AMERICAN:

If you and your readers are not tired of this question, may I suggest another solution than that Mr. Solon De Leon gives? I may perhaps point out that, originally, I simply stated the problem, did not say it vexed me, and made no false sociologic assumption.

Let  $X$  represent the first generation, and so assume  $X=2$ . Assume continuity of descent, and let  $X_n$  represent some later generation. We need not trouble about what value we give to  $y$ ; all we want is that the number of individuals of the generation is represented by  $X_n$ . We get, say, 20,000,000 of individuals descended from 2 original individuals, and see at once that there is some consanguineous relationship between all the individuals of the  $X_n$  generation. So,

if we assume all of us now existing are descended from some original man and woman, it is clear we are all of us consanguineously related.

Now consider any one individual existing at the present time. Then his parents are consanguineously related, but in most cases the blood relationship is so remote that he will treat the relationship as non-existent. We have, in the simple form of the problem I use, a series,  $X, X^2, X^3, \dots, X_n$ , where each individual of the  $X_n$  generation relates back in consanguinity to the original generation  $X$ ; but there being so many intermediate-generations, his collateral consanguinity to any other individual of his generation is so remote that to him it is non-existent. For an example of this we have the fact that man as an organism is related to the monkey as an organism through some arboreal ancestors. But the collateral consanguinity is so remote, that we treat it as non-existent.

F. C. CONSTABLE.

Wick Court, near Bristol, England.

THE HIGHEST HUMAN ASCENT.

To the Editor of the SCIENTIFIC AMERICAN:

On page 239 of your issue of October 2nd, 1909, you state: "The record of altitude in aeronautics has been attained by Sig. Placenza and Lieut. Mina, in an ascension made from Milan on August 10th, 1909. Their great spherical balloon . . . reached an elevation of 38,700 feet, or more than seven miles." This statement, based probably on the press reports, is incorrect, as proved by a letter from the aeronauts themselves, Messrs. Mina and Placenza, published in the French journal L'Aérophile, of September 1st, from which it appears that the maximum height was only about 9,200 meters, or 30,180 feet. Since their cotton balloon held only 80,500 cubic feet and contained illuminating gas, this was a remarkable performance; and though there is some doubt as to the barometric observations, it probably exceeds both the French and Italian records. The world's record is, however, still held by Messrs. Berson and Süring, who ascended from Charlottenburg, near Berlin, on July 31st, 1901, in a balloon of nearly 300,000 cubic feet capacity partially filled with hydrogen gas, to the height of 34,450 feet.

A. LAWRENCE ROTCH.

Blue Hill Observatory, Hyde Park, Mass.

AERIAL WARFARE IN 1798.

To the Editor of the SCIENTIFIC AMERICAN:

In connection with the letter published in your issue of September 18th it may be of interest to cite an earlier suggestion of invading England by balloon. In R. P. Heame's "Aerial Warfare" a copy of a print of 1798 is reproduced from the collection of Capt. Baden-Powell, and this print bears the following inscription:

"The Grand Republican balloon intended to convey the Army of England from the Gallic shore; for the purpose of exchanging French liberty for English happiness! Accurately copied from a plan presented to the executive directory by Citizen Monge."

The Grand Republican balloon is depicted as having a spherical gas bag to which is suspended, by means of rope ladders, a peculiar contrivance half ship and half house. On top of the gas bag is the Gallic cock holding a tri-color surmounted by a liberty cap. Half-way down the sphere is a great circle on which is encamped a detachment of troops and a guillotine. Pipes to let out the inflammable air also appear, while a pair of ornamental wings are noted. A small captive balloon to serve as a boat is fastened to the great circle from which a lighthouse juts out.

The lower portion is a jumble of houses and sails with apartments for the officers in the hold. Below this again is the magazine suspended by cables, while a box-like structure on one side bears the designation of "water closet." The print bears the mark of a London publisher and forms an interesting addition to the cartoons of that period.

GERALD ELLIS CBONIN.

The operation of the 1,200-volt direct-current system of interurban railway control is dealt with by Mr. C. D. Eveleth in a paper read before the Street Railway Association of the State of New York. Four lines have adopted the system in America. The obvious advantages, assuming that there are no drawbacks, which Mr. Eveleth sets out to demonstrate, are that the first cost is low, maintenance is not more expensive, and extensions to existing lines can be entered upon with much more ease and confidence. There are now in operation or under contract eleven systems of 1,200-volt direct-current railways, employing motors of 50, 75, and 150 horse-power, and Mr. Eveleth predicts that in a few years the 1,200 voltage will be as common as 600. The cars can be easily operated on 600-volt sections where necessary. Those electrical engineers in Great Britain who still hope that the authorities will some day "encourage" the construction of rural and interurban light railways will welcome these American experiences as suggesting further sources of economy in rendering their schemes commercially attractive.