man (president, we might say) of this forest republic, which comprised the thirty confederated tribes of Powhatan." These questions need not be discussed now, but such statements ought not to be made history.

My attention was directed to the article by a friend, who was surprised by a mention of the snow-snake among these primitive Virginians. The children indoors were playing at *gus-ha-eh* (or 'peach-pits'), it is said; but where the peaches came from at that early day is not explained. The "boys were tumbling about in the light snow, at their favorite game of *ga-wa-sa* (or the 'snow-snake')." The use of these Seneca words sufficiently shows the source of information, but it is not wise to place a Northern game so far South. Something more than a light snow is required for this sport; and boys do not tumble about in it, but stand up to their work. Neither would any one risk breaking the graceful shaft between the legs of one running at full speed.

I was recently surprised at not finding the snow-snake in the collection of Iroquois implements at the Museum of Natural History in New York, and still more to learn how few students of Indian life know any thing of it. A game something like it is found among some Western Indians, but the implement used is very different. Nor do I now recall any mention of it among early Indian games. That it would not be of general use is in the nature of things. Only in those colder regions where an icy crust often forms would it naturally occur. Even there it may be recent, as the head is always weighted with metal, melted into grooves, and nicely smoothed. Of course, this might have been different if its use was ancient. Morgan describes the Seneca snow-snake as being from five to seven feet long, and he gives a good figure and description. Those of the Onondagas are often longer. Mine is of their medium

size, and is upwards of seven feet long, while I have seen many not less than nine feet in length. They are very neatly made, for any irregularity would interfere with successful use. The smaller notched end of mine is but a trifle over half an inch wide by about a quarter deep. This increases to seven-eighths of an inch wide by one-half deep just back of the raised head at the other end. The head begins to rise about six inches from the extreme point with a gradual curve. Lead is inlaid in this, often in a pretty pattern; and I have thought it barely possible, granting its antiquity, that stone bird amulets may once have formed the heads. These seem to belong to woodland regions, where the winters are long, but such a use is hardly probable.

The game is simply one of dexterity and strength. The forefinger is placed in the basal notch, the thumb and remaining fingers reaching along the shaft, and the snow-snake is thrown forward on the ice or hard snow. It might go a little way through light snow, but this is not favorable to its use. An icy crust or the track of a sleigh, the travelled road, or even ice, are favorite resorts. A much worn road would injure the fine polish of the implement, and a level surface, with a good crust, is commonly chosen. On a fine winter's day men and boys are often seen in such places, pursuing this sport. They play quietly, for the Onondagas are a very quiet people, and one out of sight might know nothing of the most exciting game. When the slender shaft is thrown, it glides rapidly over the surface, with upraised head and a quivering motion, that gives it a strange resemblance to a living creature. The Christian Onondagas have abandoned its use, perhaps because betting is a feature of the game, or it may be they dislike its symbolism; but I think the former the true reason. The Senecas call it *ga-wa-sa;* the Onondagas, *ka-wher-tah;* neither of these words referring to its snaky appearance. I am unable to learn of any idea attached to the name, and this favors an early use. The game is to see which person or side can throw it farthest, and sometimes the distance of a quarter of a mile is reached under favorable circumstances, but I think this rare. W. M. BEAUCHAMP.

Baldwinsville, N.Y., Dec. 30.

The Conspiracy of Silence.

THE Duke of Argyll's charge of a conspiracy of silence among scientific men, by means of which new truths are to be ignored, has been perhaps sufficiently answered. In fact, according to the duke's own statement, the theories of Messrs. Murray and Guppy are already printed, and are before the public for judgment. This discussion has been interesting, but, so far as I have seen, two points worthy of attention have not been brought out.

1. There is in all branches of learning a just and good conservatism. We cannot afford to give up scientific truths that have been acquired with much labor and difficulty. Hence, when theories are proposed that conflict with established principles, they are to be received with caution. No one can believe in perpetual motion until our theory of dynamics is overthrown. A mathematician who claims to solve the equation of the fifth degree will have a hard time in finding believers. If a writer on theoretical astronomy violates the rules of the calculus, he has no right to ask the respect of astronomers. He deserves to be ignored. Astronomers should not spend their time in demolishing absurd theories that may be proposed to them. The age of Don Quixote is past.

2. But in the discussion which has taken place the assumption seems to be made that scientific men are better, or ought to be better, than other people. Although this might be taken as a tacit compliment, I think it is a mistake. The truth is, that scientific men are very much like other people. They have the same desires, the same passions; and they will have the same greed for money and fame that other people have. If they place themselves on a footing devoid of morals, they will develop as mean men as the world has ever seen. But it is not simply from the character of the men who do scientific work that we are to look for good results. These come rather from the scientific method, which, in its final judgment, pays no regard to the condition of the worker. The question is only if his result is right. The dissipated young Frenchman, Galois, was killed in a duel at the age of twenty-one, but his genius was so powerful that he left an indelible mark on the old science of mathematics. His work remains, and in using it we do not consider Galois and his extreme republican principles. ASAPH HALL.

Washington, D.C., Jan. 10.

One of the Causes of the Inefficiency of the Reis Telephone.

SOME who have experimented with the Reis telephone declare that they have never been able to hear a transmitted word. Others have heard some words and sentences; but these have always been weak and irregular, so as generally to discourage one in a short time, especially now, when through the improvements in telephones it is possible to reproduce words both loudly and regularly. Experimenters therefore have been impatient with Reis's apparatus, and seldom have done any thing with it, except make some hasty tests for some phase of the great telephone controversy.

The inefficiency of the Reis telephone has, by a kind of common consent, been admitted to be altogether due to the imperfect mechanical operation of the transmitter, by which the making and breaking of the current when it is in operation is such as not to properly follow the actual vibratory movements of the diaphragm when the latter is moved by speech-vibrations; that at best it can deliver to the line only the fundamental rate of the vibration, leaving out the characteristic over-tones which are supposed to be necessary to the successful transmission of speech. This judgment as to the mode of operation of the transmitter has been derived wholly from what has been heard by one listening at the receiver; for there is to-day no known method by which it may be determined whether or not a transmitter has the proper motions, except by listening at the receiver. That is the test. Hence it has been concluded, that, if speech was not properly delivered in a receiver, the trouble must be with the lack of proper movements of the transmitter. Yet it is mechanically possible for the transmitter to move properly, and the receiver to be so much overloaded, so to speak, that the latter fails to be heard on account of the extra disturbance.

The Page effect — the magnetic click — may be so strong in a Reis receiver, with a proper current, as to be heard a good many feet distant from it. When the receiver is held against the ear, the sound may be very loud; so much so as to quite drown weaker