THE PLANTING AND EXHUMING OF A PRAYER.

IT may not be known to all the readers of *Science* that Mrs. Colonel Stevenson brought with her from New Mexico last autumn, Wa-Wah, a Zuñi woman, the most expert weaver and potter in her pueblo, and one of the five priestesses of the order of Ko-Ko.

For six months this woman has taught her patroness the language, myths, and arts of the Zuñis, — now explaining some intricate ceremony, at another time weaving belt or blanket under the eye of the camera, or with wonderful dignity and self-possession moving among the most enlightened society of the metropolis.

As the season of the summer solstice, or, more correctly, the summer moon, approached, Wa-Wah expressed the greatest anxiety to join with her distant people in the semi-annual plume-planting, the other festival occurring at the time of the winter moon. Letters were written to New Mexico, and the very day ascertained upon which the ceremony would take place in Zuñi (see accompanying plate, fig. 1).

Wa-Wah was all excitement to make her preparation of meal, sticks, paint, and feathers. All of these were abundant enough in the stores, but nothing of that kind would suffice. Various diplomatic schemes were tried, but her heart was fixed. The prayer must be right to infinitesimal particulars, or she would have nought to do with it.

Meal must be mixed with powdered shells and turquoise; the treasures of the national museum had to be opened; and the very pieces of yellow, blue, and black pigment collected in former years by the Bureau of ethnology must be laid under contribution for the stems of the sacred prayer-sticks. Mr. Ridgway's department of ornithology was invoked to supply feathers of the golden eagle (Aquila chrysaetos), the wild turkey (Meleagris mexicana), the mallard (Anas boschas), and the bluebird (Scialia arctica).

Fresh twigs from the cottonwood-trees were gathered for stems to the plumes. In the national museum are many boxes, said by the collectors to have been Zuñi plume-boxes (fig. 2), in which such treasures are kept. The plumes, which form the material instrument or accompaniment of the prayer we are describing, are made as follows: Take a straight piece of wood about the size of a lead-pencil and as long as the distance from the crease in the palm of the hand to the end of the middle finger. Make a slight incision around the stick near one end. Take a short stiff feather of the eagle, the turkey, the duck, and the bluebird, and one or two downy feathers of the eagle. Lay them together so that all the under sides will be toward the stick, and wrap their quill ends and the stick securely together with a cord made of native cotton, sufficiently long to leave free ends five or six inches in length after the tying. To these free ends tie another bunch of smaller feathers from the four kinds of birds (fig. 3). The upright feathers indicate the prayer as addressed to the sun, moon, and Ko-Ko; the trailing feathers, that the suppliant asks for help to walk in the straight path of Zuñi morality.

Ten plumes were thus finished on Friday, June 18, and dedicated to the several spiritual powers by painting the stems as follows: —

1. *Sun-plume.* — Blue stem; feathers of eagle, duck, and bluebird on stem and streamer; 2. *Moon-plume.* — Yellow stem; feathers of eagle, duck, and bluebird on stem and streamer; 3 – 6. *Ko-Ko plumes.* — Black stems; feathers of eagle, turkey, duck, and bluebird on stem or streamer; 7 – 10. *Ancestral plumes.* — Black stems; feathers of eagle, turkey, duck, and bluebird on stem or streamer.

On Saturday, June 19, at two o'clock in the afternoon, in a retired garden in Washington, Wa-Wah performed the ceremony of planting the plumes. Her time was arranged so as to act simultaneously with her people at Zuñi.

A hole was dug six inches square and fourteen inches deep, three inches of loose earth being left in the bottom. Around the top for a foot or more the surface dirt was smoothed like a garden-bed. Meal mixed with powdered shells and turquoise was sprinkled freely about and in the hole. Wa-Wah, arranged in her best attire, holding all of her plumes in her left hand, kneeled by the excavation (fig. 4). Taking the sun-plume in her right hand, she prayed for the good influences of the sun upon herself, her people, the crops, and her friends, and then forced the blue stem into the loose dirt of the cavity on the extreme west side, the inner sides of the feathers toward the east. The prayer continuing, the moon-plume, then the four Ko-Ko plumes, and lastly the four ancestral plumes, were planted in order, all with feathers inclining eastward.

Wa-Wah then arose, drew forth her little bag of sacred meal, poured a small quantity into her own hand and that of each of her two friends, who were watching with the deepest interest. Each, in turn, sprinkled the meal over the shrine, blowing gently with the breath (fig 5).

The utmost sincerity manifested itself in every portion of this ceremony. It seemed to those who gazed in rapt silence at this simple devotion, that they were witnesses to the surviving worship of the primeval world.

It was necessary that the sunlight should look upon this prayer during the rest of the day; therefore every precaution was taken to protect the place from intrusion.

On Monday morning, with the consent of Wa-Wah, the prayer-plumes, and the earth containing them, were carefully dug up, without disturbing a feather (fig. 6), and deposited in the national museum, perhaps the most unique object ever placed among its precious collections.

This ceremony has been carefully studied among the Zuñis by Mr. Frank Cushing and Mrs. Stevenson, and among the Navajos by Dr. Washington Matthews, all of whom will give more detailed descriptions, with translations of the prayers, in the future reports of the Bureau of ethnology.

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CAN ECONOMISTS AGREE UPON THE BASIS OF THEIR TEACHINGS?

ONE of the first and most obvious tests by which to determine whether men possess exact and reliable knowledge of a subject should be afforded by the agreement or disagreement of its recognized cultivators. I propose to show in the present paper that there is no sound reason why political economy should not favorably pass such a test. It is true that its cultivators differ both in the methods and objects of their studies. But such differences do not imply difference of views respecting either fundamental principles or conclusions.

Let us illustrate this by the case of physics. We have some writers and teachers of physics who prefer the experimental method. They teach principles by experiments, and lay little stress on mathematical deduction. Others teach the leading branches of the subject by mathematical reasoning, clothing their results in formulae and theorems.

But these two classes of teachers do not stand in any antagonism to each other, nor accuse each other of ignorance. Each class recognizes the fact that there can be no diversity between correct theory and experimental results, and gives the other credit for aiming at truth in his own way. It is very clear to them that they are viewing and approaching the same subject from different points.

So, also, there are some economists who lay most stress upon the general principles of the science and the conclusions to be deductively obtained from them. Others prefer to lay stress upon the observed facts of society and business, showing the student how to work out such theories as may be founded on the facts he observes.

But it is an unpleasant fact that these two classes of teachers do not, like their brethren the physicists, mutually recognize each other as seeking and reaching valuable truths by different ways. Their attitude toward each other resembles that of the mediaeval philosophers more than that of the modern scientists. They divide themselves into 'schools,' each of which seems very unwilling to admit any truth in the system of the other. I hold that this state of things is a great drawback to the character and usefulness of economic science, and propose to inquire whether there is any necessity for its existence.

Since we must agree upon a common end, I shall assume such end to be the improvement of society, either by promoting such public measures and social movements as tend in that direction, or by discouraging and repressing those which tend to injure society. It is true that this is viewing the subject as an art and a policy rather than a science, and, in fact, taking a stand-point which detracts from its scientific dignity. But I am careful to say that this practical end is not the immediate subject which concerns us, but only the ultimate object which we may have in view.

Admitting, then, that a student desires to know what measures will benefit society, and what measures will injure it, how shall he proceed in acquiring that knowledge? I reply, he must be able to trace beneficial and injurious causes to their effects upon the social organism. If the knights of labor tell him that they want him to favor an eight-hour law, he wants to foresee what effect such a law will have on the interest of all concerned, — wage-workers, mechanics, men out of employment, and capitalists. So, also, when two opposing parties want him to vote for or against the coinage of silver, he cannot reach any intelligent conclusion unless he can foresee what effect free coinage or a cessation of coinage will have upon industry, commerce, and wealth. In a word, society being an extremely complicated and delicate organism, he must know what effects different causes may have upon it.

How shall he prepare himself for this great problem? I answer, that he must prepare himself as he would in the case of any other organism or machine: he must begin by understanding the anatomy and physiology of the social organism in its minutest details. Especially must he understand to what forces it is subjected, and what influence these forces have upon its workings.

Possibly we may here be met with the assertion that this is not a subject on which any exact knowledge can be acquired. There are respectable people, even teachers of economics, who seem to deny that they are dealing with a science. All