fences, burlap-covered, are erected to get a better distribution. Meanwhile, the growing vegetation begins to bind the soil so that, with conservative utilization of plant life, there is little danger of washing after the first year.

Last year, the volume production of grass below one such diversion dam on our project was increased to nearly five times that on adjoining lands where no water was spread. The production in a Navajo corn field receiving flood irrigation through this water-spreading device was increased from a probable twenty bushels to about forty bushels per acre.

The cost of collecting and distributing these flood waters is comparatively small, amounting to but a few dollars per acre. The effects are far reaching. The washes from this eroded area carry a silt content of from twenty-five to thirty per cent. In the natural course of events, this is dumped into the San Juan River, and from there into the Colorado. It doesn't take much imagination to see what this constant depositing will do to the Boulder Dam. Engineers have stated that the very life of the dam depends upon the amount of silt deposited above it, and by far the greater part of it probably comes from the watershed of the San Juan and the Little Colorado Rivers. It is gratifying to know that while we are striving primarily to rehabilitate the lands for the Navajo, we are at the same time helping in the preservation of one of the greatest irrigation projects in the United States.

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NAMING POTTERY TYPES, AND RULES OF PRIORITY

IT is a curious psychological fact that a pottery type with a name can be visualized. One without a name seems intangible. As an example, two-color yellow ware means little, whereas Sitkiatki polychrome to the initiated brings up a distinct picture in the mind, a picture of all the attributes of the type. Besides, a type with a name can be referred to without repeating a partial description every time it is mentioned. These are the reasons for naming pottery types, and the method proposed at Pecos Conference in 1927 (SCIENCE, 66: 489) seems to be the best method and has in consequence been widely accepted. But we must go farther than that.

The necessity for having rules to follow in the naming of pottery is evident from the large synonymy that has developed. In the Southwest about 250 pottery types have been described. In one ware, which contains sixteen types, there are fifty-four synonyms, making seventy names to be remembered by an investigator working on that ware. One type, Flagstaff Black-on-white, has seven synonyms. Almost every author that has worked in the Southwest has felt free to give names as the whim pleased him, without reference to what has been done in the past, and one author has called the same pottery type three different names in three different publications. The need for a system is evident.

The authors of this paper are working on a handbook of northern Arizona pottery types and propose the following rules to determine the name that they will use. As these rules follow, in general, those that have been developed by biologists since the time of Linnaeus we see no reason that they can not, in a modified form, be applied to ceramics. Certainly some sort of a system is necessary.

In order to prevent a useless duplication of the names of pottery types we propose the following rules:

(1) A name of a type consists of a geographical name, followed by a descriptive term. Example: Sitkiatki Polychrome. This binomial principle was decided at the 1927 Pecos Conference (SCIENCE, 66: 489, 1927). Gladwin and Gladwin (Medallion Papers, No. 7, 1930) state that "the geographical name need not be the spot where the type was first found, nor its area of greatest density but would simply serve as a label for reference." This idea can not be too greatly stressed. Many feel that if a type is named for some place on the periphery of its area of distribution it should be changed, as our knowledge increases, to a locality in the center of the area. This only leads to endless confusion and a useless synonym. The first name given, if properly constructed, and, if the description is clear, should stand.

(2) The geographic name must not be combined with a prefix (Example: Proto-Kayenta) or a comparative adjective (Upper Gila) except where a prefix or an adjective has become an accepted part of the geographic name (Little Colorado).

(3) Names should be short (Chaco) and unwieldy geographic names can be abbreviated (Kokopnyama becomes Kokop). Unnecessary adjectives should be omitted (North Creek Gray Corrugated becomes North Creek Corrugated).

(4) Any name of a pottery type given before the Pecos Conference of 1927 is credited to an author if a geographic name is inferred with a descriptive term. Example: Nordenskiold ("Cliff Dwellers of Mesa Verde," 1893, p. 83) has accurately described and figured a type from Mesa Verde, which he calls Black and white ware. Kidder ("Southwestern Archaeology," 1924) calls it Mesa Verde Black-on-white, which is properly constructed on the binomial

system, although Nordenskiold's name is not. By inference Nordenskiold has named the type. If a question of priority should arise 1893 should be the date —not 1924.

(5) The type must be sufficiently well described that the description does not conflict with the description of any other type.

(6) A name printed without a description should be ignored.

(7) The date of acceptance of a manuscript for publication, when printed in a journal, supersedes the date of publication of the journal in matters of priority.

(8) The name and description of a new type, to be accepted, must be printed, lithoprinted or mimeographed, and not less than fifty copies distributed to libraries of anthropological laboratories and workers in the field.

(9) As suggested by Gladwin and Gladwin (1930) when a type is named sherds and, if available, whole vessels should be designated type specimens and set aside for future comparison.

The authors of this paper would be glad to receive comments on the above rules.

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THE INHIBITING INFLUENCE OF A VIRUS ON ONE OF ITS MUTANTS

SEVERAL years ago the writer[1] called attention to the fact that when tobacco plants showing the symptoms of the common mosaic (referred to as light-green mosaic) were reinoculated with the virus of a yellow mosaic, which is considered to be a mutant of the former, no change in the symptoms occurred.

The writer inoculated tobacco plants with virus mixtures in which the virus extract of the yellow mosaic was 999 times more concentrated than the virus extract of common mosaic. All the inoculated plants developed symptoms of yellow mosaic. However, 47 days after inoculation the young leaves were showing the symptoms of common mosaic. Other plants, inoculated at the same time with mixtures containing 499 parts and 99 parts of the extract from yellow-mosaic plants, also developed symptoms of yellow mosaic, but the common mosaic symptoms made their appearance earlier than 47 days.

Tobacco plants having yellow mosaic were reinoculated with the purest virus of common mosaic obtainable. From 5 to 20 leaves which developed after this reinoculation developed yellow mosaic, then from 8 to 25 leaves developed progressively less yellow mosaic in combination with common mosaic until the subsequent foliage developed only typical common mosaic. Suckers from such plants developed the typical symptoms of common mosaic. Some of the first few leaves which manifested only the light and dark-green mottling carried a small amount of the virus of yellow mosaic. However, subsequent leaves were free of detectable amounts of yellow-mosaic virus, except in cases where the small yellow-mosaic mutation spots occurred and in such cases the virus of yellow mosaic was confined to these spots and the adjacent tissue.

Other workers have found that certain yellow-mosaic viruses which induce necrotic lesions in suitable species will not induce these lesions if the plants have been previously infected with certain leaf-mottling viruses.

This phenomenon has been referred to as acquired immunity[2, 3] and as induced immunity.[4] On this basis the virus of common mosaic may be looked upon as an immunizing agent or "vaccine" and from the evidence presented in the second and third paragraphs it appears that we are dealing with a condition of incompatibility in which the "vaccine" virus eventually suppresses the yellow-mosaic virus in the meristematic tissues. This interpretation makes it unnecessary to assume that the "vaccine" virus induces the plant to set up a special defence mechanism which in turn combats the virus of yellow mosaic.

It appears that the virus of common mosaic represents a rather low or primitive form of "vaccine," since the disease induced by it becomes permanent and is a distinct menace to the plant during its life under normal cultural conditions. On the other hand, the virus seems to represent a uniquely high type of "vaccine," since it suppresses the development of the yellow-mosaic virus and ultimately induces what possibly may be considered a cure for yellow mosaic in those parts of the plant which are formed after the original yellow-mosaic virus has been sufficiently reduced. The *G* virus used in Salaman's[5] tests against the *L* virus in tobacco and *Datura stramonium* is a more efficient "vaccine" since it induces very slight symptoms with no appreciable effect on the health of the plants. It is possible that virus mutants may be isolated which will protect as well as "cure" and yet not survive indefinitely in an active form in the plant.

The inhibiting characteristic of the common-mosaic virus is regarded as one of the strongest lines of evidence in support of the view that the occasional small yellow-mosaic spots[1] which have been associated with common mosaic in all the 5,000 or more tobacco plants studied by the writer resulted not from viruses intro-

[1] H. H. McKinney, *Jour. Agr. Research*, 39: 557, 1929.

[2] L. O. Kunkel, *Phytopathology*, 24: 437, 1934.

[3] W. C. Price, *Phytopathology*, 25: 776, 1935.

[4] John Caldwell, *Proc. Roy. Soc.*, Ser. B 117: 120, 1935.

[5] Redcliffe N. Salaman, *Nature*, 131: 468, 1933.