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MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE LOST ARTS OF CHEMISTRY[1]

IN addition to chronicling past and present events merely, it pleases the historian from time to time to ascertain, as nearly as he can, by a comparison of present with past conditions and present knowledge and practise with past knowledge and practise, the present condition of mankind of any particular society, in comparison with past conditions. Thus are compared present systems of government with past systems, new religious beliefs with old, modern science with ancient science, present-day arts and manufactures with those of old.

Progress never takes a straight course for any considerable length of time. Nor does it even follow an undulating course in one general direction. But there are advancements and retrogressions, repeated endlessly. And again progress as recorded by history does not represent necessarily the progress of the whole human race. On the contrary, it does not represent even a large part of the human race, but at most an isolated portion of it, and in this isolated portion the progress is recorded not of the whole but of the most advanced individuals only. When we say that the present age is one of great business, scientific and manufacturing or artistic achievements in comparison with the fourteenth century, for example, we mean that a few individuals, very few in fact compared with the total number, have contrived to bring about great results in those fields of human activity. But we must remember at the same time that the majority of indi-

[1] An address delivered before the Minneapolis meeting of the American Chemical Society, December 28, 1910.

termites by Holmgren; a similar account of the ants by Forel; descriptions of the termitophilous coleoptera by Wasmann; a description of a new cricket (*Myrmecophila escherichi*) which has become termitophilous, by Schimmer; termitophilous thysanura, myriopoda and coleopterous larvæ by Silvestri; a termitophilous earthworm (*Notoscolex termiticola*) by Michaelsen.

W. M. WHEELER

SCIENTIFIC JOURNALS AND ARTICLES

THE contents of *The American Journal of Science* for April are as follows:

"Ionization of Different Gases by the Alpha Particles from Polonium and the Relative Amounts of Energy Required to Produce an Ion," T. S. Taylor.

"Heat Generated by Radio-active Substances," W. Duane.

"Contributions to the Geology of New Hampshire. IV. Geology of Tripyramid Mountain," L. V. Pirsson and Wm. North Rice.

"Note on a Method in Teaching Optical Mineralogy," F. W. McNair.

"New Paleozoic Insects from the Vicinity of Mazon Creek, Illinois," A. Handlirsch.

"Results of a Preliminary Study of the so-called Kenai Flora of Alaska," A. Hollick.

SPECIAL ARTICLES

THE ORIGIN OF FIVE MUTATIONS IN EYE COLOR IN DROSOPHILA AND THEIR MODES OF INHERITANCE

The White Eye

IN cultures of *Drosophila ampelophila*, that had been closely inbred for a year, a male fly, lacking the red pigment of the eye, appeared. The same stock has continued to produce these white-eyed mutants always of the male sex. A white-eyed father transmits the character to about one fourth of his grandsons, but to none of his granddaughters. In this sense the character is sex limited. The white eye can be transmitted, however, to the females, most readily by breeding any white-eyed male to red hybrids (F_1) out of white by red. White-eyed males and females give pure stock. When a white-eyed female is bred to any wild male all of the female offspring have red eyes and all of the male offspring white eyes. The result shows that the male-bearing sperm of the wild flies lacks at least one of the factors essential for the production of red eyes. This statement does not mean that the male-determining sperm lacks all of the factors essential for producing red, but only that it lacks one of the factors necessary for the production of red. In fact, it is conceivable that all of the rest of the cell may be equally essential for the production of red, but in the absence of one condition (factor) the red fails to develop. It is in this sense that I understand the use of the word "factor" in inheritance; and in the same sense one might employ the word "unit character," although the latter word may seem to imply (from usage) that a particular character is represented entirely by some unit in the germ cells. We are not warranted, I believe, in extending to the results of Mendelian inheritance such an interpretation. Since I have discussed elsewhere the mode of transmission of the white eyes,[1] I shall omit further details here.

The Pink Eye

This eye color has appeared at least twice in cultures in no way closely related to the white-eyed stock. It is not due to a cross between red- and white-eyed flies. The color is much lighter and more translucent than red, and appears to contain more yellow. It is seen to best advantage soon after the flies have emerged. Later it becomes darker and casual observation might mistake it for red. As the flies get old the pink changes to a somewhat purplish color, and this change does not take place in the red eyes, so that with experience there is no difficulty in separating the two colors at all stages. No intermediate condition has been seen despite the fact that thousands of the pink-eyed flies have been examined.

Pink-eyed males bred to wild red-eyed females produce all reds in the first generation. These flies, inbred, have produced in the second filial generation 3,063 reds to 169

[1] SCIENCE, July 22, 1910.