Totem is adopted into near kinship we merely see, in the not-killing and eating, that which follows naturally the rule of human kinship. But if the main motive in abstaining from eating Totem 'is to conciliate,' then Totemism is so far religious as a method of dealing with superiors, for in a broad sense religion includes all acts toward the superior as such. But Totemism, so far as it makes the native coercive to his fellow animals by force of cunning magic, certainly is unreligious.

As to Exogamy, while this may arise similarly with abstinence from killing and eating, and is thus a saving from supposed incest, as Mr. Frazer says, we would also see that marriage within a Totem group might have the undesirable result of a Totem animal as offspring instead of a human child. Mr. Frazer reports something analogous in his book on Totemism (page 16): "Bakalai think that if a man were to eat his Totem the women of his clan would miscarry and give birth to animals of the Totem kind or die with an awful disease."

It would be of interest to know whether there is a Totemic instinct and whether it emerges in civilized children. I think it might be found, especially among street Arabs and others early thrown on their own resources. As to Totemism bearing on the domestication of animals, the researches of McGee and others in the United States favor domestication of animals from commensalism. (Cf. also domestication of snakes as ratters in the Philippines.) Totemism certainly acts analogously to a limited close period by restricting those who shall kill and eat certain food animals; but the Totemic idea of controlling by spell is contrary to the idea of direct subjection, and would scarcely lead to it. The Totem group are merely those who stay at home, and by their intimate relationship weave the spells by which the prey is made plenteous and convenient to the hunter.

In Totemism and also Fetichism—which is but a means to Totemic power—we see the first groping of the human mind toward causal relation and its practical application; but so grossly animistic, especially in its kinship idea, as to be difficult of understanding by civilized man with his scientific mode of thought. The Totemic control of nature by making oneself akin, is antipodal to the depersonalizing scientific method. Totemism is the human animal fascinating his prey by kinship rite and spell.

Hiram M. Stanley.

Lake Forest, Ill., May 29, 1899.

Arousal of an Instinct by Taste Only.

Editor of Science: The following observation is submitted on the chance that it may be of use. A dead mouse was given to two kittens eight weeks old. They showed no interest in it from sight or smell, but as soon as they were made to taste the mouse they went into a fighting passion, which remained as long as the mouse was tasted. When they were forced to give up the mouse, all interest was lost and could not be aroused even by smell. Yet as soon as the tongue again touched the mouse the kitten fell into the same passion of fighting. One test showed marked results. Giving the mouse to one kitten, I held it, scratching vigorously, in one hand, while with the other hand I made the other kitten touch and smell the mouse and finally taste it. As long as the second one did not taste the mouse it showed no interest, but it began to fight vigorously at the moment of tasting. As soon as the first kitten was made to release its hold on the mouse it at once ceased to show any interest.

E. W. Scripture.

Current Notes on Meteorology.

Influence of the Great Lakes on Precipitation.

The *Meteorological Chart of the Great Lakes* for June (U. S. Weather Bureau) presents a chart of the normal annual precipitation of rain and snow in the drainage basins of the Great Lakes, with a set of tables and a brief summary prepared by A. J. Henry. The conclusion reached as to the influence of the Lakes on precipitation is as follows: With the possible exception of Lake Superior, the lakes do not seem to have a very marked influence on the precipitation over adjacent land areas. There is more precipitation on the south than on the north side of Lakes Superior, Erie and Ontario, the differ-

ence in the case of Lake Superior being about eight inches, while the average precipitation on the south shores of Lakes Erie and Ontario is about three inches greater than that on the north shores. The eastern shores of Lakes Michigan and Huron have a greater precipitation than the western, but the differences are not so strongly marked as between the northern and southern shores of the other lakes. The annual precipitation is somewhat less over the northern peninsula of Michigan as compared with the immediate shore line, and the precipitation over the interior of the northern portion of the lower peninsula is considerably less than on the shores of the lakes on either side.

REPORT OF THE CHIEF OF THE WEATHER BUREAU.

THE *Report of the Chief of the Weather Bureau for 1897–98* is an unusually interesting volume. We note that Section I., which deals with *New Work and Special Investigations*, includes an account of the kite work, illustrated by reproductions of a considerable number of kite meteorograph curves. Deaths by lightning during the year 1897 are reported as reaching 362, which is the largest number in any single year since a record has been kept. The number of deaths due to violent storms was 55. Part VII. contains *The Climate of Cuba*, by W. F. R. Phillips, a somewhat fuller account than that published in Bulletin No. 22 (see SCIENCE, July 1, 1898, p. 16); *Temperature, Rainfall and Humidity at San Juan, Porto Rico*, and *The Weather of Manila*, both by W. F. R. Phillips. The latter account was contained in Bulletin No. 22. Two papers by Professor H. A. Hazen, one on *Meteorologic Waves* and one on *The Distribution of Moisture in the United States*, both well illustrated, close the volume.

JAMAICA WEATHER SERVICE.

OWING to the withdrawal, by the government, of the annual subsidy, the Jamaica Weather Service came to an end on April 1st of this year. This service was established in 1880, and has done valuable work in furnishing warnings of coming hurricanes, as well as in carrying on and publishing investigations of hurricanes, rainfall, damage by lightning, etc. Mr. Maxwell Hall has been in charge of the Jamaica Weather Service from the start, and has had the able assistance of Mr. Robert Johnstone, as observer in charge at Kingston. The announcement is now made that Mr. Johnstone's services must be dispensed with, and that the first-class station at Kingston and the second-class station at Montego Bay must be discontinued.

NEW DAILY WEATHER MAPS.

THE *Monthly Weather Review* for March notes the issue of two new daily weather maps, one in Canada and the other in Mexico. In the summer of 1898 the Canadian Meteorological Service established a Pacific Coast Division with headquarters at Victoria, B. C. An interchange of daily telegraphic reports takes place between our own Weather Bureau and that of Canada, so that the information available to one is also accessible to the other. It is expected that daily maps and forecasts will be issued by the Pacific Coast Division of the Canadian Weather Service similar to those now issued by the U. S. Weather Bureau at San Francisco and at Portland, Ore. On March 1, 1899, the Republic of Mexico began the publication of a daily weather map, 12 by 16 inches in size, the observations being made at 8 a. m., 75th meridian time. The map makes possible an immediate connection with the daily maps of the United States and of Canada.

WINTER TEMPERATURES AT DAWSON CITY.

THE *Monthly Weather Review* for March also contains a summary of some meteorological observations made at Dawson City during November and December, 1898, and January, 1899, by U. G. Myers, Observer, Weather Bureau. The maximum in November was 23.3°; the minimum, -41.4°. In December the maximum was 38.0° and the minimum —41.0°. In January the maximum and minimum were 2.0° and —45.0°, respectively.

RECENT PUBLICATIONS.

The Use of Kites in the Exploration of the Upper Air. C. F. MARVIN, Professor of Meteorology, U. S. Weather Bureau. Year-book of

the Department of Agriculture for 1898. Pp. 201–212. Pls. I. Figs. 9.

Description of the standard Weather Bureau kite and apparatus, with illustrations.

Proceedings of the Convention of Weather Bureau Officials held at Omaha, Nebraska, October 13–14, 1898. Prepared under the direction of Willis L. Moore, Chief of Weather Bureau. U. S. Department of Agriculture, Weather Bureau. Bulletin No. 24. 8vo. Washington, D. C., 1899. Pp. 184.

This Bulletin contains a large number of papers on a wide range of subjects connected with the work of the Weather Bureau and with the relations of the Bureau to the public.

R. DeC. Ward.

Harvard University.

BOTANICAL NOTES.

THE VARIETIES OF CORN.

Several years ago the lamented Dr. Sturtevant published privately the results of his studies of Indian Corn, with especial reference to the varieties which have been created by man since he has had it under cultivation. The value of the original paper was such that the Department of Agriculture has done wisely in determining to bring out this considerably enlarged and improved edition as one of the publications of the Office of Experiment Stations (Bulletin No. 57). It is an attempt to treat in a scientific manner the whole problem of the varieties into which the originally single species has developed under man's selection. It is thus a contribution to our knowledge of the evolution of a species under cultivation.

The paper opens with a technical description of the Family *Gramineae*, the tribe *Maydeae* and the genus *Zea*, and then follow descriptions of 'the one recognized species,' *Zea mays* L., and the 'species groups.' In discussing the variations in the species the author says: "The species *Zea mays* includes exceedingly divergent forms. The height of the plant in varieties and localities has been reported from 18 inches for the Golden Tom Thumb pop to 30 feet or more for varieties in the West Indies, and single stalks in Tennessee at 22¼ feet. I have seen ears 1 inch long in the pop class and 16 inches long in the dent class. The rows in varieties may vary from 8 to 24 or more, and in individual ears are reported from 4 to 48. A hundred kernels of Miniature pop weighed 46 grains, of Cuzco soft 1,531 grains. In some varieties the ears are long and slender; in others, short and thick; in the Bear Foot pop, flat. Some varieties have flat kernels; other varieties have spheroidal kernels; yet others, conical kernels. The summits of the kernels may be flat, rounded, pointed or indented. These kernels, usually upright on the cob, may be sloping or imbricated, firm or loose, usually sessile, yet sometimes stalked. In structure some are corneous throughout; others are partly corneous and partly farinaceous, others entirely farinaceous. * * * The season also varies. A variety that ripens in one month is mentioned from Paraguay, and seven months are said to be required in some southern countries. * * * In one group of corn each kernel is surrounded by a husk and the ear thus formed is itself enveloped in husks. In all our field and garden corns, however, the seed is naked on the cob."

With all these variations before him the author finds little difficulty in dividing the 'polymorphic species *Zea mays*' into a number of groups, "which, on account of their well-defined and persistent characters, may be considered as presenting specific nomenclature." Accordingly, the author proposes six 'species groups,' each having the value of species in process of formation (if we understand the author aright). These species of a lower order are as follows:

1. *Zea tunicata*, the pod corns, in which each kernel is enclosed in a pod or husks. This is thought by some to be the type of the primitive maize, but Dr. Sturtevant very shrewdly suggests that "a more complete study, with more ample material, may possibly bring this group under the classification of abnormalities, the pod being but a proliferous condition."

2. *Zea everta*, the pop corns, in which the excessive proportion of corneous endosperm and the small size of the kernels and ears are characteristic. Twenty-five varieties are recognized.