which she would remove with her front feet every specimen that made an attempt to ascend the wall of her enclosure; but these bugs were not eaten. The toad was then transferred to another jar of the same size and construction and eight bugs were suddenly introduced from the squash leaf so that the toad would get the first and fullest effects of the odor; the result was that the animal went through a series of contortions followed by a short period of stupor similar to that mentioned before. Upon recovery the toad was again removed to the vivarium where it now lives in partial hibernation.

A young red spotted salamander was affected and killed as easily as the half-grown toad, while for the common field frog a greater number of bugs were required to bring about similar effects, the frogs also being killed. Many experiments with snakes were tried, but no ill effects from the secretion of the bugs were apparent.

The odor that the bug gives off emanates from a clear, slightly greenish liquid expelled from the extremity of the alimentary canal; when it comes in contact with the air the odor is given off almost instantaneously while the liquid remains to evaporate.

These experiments are still in progress and when completed will be published in detail. They seem to open up an interesting field for investigation as to the protective value of the odoriferous secretions of many of the Heteroptera.

ALBERT F. CONRADI.

NEW HAMPSHIRE COLLEGE AGRICULTURAL EXPERIMENT STATION, DURHAM,
October 29, 1901.

CURRENT NOTES ON METEOROLOGY.

THE WEATHER BUREAU.

THE address presented at the Convention of Weather Bureau officials, held at Milwaukee last August, by Professor Willis L. Moore, Chief of the Weather Bureau, is printed in the October number of the *National Geographic Magazine*. The salient facts in the history of the weather service are given, and special emphasis is laid on the tangible results of the Weather Bureau's work. It is a pleasure to see the name of Professor Cleveland Abbe, the foremost living American meteorologist, linked with the names of Redfield, Espy, Maury and Loomis in this article. Some of the statistics given by Professor Moore are worthy of note here. Thus, in the case of cold-wave warnings, the statement is made that 100,000 telegrams and messages are frequently distributed within a few hours. During one cold wave $3,400,000 worth of property is estimated to have been saved as a result of the information issued by the Weather Bureau. The system of distributing warnings of gales dangerous to navigation is so perfect that "the Chief of the Weather Bureau, or the forecaster on duty at the Central Office, can dictate a storm warning and feel certain that inside of one hour a copy of the warning will be in the hands of every vessel master in every port of material size in the United States, provided that it is his desire that a complete distribution of the warning be made."

Reference is made to the important work of the Bureau in connection with measurements of snowfall in the high mountains of Montana, Wyoming, Idaho, Utah, Arizona and New Mexico, which make it possible to estimate the probable supply of water to be expected for irrigating purposes, and also to the recently inaugurated forecasts of wind direction and velocity for a period of three days after steamers sail from European or North American ports. At the conclusion of his article, the Chief of the Weather Bureau rightly criticizes the press for the attention it gives to the long-range forecast frauds, which deceive so many persons. Last year's appropriation of $1,058,320 for the Weather Bureau was certainly small, considering the value of the work done.

MONTHLY WEATHER REVIEW.

THE *Monthly Weather Review* for July (issued in October) contains the usual number of interesting articles. In 'The Thunder-storm: A New Explanation of one of its Phenomena,' Byron McFarland gives his reasons for not accepting the common explanation of the origin of the squall wind in thunder-storms, viz., that this squall is due to the 'kick' of the rapidly ascending air, and advocates the theory that the cool air within the thunder-storm accounts for

the phenomena of the outflowing squall. A. L. Rotch contributes a short account of a meteorological balloon ascension in which he took part at Strassburg last July. Professor R. E. Dodge describes some diurnal winds in northwestern New Mexico, which are developed on very faint gradients. A translation, by Professor Cleveland Abbe, of the introduction to Marcel Brillouin's recent volume 'Mémoires Originaux sur la Circulation Générale de l'Atmosphère,' brings before American readers an excellent brief historical summary of the various important contributions made by Ferrel, Thomson, Siemens, and others, to the subject of the general circulation. 'Yukon Weather' is the title of a paper by U. G. Myers, Section Director of the Weather Bureau in Alaska. Professor Abbe, in his 'Notes by the Editor,' discusses the relation between the scientific work of the Weather Bureau and the long-range forecasts made by those who believe in lunar or stellar influences, and in this connection gives a translation of the paragraphs of Angot's 'Traité de Météorologie' which deal with this subject. An account of the Milwaukee convention of Weather Bureau officials concludes this number of the *Review*.

GEOLOGICAL CHANGES OF CLIMATE IN THE EASTERN CORDILLERAS.

A RECENT paper by Professor N. S. Shaler, on 'Broad Valleys of the Cordilleras' (*Bull. Geol. Soc. Amer.*, Vol. 12, 271–300), explains certain features of these valleys by an increased erosive action due to an ancient temporary increase of rainfall in preglacial time. The source of the larger part of the rainfall in the Mississippi valley drainage area is evidently in the basin of the Gulf of Mexico and the Caribbean Sea. When these waters were of greater extent, the evaporation from them might well have produced a much heavier rainfall over the Cordilleras than is now found there. There is evidence in the broad valleys of several oscillations of climate. At the present time the conditions of the eastern section of the Cordilleras indicate a recent return to an arid climate. The taluses are evidently increasing. "Unless the Gulf of Mexico," Professor Shaler concludes, "should again be brought over a considerable part of the southern lowlands, there seems to be no reason to expect that there will be any increase of rainfall in this area."

TREE PLANTING ON THE PRAIRIES.

WILLIAM L. HALL, assistant superintendent of tree planting in the Division of Forestry, believes that the time has come for an extensive development of forest plantations throughout the Middle West, in consequence of the rapid diminution of the supply of natural timber in the Mississippi valley (Yearbook Dept. of Agriculture for 1900). Over extensive areas the prices of posts, telegraph poles and cross-ties much exceed the cost of growing them. This difference promises profit in timber growing. Ten years ago the area for profitable tree planting was, chiefly for climatic reasons, thought to be much smaller than it is now known to be. The past year has seen the establishment of nearly 100 plantations by individuals in cooperation with the Division of Forestry, and during the present year more trees will be planted than ever before. Mr. Hall believes that if 500,000 acres of timber, well distributed throughout the Middle West, were planted annually, the production would still be inadequate to meet the demand, and liberal profits could still be hoped for. R. DEC. WARD.

PROPOSED AMERICAN ELECTRO-CHEMICAL SOCIETY.

A MEETING was held on November 1 at the rooms of the Engineers' Club in Philadelphia, to discuss the question of the advisability of organizing a national electro-chemical society on the same general plans as the American Chemical Society and the American Institute of Electrical Engineers. Some twenty or thirty persons from different parts of this country, who were thought to be interested in the subject of electro-chemistry, had been asked to be present or to express their views by letter. Among the communications received, the majority, especially from the electrochemical industries, were in favor of the formation of such a society; the minority thought the time had not come yet for such a society, that the American Chemical Society and the American Institute of Electrical Engineers filled the needs, that there were already a number of other societies at which papers on this subject could be read, etc.